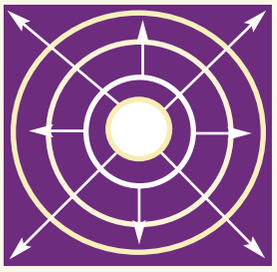

TRANSPORTATION AND REGIONAL GROWTH

a study of the relationship between transportation and regional growth

The Role of Housing Markets, Regulatory Frameworks, and Local Government Finance

Report #1 in the Series:

Transportation and Regional Growth Study

John S. Adams, Mark D. Bjelland, Laura J. Hansen, Lena L. Laaken, and Barbara J. VanDrasek

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This four-part report is the first in a series of studies that address Twin Cities regional dynamics, using an integrated mix of statistical and cartographic analyses.

The report examines the land use/transportation dynamic and its influence on metropolitan development in postwar U.S.; changes in housing supply, housing demand, and residential price movements between 1970 and 1990 in minor civil divisions (MCDs) within the seven-county metropolitan area and adjacent counties; a classification of state and local regulations that promote low-density development on the built-up metropolitan edge and beyond and that raise obstacles cost-effective redevelopment in older settled areas near the cores of Minnesota's major urban centers; the changing profiles of taxation, intergovernmental revenue transfers, and expenditures by function for counties and MCDs within the Twin Cities region.

Findings include the following:

- During the post-World War II era, the growth in vehicle miles traveled on the Twin Cities metropolitan highway system has significantly out paced growth in population.
- As income relocates outward from the metropolitan core, the demand for transportation increases on the edges.
- Sectoral housing market dynamics have contributed to outward expansion at lower densities.
- Low-density development often occurs because zoning regulations encourage or actively promote it.
- The regulatory framework that encourages low-density development and contributes to urban sprawl on the metropolitan edge also inhibits the development of affordable housing.

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Opinions expressed in this report, as well as any errors in fact, remain the sole responsibility of the authors.

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EXECUTIVE SUMMARY

This four-part report is the first in a series of studies that address Twin Cities regional dynamics, using an integrated mix of statistical and cartographic analyses.

The series is one of six in a multi-year initiative of research and public education on Transportation and Regional Growth.

This report is meant to provide a backdrop for subsequent reports, which will take a more detailed look at the complexity of interactions relating transportation infrustructure and flows, housing market dynamics, economic development processes, local government finances, and regulation, and their influence on the shape and substance of metropolitan growth.

Chapter 1 introduces the land use/transportation dynamic, as it has influenced metropolitan development in the postwar U.S.

Chapter 2 examines changes in housing supply, housing demand, and residential price movements between 1970 and 1990 in minor civil divisions (MCDs) within the 7-county metropolitan area and adjacent counties. This chapter addresses two major questions: 1) where is new housing going? and 2) how does the changing mix of housing affect each MCD's relative attractiveness (or rank) within the metro area?

Chapter 3 presents a classification of state and local regulations (zoning controls, development incentives, brownfield guidelines) that promote low-density development on the built-up metropolitan edge and beyond, and that raise obstacles to cost-effective redevelopment in older settled areas near the cores of Minnesota's major urban centers. The major questions addressed in this chapter are: 1) how do public regulation and consumer and producer behavior inhibit redevelopment in central cities and older suburbs, and promote development on the edge? and 2) how do these tendencies affect long-term demand for transportation?

Chapter 4 is an examination of changing profiles of taxation, intergovernmental revenue transfers, and expenditures by function for counties and MCDs within the Twin Cities region, within the framework of several questions: 1) what happens to an MCD's

Metropolitan population expansion stimulates suburban housing construction.

Economic growth brings more jobs.

Commercial development pursues household purchasing power into the developing suburbs.

Industrial expansion adds job opportunities on the built-up edge.

The area's highway network promotes dispersal of households and jobs.

Growth along with dispersed low-density development means more trips over greater distances.

Travel demand exceeds what infrastructure can accommodate.

Benefits of low-density development appear to flow to individual households and businesses, but...

revenue and expense streams during different growth and development stages? 2) which costs of new development are paid for directly or as state and federal tax expenditures, and which are paid by the MCD? and 3) who should pay for whose benefits? This chapter explores the relationship between rapid metropolitan growth at the periphery, accompanied by changing patterns of highway usage, and the finances of municipalities, counties, school districts, and other units of local government.

Findings

During the post-World War II era, the growth in vehicle miles traveled on the Twin Cities metropolitan highway system has significantly outpaced growth in population. Since 1980, the most rapid traffic volume increases have occurred in the outer-ring suburbs, which also have experienced the most rapid growth in population. Thus, the demands for transportation in the metropolitan area are intimately linked to the geographic distributions of population and employment growth.

As income relocates outward from the metropolitan core, following middle- and upper-income households as they move upward socially and outward geographically, the demand for transportation increases on the edges. This tendency to develop new and extravagantly on the edge rather than to reinvest in maintaining and improving already-developed areas has particularly noticeable effects on transportation requirements. Sprawling, low-density development carries with it an increase in automobile dependency, increases in distances traveled, higher traffic volumes, greater fossil fuel consumption, reduced efficiency of public transit systems, and persistent calls for additional high-volume, high-speed roads.

Sectoral housing market dynamics have contributed to outward expansion at lower densities. Developers have produced what their experience showed them that people wanted, then people bought what was made available to them. The geography of America's suburbs evolved in the post-war period in response to these interlocked forces that dictated and perpetuated distinctive patterns of housing supply and housing demand. Faced with a set of equally affordable choices, the large majority of American households report preferences for newer, low-density housing in

middle-class suburbs over older, higher-density housing in mixed social-class neighborhoods closer to the metropolitan center.

Low-density development often occurs because zoning regulations encourage or actively promote it, not necessarily because the market needs such development or because developers determine that it is the best use of a property. Regulatory constraints on redevelopment and regulatory incentives for suburban development have created a housing market that consistently undervalues older homes and constantly pushes the boundaries of new, low-density housing out toward the edge. Sprawl is accompanied by a chronic shortage of investment dollars for central cities even as their suburban counterparts strive to cope financially and administratively with relentless growth.

The regulatory framework that encourages low-density development and contributes to urban sprawl on the metropolitan edge also inhibits the development of affordable housing. Highway and road construction and water and sewer expansions have encouraged housing construction on the edge of cities rather than the renovation of older housing stock. Building codes also contribute to the cost of rehabilitating residential, commercial, and industrial buildings in the central city.

Among the major factors influencing the locational arrangements of regional growth are the fiscal incentives and anticipated fiscal consequences for local governments and utility providers. Whenever government or a private supplier can deliver essential services in an orderly and compact fashion, costs are lower. The "non-contiguous" low-density development that has occurred has the effect of increasing the cost of delivering essential urban services, costs that are then passed from the developer to the housing consumer and to the public at large. Within this framework, school district levies comprise the single largest portion of property tax bills in Minnesota. Regional growth patterns strongly influence school district enrollments in metropolitan areas.

The current pattern of rapid growth at the fringe of metropolitan areas is shaped in part by the belief that attracting new housing subdivisions, shopping centers, and business parks will lead to a strong tax base and ensure a city's prosperity. Growth often is linked to traffic congestion and even fiscal stress, however, and thus is questioned as a panacea for the financial woes of a community.

...aggregate costs of sprawl to the community are high--and going higher.

Local governments anxiously try to match revenues with rising costs, manipulating land use plans and zoning for revenue. Meanwhile...

...school districts must respond to land use decisions made by local governments outside of their control.

Efficient land development and land-use arrangements mean:

- efficient use of highways and other elements of the built environment,
- reduced impact on fragile environments,
- lowered travel demand,
- reduced need for new infrastructure investment,
- cheaper costs of maintaining existing facilities, and
- less dispersal of population and stronger communities.

Conclusions and Implications

Travel behavior changes have generated demand for ever-expanding road capacity throughout the commuteshed, expansion that no longer is politically or financially feasible. The stage has been set for a public-policy conflict: the motoring public appears to want what it cannot have at the prices it is willing to pay.

Growth may benefit the entire region, or it may benefit some areas at the expense of other parts of the region. The cumulative effects of federal, state, and local regulations during the last 50 years have pushed residential, commercial, and industrial development out of the central city and pulled it into the surrounding suburban fringe. A variety of tax laws, zoning codes, development rules, and related land use regulations operate in concert with housing market activity and consumer preference to promote low-density, suburban development, and to discourage rehabilitation and reinvestment in core areas of the metropolitan region. The result is a creeping outward of low-density development that affects the region as a whole.

* * * * * * * * *

The findings of this report raise additional questions, and highlight the need not only for more detailed analyses, but for new ways of looking at metropolitan growth dynamics. The overriding questions in our examination of Twin Cities regional dynamics and parallel dynamics in Minnesota's other major metropolitan areas are: what are the true costs and benefits of various metropolitan land use and transportation development options? Who pays and who benefits from different options? And what difference does it make?

Chapter 1
INTRODUCTION

Barbara J. VanDrasek and John S. Adams

The Transportation Land-Use Connection

Since World War II, fiscal incentives and consumer preferences have directed growth in U.S. metropolitan regions outward from the center, rather than upward in higher densities of people and activity. Transportation improvements have facilitated this outward growth. In the Twin Cities region, this pattern of development was largely unfettered by regulation, topography, or demography.[1] Population grew, transportation systems expanded and improved, and legislation aimed at coordinating these two for any purpose was limited to those aspects of growth that, in the 1960s, were seen to be metropolitan in scope. In fact, there seemed to be no reason to constrain outward growth in an expanding economy at a time when resources to provide the infrastructure for growth were plentiful.

The growth of the Twin Cities region during the post-war era is reflected in part in the expansion of the Census/OMB-defined metropolitan area (Figure 1.1).[1] Originally designated in 1950 as a "Standard Metropolitan Area" of five counties, the delineation was expanded in phases over two decades to encompass a 13-county (including two in Wisconsin) "Metropolitan Statistical Area" by 1997. The increasing links between the Minneapolis-St. Paul and St. Cloud metropolitan areas, facilitated by the completion of Interstate Highway 94 to the west of Minneapolis, has led the two regions to merge in many functional ways. Commuting patterns reveal an increasing overlap of daily activity orbits centered on the St. Cloud area, Minneapolis, and suburban areas of Hennepin County (Figure 1.2) [2, 3]. To the east of St. Paul, easy movement on I-94 has encouraged faster growth, widespread development and longer commutes for persons living in Washington County and across the St. Croix River into Wisconsin's western counties, as more and more households pursue their dream of a "rural lifestyle with an urban income" [4].

[1]The general concept of a *Metropolitan Area* is that of a core area containing a large population nucleus, together with adjacent communities having a high degree of economic and social integration with that core. Each *Metropolitan Statistical Area* must include at least one city with 50,000 or more inhabitants, or a Census-defined urbanized area (of at least 50,000 inhabitants) and a total metropolitan population of at least 100,000 (75,000 in New England). The county that contains the largest city becomes the "central county" (or counties) of the MSA, along with any adjacent counties that have at least 50 percent of their population in the urbanized area surrounding the largest city. Additional "outlying counties" are included if they meet specific requirements of commuting to the central counties or other selected requirements of metropolitan character (such as population density and percent urban).

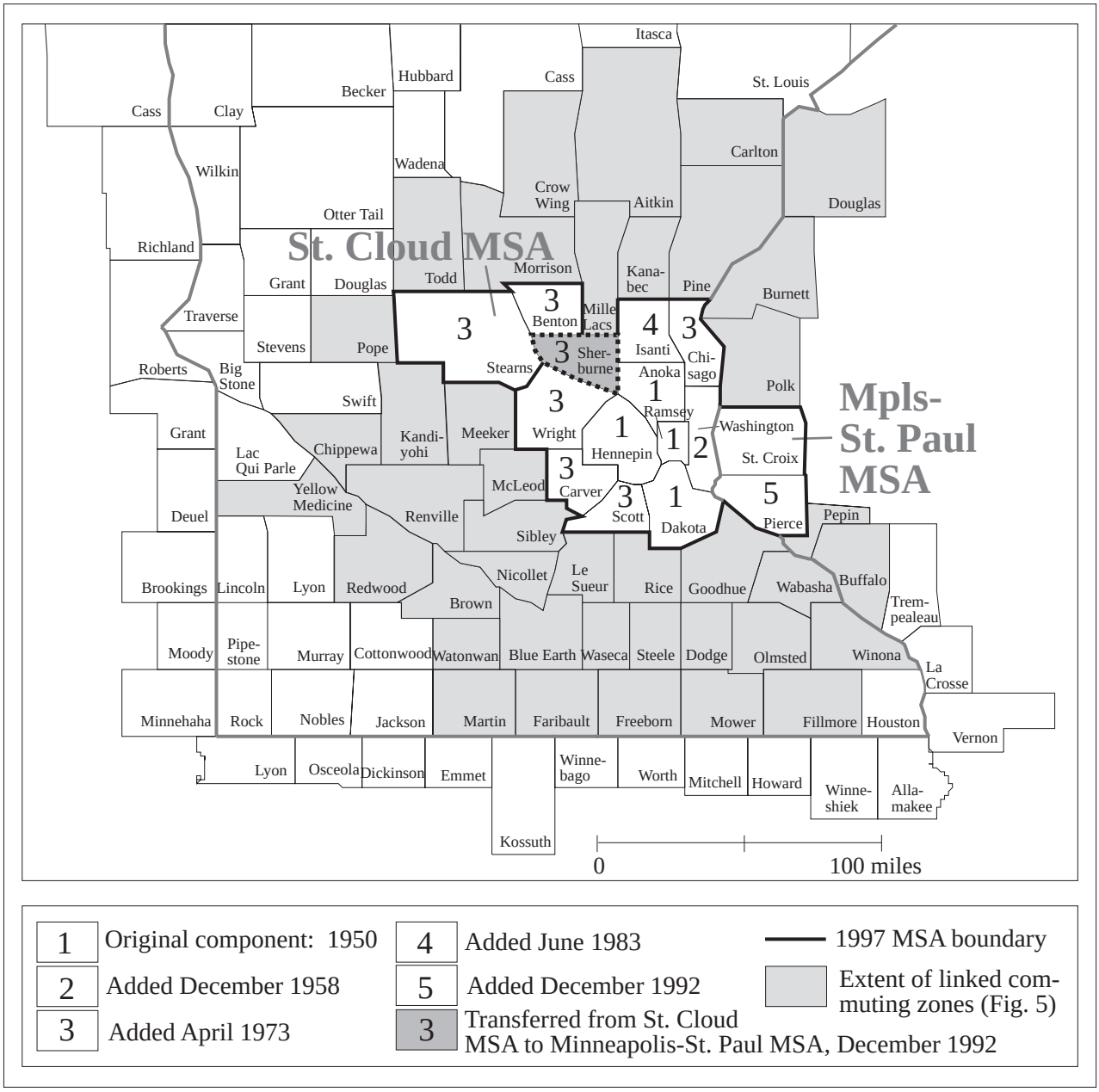

Figure 1.1. Growth of the Minneapolis-St. Paul and St. Cloud Metropolitan Statistical Areas, 1950-1997

As growth continued into the 1990s, the world economy changed, the national political climate changed, and local attitudes regarding transportation, land use, growth, and the use of tax dollars have changed. Public resources to support ever-expanding infrastructure are dwindling at the same time that citizens continue to expect that government will provide what it always has provided--a modern and efficient transportation system that will facilitate their choices of residence, workplace, and leisure activity. "Efficiency" typically is defined by motorists as conveniently-available

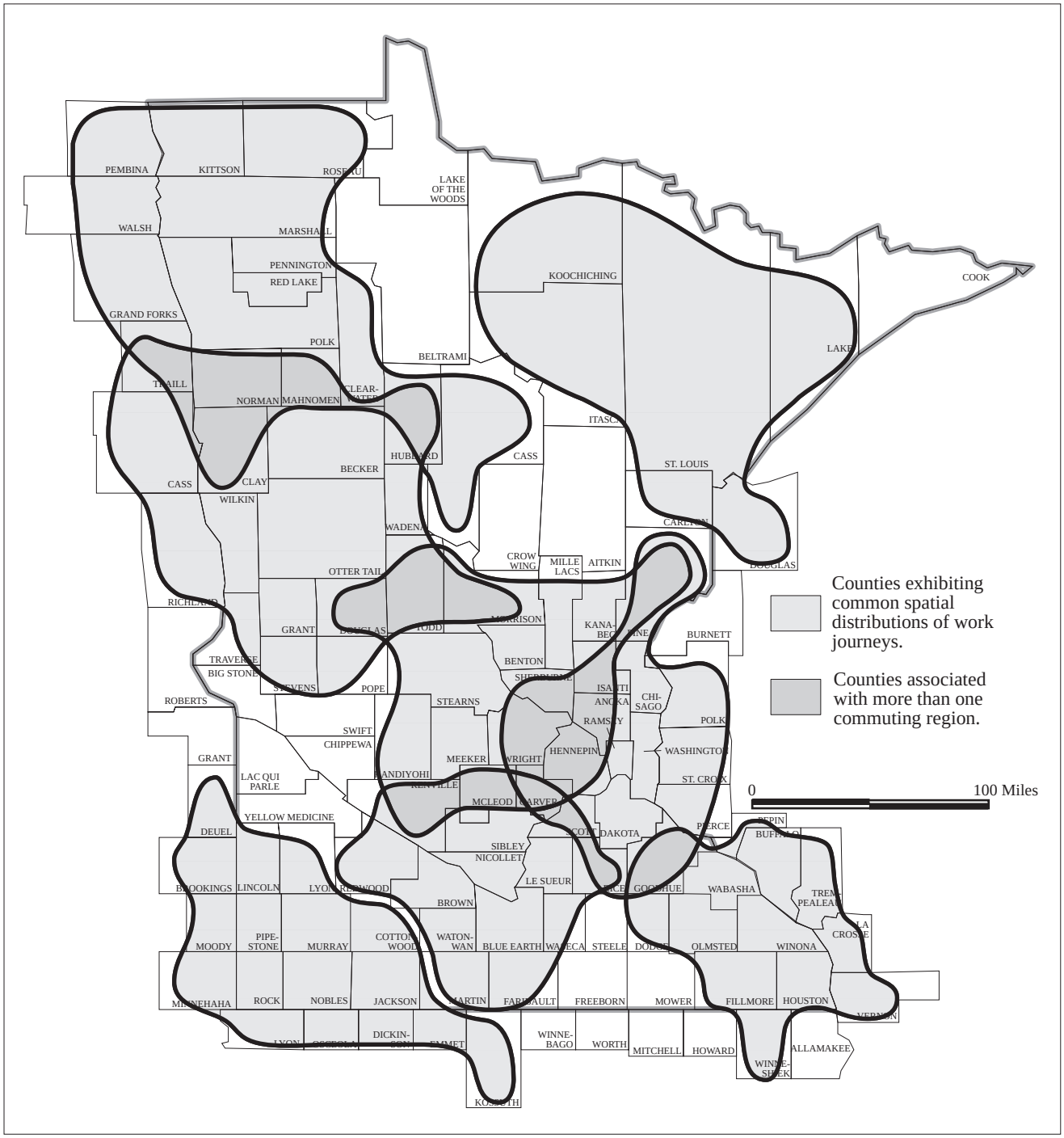

Figure 1.2. Minnesota's Eight Dominant Commuting Fields, 1990

Source: John S. Adams and Elvin K. Wyly. *Commuter Linkages Among Counties in the Twin Cities and Greater Minnesota*. Research Report No. 94-02. Center for Transportation Studies, University of Minnesota, and Minnesota Department of Transportation, September 1993.

uncongested freeways in good repair, leading where they want to go at minimal direct time and money cost. This expectation persists even as households choose to reside farther and farther away from the metropolitan core, to work, shop, and recreate anywhere within the metro region, and to do so while expecting to pay 1960s prices for government services in general and for transportation infrastructure in particular. Accompanying this expectation is an apparent sentiment on the part of citizens, taxpayers and motorists that if imported commodities can be provided in ever-increasing volume, with improved quality and low prices, then locally-produced government services and transportation infrastructure ought to be supplied on similar terms.

The stage has been set for a public-policy conflict: the motoring public appears to want what it cannot have at the prices it is willing to pay. Meanwhile individual behavior yields collective costs that the state can no longer afford. A three-decade trend in residence and mobility patterns directly conflicts with demands for convenience and efficient operation in our statewide and metropolitan transportation system, as well as in metropolitan-wide systems such as sewers, other public utilities, and the services that each new house requires.

The need for coordination of growth and land development at the metropolitan regional scale has been contested in the Twin Cities region since the establishment of the Metropolitan Council in 1967 [5]. Moreover, the connections among transportation infrastructure, economic growth, and patterns of land development have not been well documented nor clearly grasped by the public, even as we have watched road congestion increase, the core cities and suburbs deteriorate, and public debates intensify over what are the costs and who is paying them, or *should* pay them.

An initial look at the direct relationship between highway use and population and employment growth along four major arterials in the Twin Cities reveals the high rates of growth in commuter travel at the edges of the region (Figures 1.3, 1.4). As the number of jobs and households has tripled or quadrupled in outlying growth centers over the last two decades, traffic volumes and commuter flows have increased dramatically as well, far faster than within the fully-developed area (Table 1.1; Figure 1.5).

These highways were built with fixed capacities, based on growth projections that could not have foreseen the dramatic changes in households and travel behavior of recent decades: an increase in cars per household, a diminished proportion of suburb-to-center commutes in favor of suburb-to-suburb travel, steady increases in disposable incomes per household and per person, and growth at exponential rates in the number and type of trips beyond the journey to work. These unforeseen

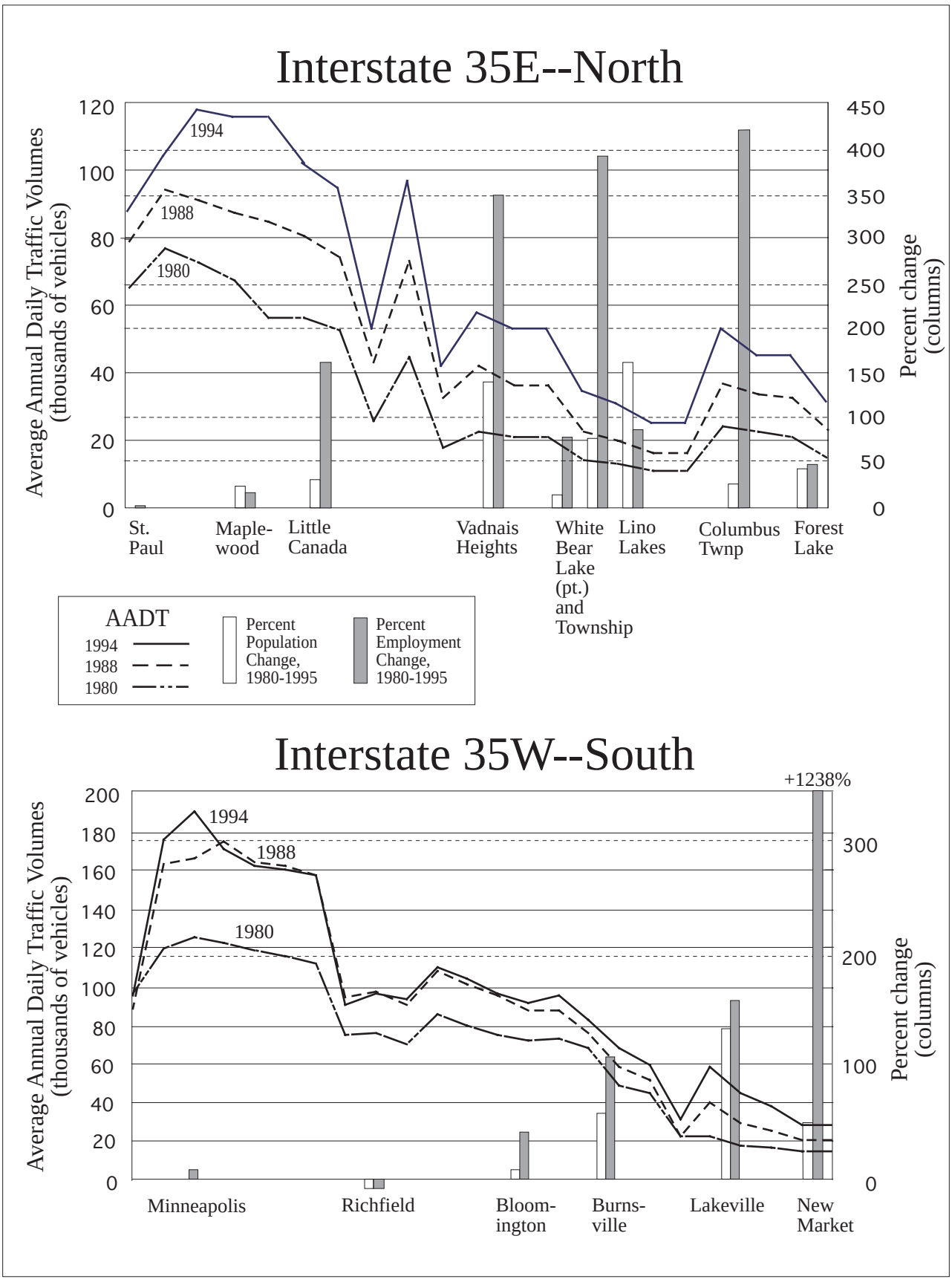

Figure 1.3. Traffic Counts, Population and Job Growth, Interstate Highway 35
Data sources: Minnesota Department of Transportation and Metropolitan Council.

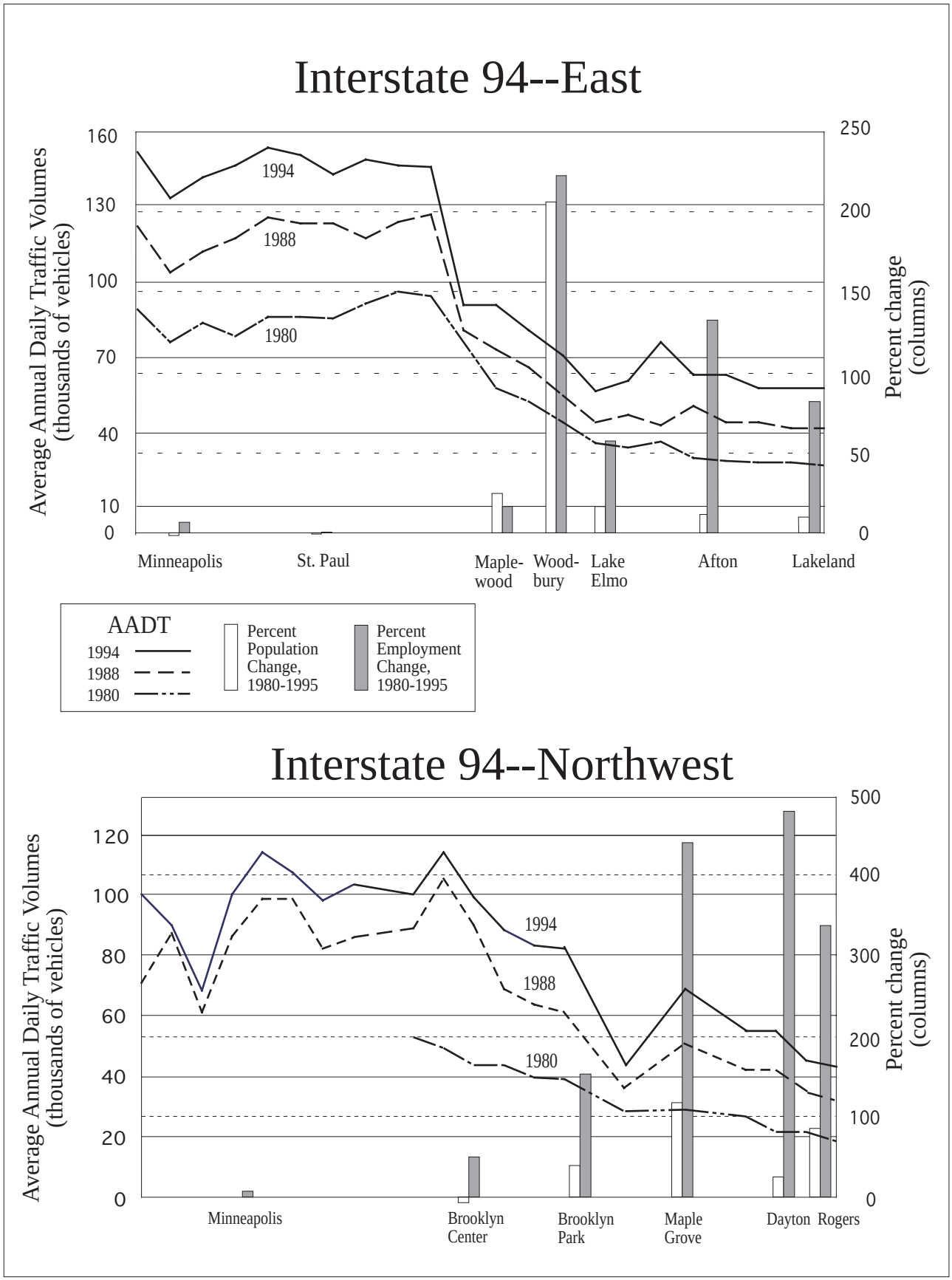

Figure 1.4. Traffic Counts, Population and Job Growth, Interstate Highway 94
Data sources: Minnesota Department of Transportation and Metropolitan Council.

Table 1.1. Journey-to-Work Trips Among Zones of Counties Surrounding the Twin Cities, 1960-1990 (daily commutes, thou

1960

From:	*To:* Zone I	Zone II	Zone III	Zone IV
Zone I	550	1	*	*
Zone II	8	82	2	*
Zone III	1	1	128	2
Zone IV	*	*	2	168
			Total:	**945**

1980

From:	*To:* Zone I	Zone II	Zone III	Zone IV
Zone I	916	6	1	**
Zone II	35	114	9	*
Zone III	4	6	187	5
Zone IV	**	*	6	186
			Total:	**1,476**

1970

From:	*To:* Zone I	Zone II	Zone III	Zone IV
Zone I	715	3	*	0
Zone II	18	85	4	*
Zone III	4	3	142	3
Zone IV	*	*	4	159
			Total:	**1,141**

1990

From:	*To:* Zone I	Zone II	Zone III	Zone IV
Zone I	1,200	10	2	**
Zone II	61	137	12	*
Zone III	8	10	231	7
Zone IV	2	**	11	202
			Total:	**1,897**

Change in Commuting Volume, 1960-1990

Change in number of commutes

(000s)

From:	*To:* Zone I	Zone II	Zone III	Zone IV
Zone I	650	9	c1,500	*
Zone II	53	55	10	*
Zone III	7	9	103	5
Zone IV	*	*	9	34

Percent change

From:	*To:* Zone I	Zone II	Zone III	Zone IV
Zone I	218	1,000	3-400	50-100
Zone II	763	167	600	*
Zone III	800	1,000	180	3,500
Zone IV	*	*	550	120

* fewer than 500 trips ** fewer than 1,000 trips

Source: Special tabulations of decennial U.S. Census journey-to-work frequency tables and Bureau of Economic Analysis data.

changes have generated demand for ever-expanding road capacity throughout the commuteshed, expansion that no longer is politically or financially feasible [6].

Now, in the 1990s, the building of new highways has come to a virtual halt. The need for new strategies to facilitate the movement of people and goods within metropolitan regions finally has been recognized in legislation. The Intermodal Surface Transportation Efficiency Act (ISTEA), passed in 1991, required coordinated transportation plans from both states and metropolitan regions. The dual requirements of the ISTEA and of increased efficiency have dictated that economic and population growth, and land use patterns to accommodate that growth, develop in tandem with transportation plans [7].

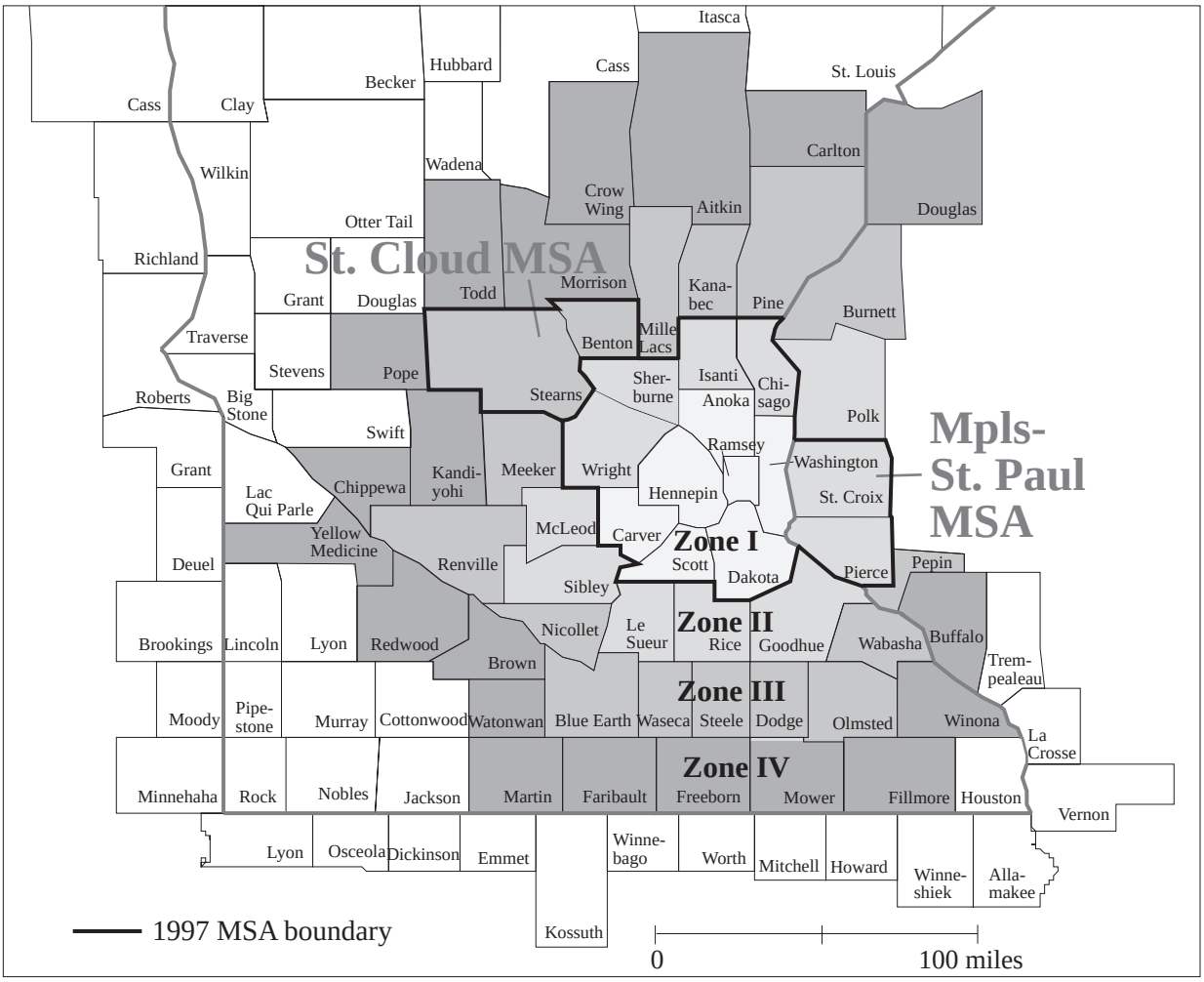

Figure 1.5. Commuting Zones Linked to the Twin Cities Metropolitan Area, 1990

Source: John S. Adams and Elvin K. Wyly. *Commuter Linkages Among Counties in the Twin Cities and Greater Minnesota*. Research Report No. 94-02. Center for Transportation Studies, University of Minnesota, and Minnesota Department of Transportation, September 1993.

Background of the Project

This project is part of a joint research and educational effort involving the Metropolitan Council, the University of Minnesota, and the Minnesota Department of Transportation entitled “Transportation and Regional Growth”. It has two components: 1) an *analytical* component aimed at identifying transportation system management and investment alternatives consistent with the region’s desire to manage economic growth and land use development as it affects transportation systems, and 2) an *educational* component aimed at providing opportunities for private and public sector decisions makers to discuss transportation and growth issues in an informed way.

The analytical component of the project is divided among six areas of inquiry:

1) Twin Cities regional dynamics,
2) passenger and freight travel demand patterns,
3) full transportation costs and cost incidence,
4) transportation financing alternatives,
5) transportation and urban design,
6) institutional and leadership alternatives.

Given the complex nature of the relationships among transportation, land use, and the economy, the long-term objectives of the project are not only to further explore, to measure, and to demonstrate these relationships, but also to develop methods to portray these dynamics in clear, accessible, and comprehensible ways for public education. The ultimate goal is to bring our metropolitan community to a common understanding of the full set of consequences of various forms of growth and development, so that policymaking can proceed in a "fact-rich environment."

To this end, the analytical component of the project supports the *educational* and *public involvement* components associated with long-range transportation and land-use planning for the State of Minnesota, for the expanding Twin Cities metropolitan region, and for other expanding metropolitan regions in Minnesota. These components will generate the following activities:

1) a computer simulation portraying Minneapolis-St. Paul regional growth dynamics,
2) leadership seminars on transportation and regional growth,
3) educational forums and public involvement in transportation and regional growth,
4) distribution among University faculty of information, research, and related ideas gathered in the study,
5) incorporation of the research into educational materials to be used in programs for continuing education.

Preliminary Research

This report presents a series of three preliminary studies that address primarily the first analytical subject, Twin Cities regional dynamics, using an integrated mix of statistical and cartographic analyses.

Chapter 2 examines changes in housing supply, housing demand, and residential price movements between 1970 and 1990 in minor civil divisions (MCDs) within the 7-county metropolitan area and adjacent counties. This chapter addresses two major questions: 1) where is new housing going? and 2) how does the changing mix of housing affect each MCD's relative attractiveness (or rank) within the metro area?

Chapter 3 presents a classification of state and local regulations (zoning controls, development incentives, brownfield guidelines) that promote low-density development on the built-up metropolitan edge and beyond, and that raise obstacles to cost-effective development in older settled areas near the cores of Minnesota's major urban centers. The major questions addressed in this chapter are: 1) how do public regulation and consumer and producer behavior inhibit redevelopment in central cities and older suburbs, and promote development on the edge? and 2) how do these tendencies affect long-term demand for transportation?

Chapter 4 is an examination of changing profiles of taxation, intergovernmental revenue transfers, and expenditures by function for counties and MCDs within the Twin Cities region, within the framework of several questions: 1) what happens to an MCD's revenue and expense streams during different growth and development stages? 2) which costs of new development are paid for directly or as state and federal tax expenditures, and which are paid by the MCD? and 3) who should pay for whose benefits?

The Next Steps

Later reports in this series will address these and related questions in greater detail. The overriding questions in our examination of Twin Cities regional dynamics and parallel dynamics in Minnesota's other major metropolitan areas are: what are the true costs and benefits of various metropolitan land use and transportation development options? Who pays and who benefits from different options? And what difference does it make?

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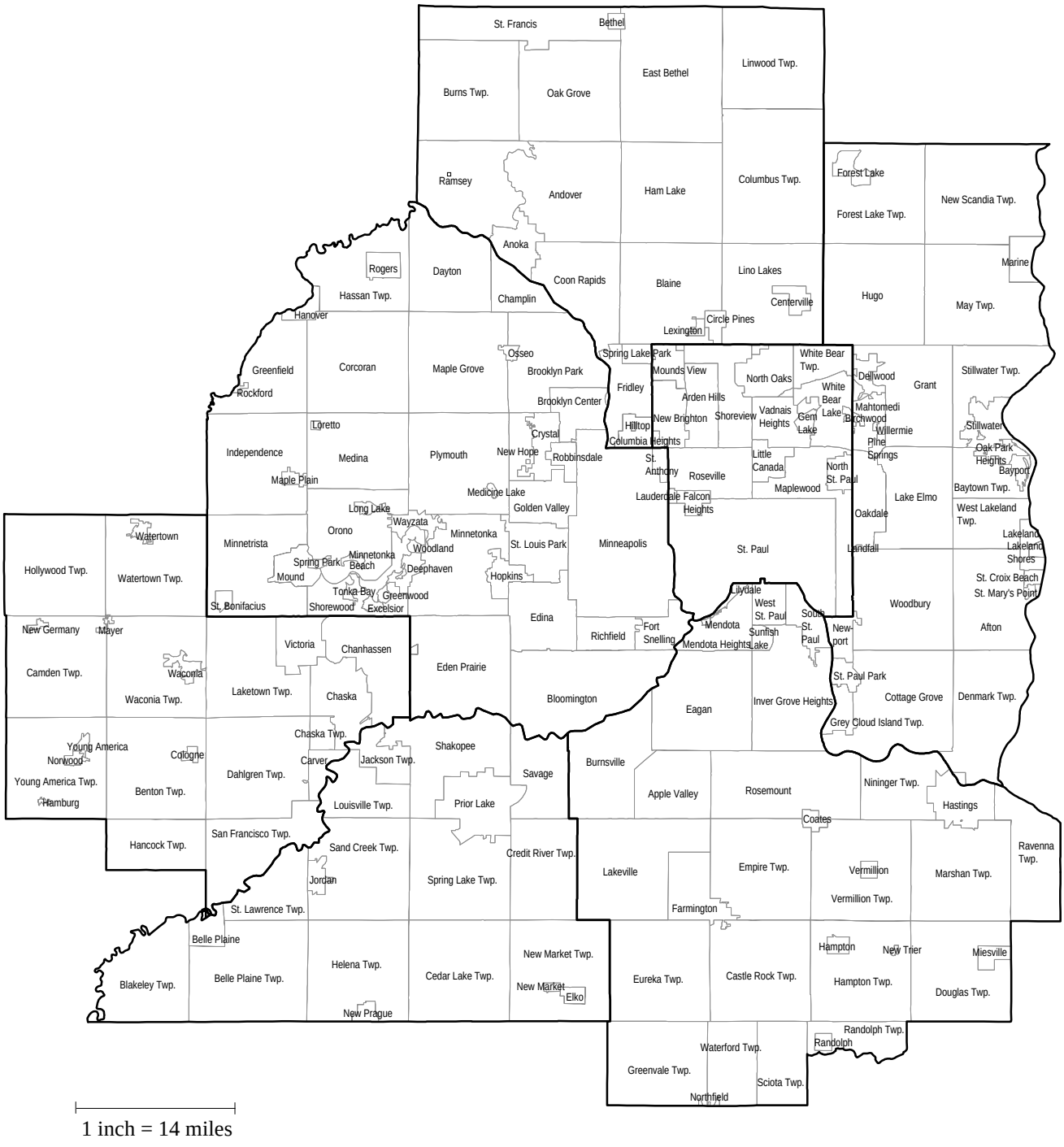


Appendix A-1. Twin Cities 7-County Metropolitan Area Minor Civil Divisions

Chapter 2
HOUSING MARKET DYNAMICS IN THE GREATER TWIN CITIES AREA, 1970-1995

Laura J. Hansen

I. INTRODUCTION

This chapter analyzes changes in housing supply, housing demand, and residential price movements inside housing submarkets in the seven-county Metropolitan Council jurisdiction and in seventeen counties adjacent to the Twin Cities area. The presentation relates housing market elements to the changing geographical patterns of highway demand and highway use during the period 1970 to the present.

II. DEMAND IN THE LOCAL HOUSING MARKET

An American urban household displays aspects of its presumed or asserted social position by choosing a house and a neighborhood in which to live. But because the housing landscape and the relative values and rank positions of different locales constantly are in flux, a household must continue to move with some regularity if it hopes to maintain its relative housing status, because other households of perceived lower status relentlessly move toward it in their efforts to improve their own positions.

Households in the Twin Cities tend to move outward from the city center to better, newer units as they can afford to. Some backflow does occur, but usually only by those households that have suffered major financial reverses, or by young adults and older couples and singles, who prefer not to live on the outer, family-oriented edges or who may be especially attracted by certain natural or cultural amenities located at or close to the metro core.

Households change their residential locations for a variety of reasons, many of them house related, but also for neighborhood, environmental, or accessibility motives. The social classes traditionally differ in their rates and types of outward movement in the Twin Cities area. Wealthy households are relatively few in number and tend not to relocate much if at all. They are in a financial position to buy what they want the first time they purchase housing, and then remain in housing that is often physically isolated or intentionally hidden from the other sectors. The upper-income sector with its enclaves of genuine wealth expands outward only slowly, as in the west-southwest sector of Minneapolis.

Working-class housing sectors also expand outward relatively slowly, but for different reasons. Traditionally, working-class housing has concentrated near principal employment areas, and is valued more as shelter and neighborhood setting than as a symbol of social status or as a speculative asset. In working-class sectors, family and neighborhood ties combine with an emphasis on home ownership and current consumption instead of long-term asset accumulation, an emphasis that tends to diminish the over-consumption of housing.[1] The construction and purchase of new housing on the edges of working-class sectors traditionally has lacked a speculative motive, but instead is provided to accommodate population expansion with the result that the sector expands outward relatively slowly.

Middle-class housing sectors traditionally expand outward more vigorously than either upper-income or working-class sectors. Middle-class households usually experience continuing real increases in income and wealth and enjoy superior access to mortgage credit. They tend to translate their upward socioeconomic mobility into geographical mobility outward and invest in housing as an appreciating asset, moving to better housing as soon as they can afford it.

Aggregate demand for housing in the Twin Cities is affected by many factors, including natural change in the population (births exceeding deaths), migration into and out of the area, and foreign immigration into the area. Demand also is affected by household purchasing power (earnings, wealth, access to credit), tastes, and household composition. Different stages in the life course carry with them different kinds of housing wants and needs, so the sizes of the cohorts in each age group and household type dictate the amount and types of housing that will be desired.

The *effective demand* for housing, that is the sum of the housing wants and needs of each cohort weighted by its size and respective purchasing power, has been expanding faster than the population as the average household size drops and the number of households and their purchasing power increases. More singles, longer life expectancies, more childless couples, and more divorced and single-parent families all contribute to an increasing number of households.

These recent changes in household *composition*, income distribution, and wealth position affect housing demand, and elicit changes in supply. These and other factors also affect transportation demand, including population growth, higher per-capita rates of personal travel, decline in auto occupancies, and longer trips caused by the dispersal of development. Household composition (size, workers per household, and so on) affects trip rates, as does mode of travel. *Income* influences the number of cars a household owns, but also affects the number of trips made and the

[1]The term “over-consumption” normally means an unusually low persons-per-room ratio, or else a much higher-than-average proportion of income and/or wealth devoted to a household’s outlay on housing costs [1, pp. 113-116].

distances traveled per household. Fifty-eight percent of households in the seven-county area own two or more cars, but these households account for over 75 percent of regional trips [2, p. 29].

Household *wealth* also influences consumption of transportation (number of cars, trips, etc.). If the value of its housing is appreciating, a household is less worried about overspending [3, 4]. Faster appreciation of housing on the edges will generally lead to higher spending by households that live on the edge, and to more demand for transportation. The Developing Suburbs, using the Metropolitan Council's development framework policy areas, experience nearly a million more trips per day than either the Central Cities or the Fully-Developed Suburbs, due to their large number of households, large household size, and greater rates of car ownership (Table 2.1). Trips are shorter for drivers in the Central Cities and Fully-Developed Suburbs, while drivers in the Developing Suburbs have to travel farther, and make more trips [2, p. 45].

Table 2.1. Household Travel, 7-County Area, Metropolitan Cour Development Framework Areas, 1990

	Number of Households	Persons per Household	Cars per Household	Total Number of Daily Trips (All Trips)	Daily Trips per Household
Central Cities	270,700	2.26	1.32	2,396,645	8.85
Developed Suburbs	208,700	2.34	1.69	2,427,002	11.63
Developing Suburbs	323,100	2.87	2.05	3,354,030	10.38
Rural	73,000	2.94	2.12	593,385	8.13
Total	875,500	2.56	1.74	8,860,634	10.12

Source: Metropolitan Council, 1994, pp. 42, 44.

III. SUPPLY IN THE LOCAL HOUSING MARKET

The housing inventory at any given moment is mostly unavailable to the active real estate market. In fact, the turnover of rental and owner-occupied housing involves only a small fraction of the total inventory during any given year.

Expensive, custom-built homes typically are added on the edge of existing high-income, high-wealth sectors. New lower-priced houses for working-class incomes and tastes are usually built

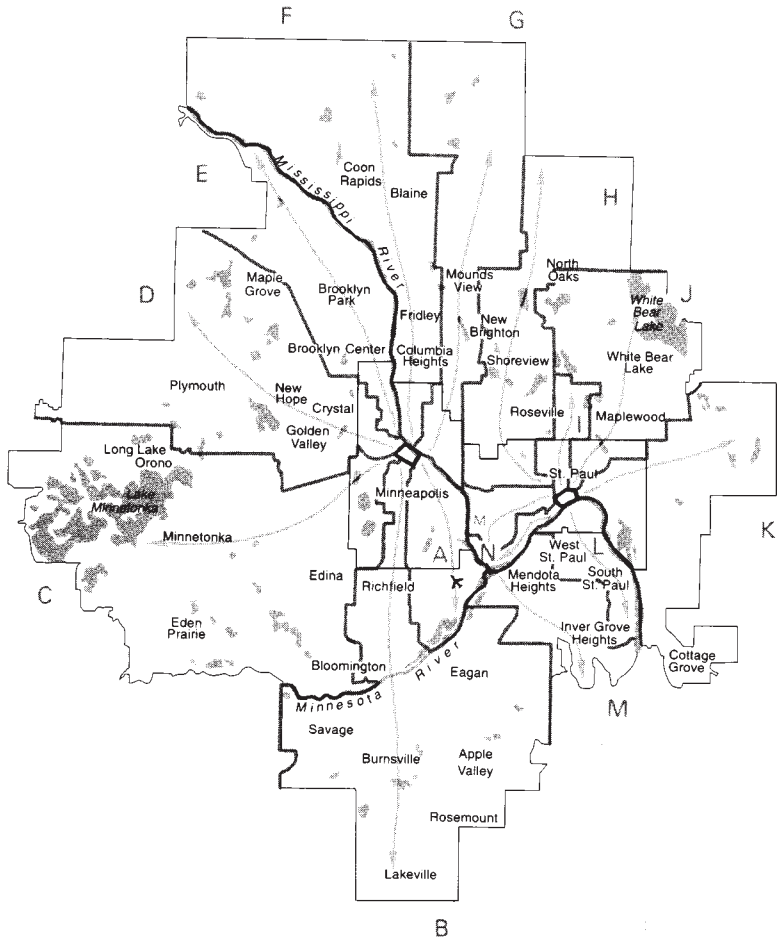


Figure 2.1 Sectoral Housing Submarkets in Minneapolis-St. Paul
Source: Hart, John Fraser, ed. Adams, John S. "Housing Submarkets in an American Metropolis." Chapter 7 in John Fraser Hart, ed. Our Changing Cities. Baltimore, MD: The Johns Hopkins University Press, p. 113.

on the edge of existing modest-income, modest-wealth sectors, where tastes lead to expenditure patterns traditionally different from the upper- and middle-classes. The highest volume and most profitable new housing supply, in the aggregate, occurs in the middle-class market, which traditionally was confined to just a few of the Twin Cities area's fourteen different housing submarkets (Figure 2.1).

Building permits were issued throughout the seven-county metropolitan area for almost a half-million units between 1970 and 1994 (177,962 in 1970-79, 171,005 in 1980-89, and 73,026 in 1990-94). Most of the 421,993 total permits during this 25-year period were issued in the newly developing suburbs. The average of 16,880 permits issued per year over this period continued into 1995, when 13,956 permits were issued, and in 1996, with 14,098 permits [5, p. 6]. Among the twenty-five largest U.S. metropolitan areas, 1996 permits in Minneapolis-St. Paul ranked 16th, but when new permits were adjusted for population size the Twin Cities ranked eighth.

New residential development is steadily increasing in the six counties adjacent to the seven-county metropolitan core (Chisago, Isanti, Pierce (WI), St. Croix (WI), Sherburne, Wright). In 1991, the 1,893 units permitted in these counties equaled 13.6 percent of the total for the 13-county Metropolitan Statistical Area (MSA); and by 1996, the 3,535 permitted units were 19.9 percent of the MSA total [6, p. 8]. The increase in number of permits issued from 1995 to 1996 was 17 percent in the adjacent counties, compared with the seven-county area's one-percent increase [7, p. 6].

In the 1970s, substantial volumes of replacement units in the central cities of Minneapolis and St. Paul accompanied major infill in the first-ring suburbs that still had vacant land, such as Edina, St. Louis Park, Brooklyn Center, Fridley, Roseville, and Maplewood (Figure 2.2). Few building permits were issued in the first-ring suburbs that were essentially fully built up, such as Richfield, Robbinsdale, Columbia Heights, and Crystal. Expansion took place in the second- and third-tier suburbs in the middle-class sectors on the western half of the metropolitan area, in Bloomington, Burnsville, Eagan and Apple Valley on the south side; Plymouth, Maple Grove and Brooklyn Park to the northwest; and Minnetonka and Eden Prairie to the southwest. These sectors accounted for the bulk of the expansion, and accompanied the build-up of highway demand in these areas by the end of the 1970s.

Expansion also occurred on a smaller scale in the sector running to the north but lying west of the river (Sector E) with its modest incomes and working-class atmosphere extending into Brooklyn Park, and the sector east of the river (Sector F) mirroring the working-class flavor originating in Old Northeast Minneapolis and expanding north through Columbia Heights and Fridley into Blaine and Coon Rapids.

In the 1980s there was steady replacement of housing units in the central cities, but little construction activity in the first-ring suburbs, which by this time were essentially fully built up and and 1980s, just over half of the housing permits were for detached, single-family units (52 percent in

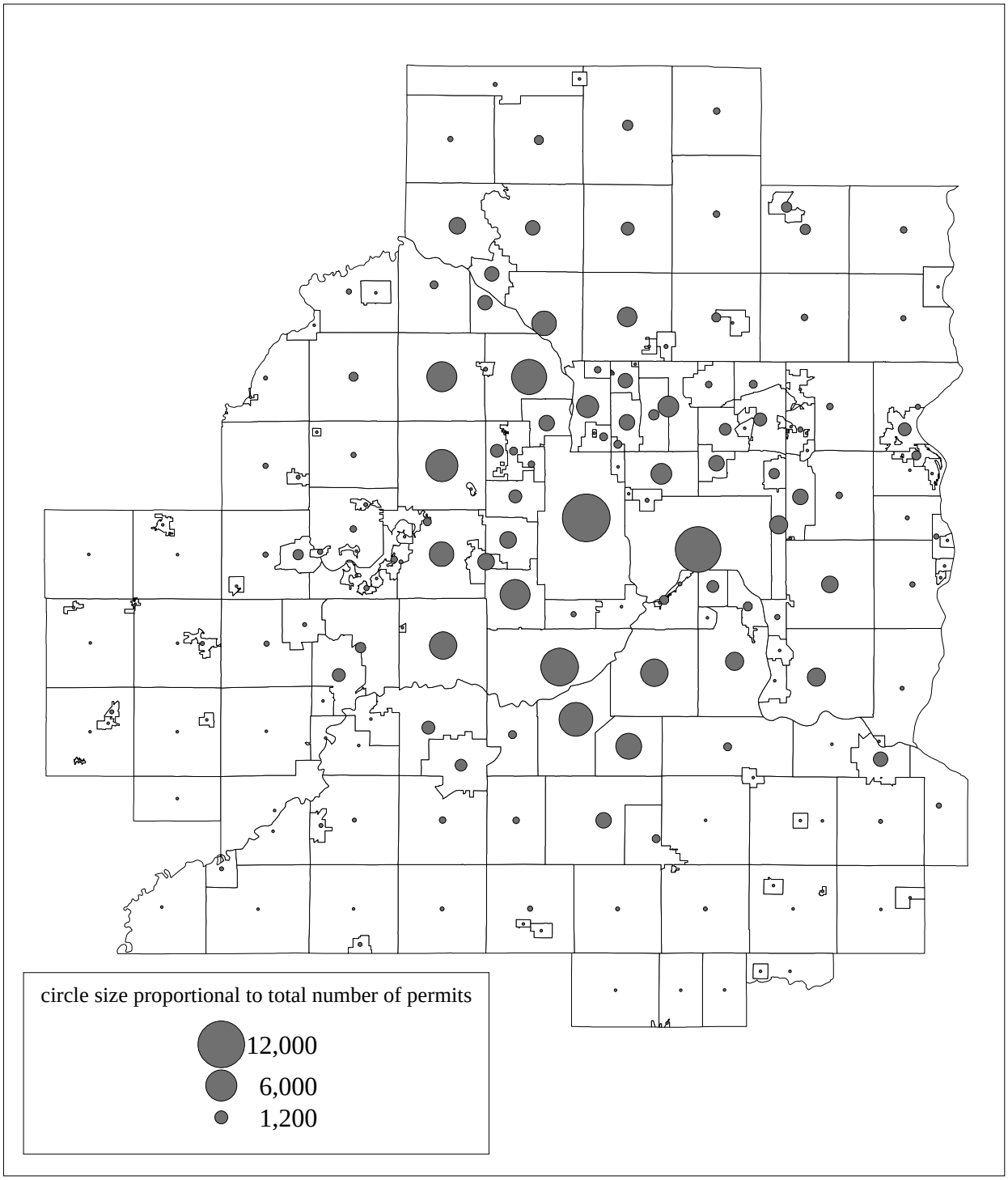


Figure 2.2. Total Residential Building Permits Issued, by MCD, Twin Cities 7-County Metropolitan Area, 1970-1979

Data Source: Metropolitan Council, Residential Building Permit Trends in the Twin Cities Metropolitan Area, 1970-1994.

(Figure 2.3). Major construction occurred in the second- and third-tier suburbs, including Bloomington, Eagan, Burnsville and Apple Valley in the south (Sector B) with conspicuous pushes into Lakeville, Savage and Prior Lake. To the southwest (Sector C), Minnetonka and Eden Prairie continued their construction booms, with vigorous activity beginning to appear farther west in Chanhassen and Chaska. To the northwest (Sector D) Plymouth, Maple Grove and Brooklyn Park continued their rapid expansion of the 1970s. North of North Minneapolis (Sector E) Brooklyn Park and Champlin spread outward, and north of Northeast Minneapolis (Sector F) Coon Rapids and Blaine continued to expand, with high rates of new construction in Andover north of Coon Rapids. In the suburbs of St. Paul, the major new building activity concentrated in middle-class Maplewood, Oakdale and Woodbury, beyond the northeast and east sides of the city. Continued vigorous housing construction in these sectors intensified highway demand on the major routes running to and through them.

Coming out of the recession years of 1990-92, housing permit activity appeared to be more balanced geographically than it had been in the previous two decades (Figure 2.4). Builders trying to locate vacant buildable lots on the west side of the metro area but within the Metropolitan Urban Service Area (MUSA)[1] found that almost all of the vacant land had been bought or optioned by major builders. Construction did not slow in those western sectors, but it did expand at faster rates on the east side where land was available at lower prices, and located close to the central cities. Substantial permit activity occurred in Andover, Ramsey, Coon Rapids, Brooklyn Park, Maple Grove and Plymouth in the north and northwest, while Eden Prairie led in the southwest. As Bloomington filled in, expansion continued in Eagan, Burnsville, Apple Valley and fourth-ring Lakeville. On the St. Paul side, Maplewood, Woodbury and Cottage Grove were the leaders. This continued expansion on the northwest, west, southwest and south sides intensified highway congestion, sometimes to critical stages.

Hennepin and Dakota counties accounted for the largest number of permits issued in 1995 and 1996: 3,855 and 3,248 out of the seven-county totals of 13,956 and 14,098 in the two respective years, but Scott and Anoka counties were growing at much faster rates [5, p. 6]. The fastest-growing cities in terms of single-family units in this latest period were Woodbury, Lakeville, Plymouth, Brooklyn Park, and Shakopee.

In recent years, there has been increasing emphasis on single-family units as changes in the 1986 Internal Revenue Code reduced investor interest in multiple-unit rental properties. In the 1970s

[1]The Metropolitan Urban Service Area (MUSA) is the unbuilt zone already served with sewers or scheduled for service development in the near future.

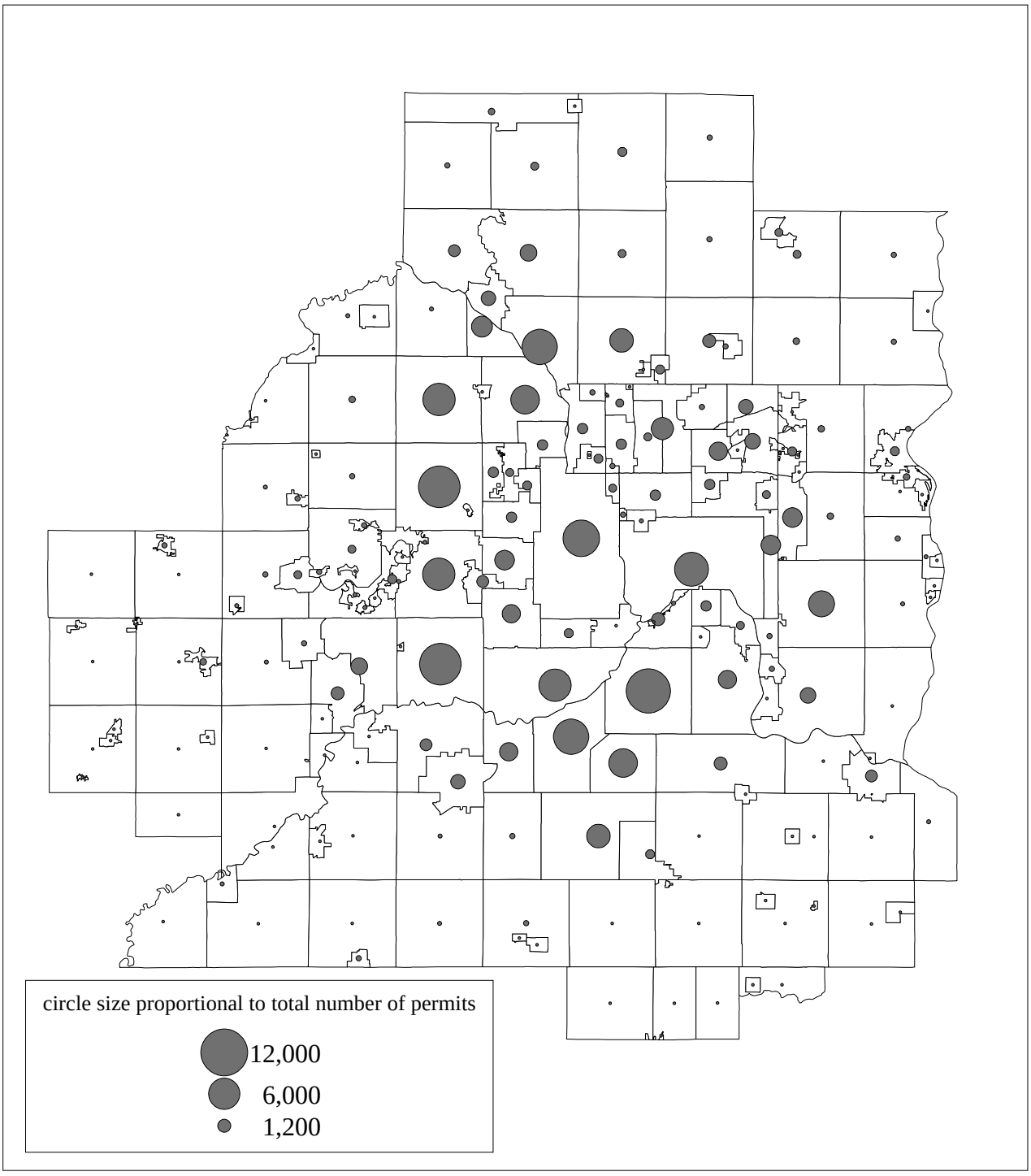


Figure 2.3. Total Residential Building Permits Issued, by MCD, Twin Cities 7-County Metropolitan Area, 1980-1989

Data Source: Metropolitan Council, Residential Building Permit Trends in the Twin Cities Metropolitan Area, 1970-1994.

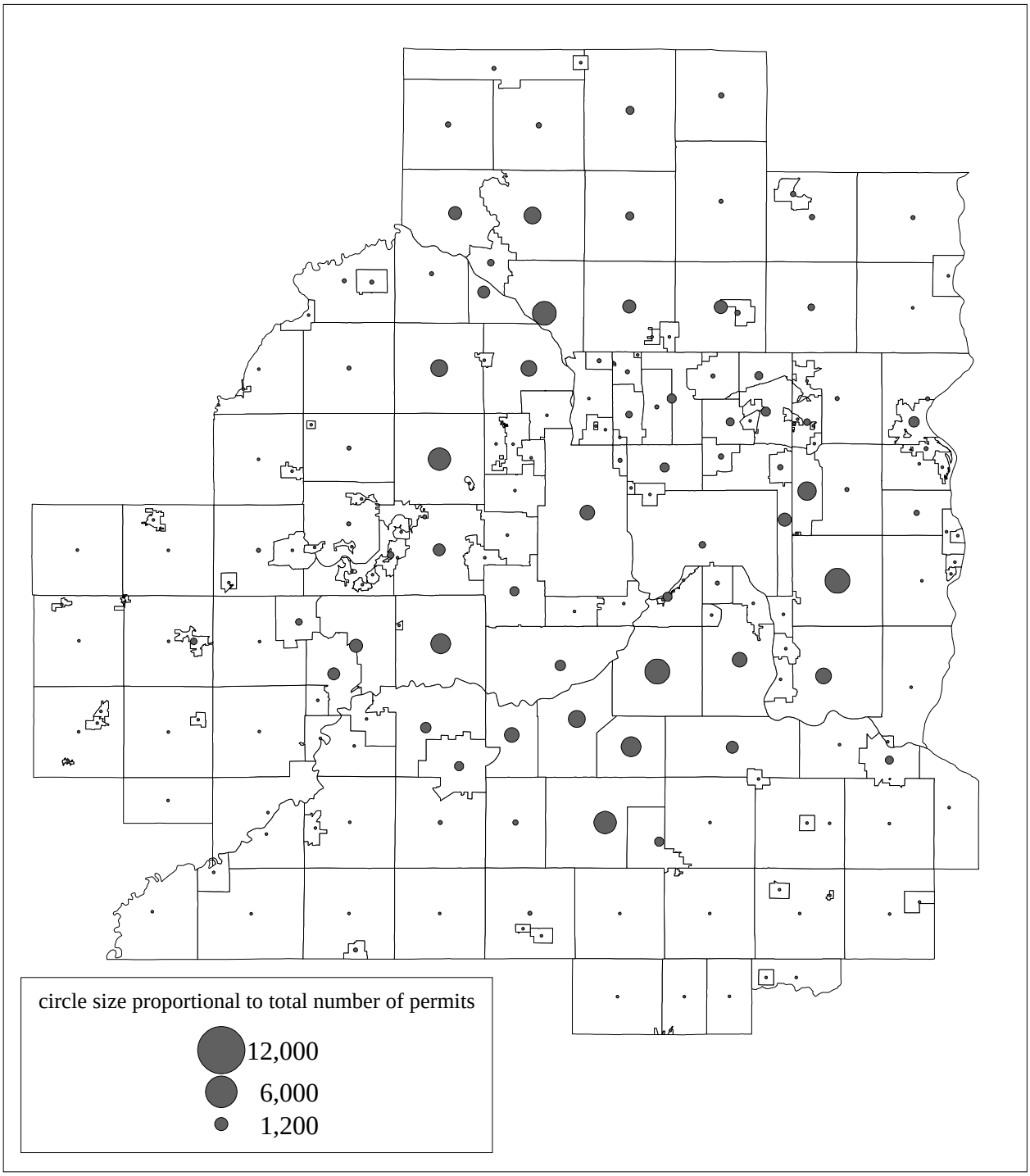


Figure 2.4. Total Residential Building Permits Issued, by MCD, Twin Cities 7-County Metropolitan Area, 1990-1994

Data Source: Metropolitan Council, Residential Building Permit Trends in the Twin Cities Metropolitan Area, 1970-1994.

the 1970s, and 51 percent in the 1980s) [8, p.2]. Between 1990 and 1994, the proportion of single-family units jumped to 74 percent, while units in multiple-unit structures (other than townhouses and duplexes) plummeted [8, p.2]. In 1995, 77 percent of the seven-county total units permitted (13,956) and 78 percent of the MSA total (16,950) were single-family units [5, p. 12]. In 1996, 82 percent of the seven-county total units permitted (14,098) and 84 percent of the MSA total (17,600) were single-family units [5, p. 12]. The greater share of single-family units in recent years leads to more low-density suburban development and to more travel per unit (up from 8.88 daily trips per household in 1970, to 9.08 in 1980, and 10.12 in 1990 [2, p. 58]), and to more congestion.

IV. SECTORAL MARKETS ARISING FROM THE INTERSECTION OF DEMAND AND SUPPLY

The construction of new housing at the edges of the Twin Cities and the outward movement of households have combined to produce housing sectors of distinctive social-class character. Each of the fourteen housing sectoral submarkets traditionally maintained a unique character and history. Working-class neighborhoods in the inner city projected their character into adjacent working-class suburbs where outmigrants settled. Middle-class areas pushed their tastes and lifestyles outward as their households relocated outward. Each housing sector in the Twin Cities operated largely as a submarket, with localized patterns of housing demand and housing supply intersecting somewhat independently from other sectors.

The southwest sector (Sector C: Southwest Lake District, Edina, Minnetonka) is in many respects currently the strongest sector in the Twin Cities. It is home to the financially secure, who have less reason to continue moving outward to mark their social progress, and thus grows relatively slowly. Real estate values hold up well in this sector. The “out-of-sight rich” have built million-dollar homes in Orono, Woodland, Deephaven, and around the eastern end of Lake Minnetonka. Newly affluent households display their status in Edina, Eden Prairie, and Minnetonka.

The north-side sector (Sector D: Near North Minneapolis, Golden Valley, Crystal, New Hope, Plymouth, Maple Grove) began as a prosperous wedge of Scandinavian and German settlement extending northwest of the city. Steady development of new housing at the edges of the sector led eventually to large numbers of vacancies in the sector’s inner neighborhoods. These vacancies attracted a concentration of Jewish immigrants shortly before and after 1900, and as these households prospered and relocated outward (to St. Louis Park, Golden Valley and Plymouth), their former housing was occupied by upwardly mobile African-Americans, who more recently are being followed by recent Asian-American immigrants.

The sector between West Broadway and the Mississippi River (Sector E: North Minneapolis, Brooklyn Center, Brooklyn Park) originated in the railroad and industrial activity that pushed upriver from the St. Anthony Falls milling district. Working-class and lower-middle class tastes persist into these suburbs.

Development in the sector running north from Southeast Minneapolis (Sector G: Southeast Minneapolis, New Brighton, Mounds View, Blaine — out to East Bethel) benefited from the construction of Interstate Highway 35W, which provided a suburban outlet. The sector features a broad mixture of middle-class and working-class tastes, with large lots, sandy soils, poor drainage and shallow lakes.

Stillwater Township lies on the eastern edge of the sector running east from St. Paul (Sector K: East Side, Battle Creek Park, Hudson Road, Cottage Grove). Factors contributing to growth in this sector are 3M Corporation's offices and other facilities along Hudson Road, the recreational areas on the St. Croix River, and the boom in small hobby and horse farms.

Residential development on sectoral edges leads to vacancies and eventually to soft markets where housing supply exceeds demand in the interior portions of the sectors, as a consequence of the "vacancy chain" process. A vacancy chain is set in motion when a new housing unit is made available for occupancy or an existing unit is subdivided and a household moves in, vacating its former quarters. When a household moves to the vacant unit, it leaves behind a vacancy. This vacancy is filled by another household that has moved in from yet another unit, which now becomes the vacancy. The vacancy moves from unit to unit through the housing sector, in the opposite direction from the direction the households are moving. This vacancy chain process leads eventually to sliding housing prices in the older neighborhoods of a housing sector that is being oversupplied with new housing on its growing edges. Prices decline in real terms where the housing stock does not change much but demand is falling, but they tend to rise in the suburbs where, although supply is rising, demand continues to be strong [9, 10].

In the active middle-class sectors, vacancy chains extend from the new development on the edge all the way into the old neighborhoods and their old and obsolescent housing units near the core. Vacancies accumulate in these older inner areas and housing prices drop, which is the reason they attract mainly low-income newcomers. The legacy of housing oversupply in middle-class sectors and the operation of sectoral markets can be seen in the vacant and abandoned housing present in conspicuous numbers in the near south side and near north side of Minneapolis, and to a lesser degree in some of the neighborhoods west of downtown St. Paul [11].

V. HOUSING PRICES AND THEIR COMPONENTS

The conventional analysis of housing prices argues that the price paid for a house and lot represents a bundle of services that can be disaggregated, with a separate price assigned to each element of the bundle. The housing unit first is separated into the structure itself and the lot on which it stands.

The structure is further disaggregated into the basic *structural characteristics* (e.g., size, style, age, materials with which it is built) and *additions* to the basic structure (e.g., extra bathrooms, fireplaces, garage, whole-house air conditioning, appliances, etc.).

Main features of the lot include its *size*, *neighborhood and community characteristics* (e.g., social class and life-course status of nearby residents, school district), its *physical environmental characteristics* (e.g., environmental amenities, noise, air quality, etc.), and its *accessibility* to important nodes of interaction (e.g., jobs, shopping, entertainment, freeway access, etc.).

Attractive features of house and lot add value to a housing unit, while disagreeable features or the absence of attractive attributes mean less demand and lower market prices. As it happens, some of the sectoral submarkets are generously endowed with attractive environmental attributes coupled with high levels of accessibility to the good things that the area offers. These places—such as the Kenwood-Lake of the Isles area in Minneapolis, or the Macalester-Groveland area of St. Paul—command high market prices for their housing. Farther out in the suburbs the same is true. Some areas offer hills, lakes and forests, with fertile soils and attractive social environments. In such places, prices are high. Where these features are lacking, demand is much more modest.

VI. CHANGES IN INVENTORY INSIDE LOCAL AREAS AND THEIR EFFECT ON PRICES

As the metropolitan area has grown in population and expanded outward, each of its housing sectors has extended outward into new territory. As the sectors push outward, they encounter different kinds of physical environments. A combination of local environments, traditional sectoral character, what developers choose to build, and customer demand at those respective locations determines the nature of local outcomes in the various suburban minor civil divisions (MCDs).

Each suburban MCD in the Twin Cities area is set within a larger sectoral submarket, with influence on its housing prices coming from several different forces. Newcomers arrive from areas close to the core. Outside forces mean that migrants arrive from Greater Minnesota, from

elsewhere in the U.S., and from foreign origins. Internal changes, such as new construction of housing by type and quality, also affect the market by the way they attract the notice of potential customers.

To investigate the different types of changes that occur in the housing inventory and composition of MCDs in the Twin Cities area, we have chosen six suburban MCDs to discuss in detail for the period 1970 to 1990, using population and housing census data (Appendix 2-A). Each of these six MCDs represents a different type of MCD change in our value-ranking system, which is presented in the next section.

An example of an MCD that strengthened its already strong position in the market (Type A+) is Orono. Orono experienced modest gains in both population and households from 1970 to 1990, although the number of persons per household declined from an average of 3.43 in 1970 to 2.79 in 1990. Almost all of the housing units in Orono are one-unit detached, and of the 875 housing units permitted in the period from 1970 to 1990, most fell toward the high-value end. In 1980, 15 percent of owner-occupied units were valued at $200,000 or higher; by 1990, that figure had risen to 38 percent. Orono's position has benefited from the addition of very expensive, high-end housing.

Edina is an example of an above-average MCD that has slipped in its relative position from 1970 to 1990. There has been relatively little change in its population, but the average number of persons per household has dropped from 3.38 in 1970 to 2.3 in 1990. This drop corresponds with an increasing number of multiple-unit residences, which made up 17 percent of the housing stock in 1970, but rose to 35 percent in 1990. Construction has slowed in Edina since the 1970s when 5,526 permits were issued, compared with 2,263 in the 1980s, and only 643 from 1990 to 1994. By the Metropolitan Council's land use classification, Edina is considered part of the Urban Area, where both housing density and job concentrations are encouraged along transportation corridors. In contrast, Orono falls into three different land use classes (Urban Area, the Illustrative 2020 MUSA, and Urban Reserve) moving outward through the MCD. In the Urban Reserve portion, short-term development must conform with eventual urbanization, but in the interim (the present to the year 2040) development is generally limited to one dwelling per 40 acres [12].

Stillwater Township is an example of an MCD that rose from a below-average position in 1970 to above average in 1990 (Type B). The township doubled its population from 1970 to 1990, and more than doubled its number of households, while retaining an average number of persons per

household exceeding three. Construction of new units has been steady (217 permits issued in the 1970s, 252 in the 1980s, and 140 from 1990-94), with almost all built as one-unit detached, and falling toward the upper end of the scale. Much of the land in Stillwater Township falls in the category of Permanent Rural Area, which the Metropolitan Council defines as a mix of farm and non-farm uses, and where clustered housing is encouraged in order to protect the rural character of the place, its natural resources, and open space. As is the case in Orono, parts of Stillwater Township also fall into the Urban Area and Urban Reserve classes.

Brooklyn Center fell from an above-average position in 1970 to below average in 1990 (Type C). It also lost almost 18 percent of its population in that twenty-year period, although the number of households increased over that time. The average number of persons per household dropped dramatically from 3.64 in 1970 to 2.56 in 1990. The number of building permits issued also has dropped, from 1,792 in the 1970s, 842 in the 1980s, to only 38 in the period 1990-94. Brooklyn Center falls completely within the Urban Area, so it is not surprising that development there has slowed, and that both the mix of housing types and the distribution of housing units by value has remained stable.

East Bethel is an example of a below-average MCD that gained in relative position from 1970 to 1990 (Type D+). The population jumped from 2,586 in 1970 to 8,050 in 1990. The number of households also has jumped (706 in 1970 to 2,542 in 1990), and the average number of persons per household has remained above three. Construction continues at a strong pace, with 957 permits issued in the 1970s, 605 in the 1980s, and already 492 in 1990-94. The mix of housing types has not changed much, although there is some increase in the number of units of higher value. East Bethel is defined as a Permanent Rural Area by the Council, as is much of Stillwater Township.

Finally, Crystal is a below-average value MCD that has lost in relative position. It lost 23 percent of its population from 1970 to 1990 (30,925 down to 23,789) while gaining 976 new households, resulting in a drastic drop in the average number of persons per household (3.72 down to 2.55). The numbers of permits issued are similar to those for Orono for the period 1970 to 1994, but construction has been occurring in the middle ranges of housing value, not at the high end as in Orono. Crystal also has many more multiple-unit residences, averaging around twenty percent of the total stock over the period 1970-90. Like Brooklyn Center and Edina (other losers in relative position from 1970-90), Crystal is part of the Urban Area.

VII. VALUE RANKING OF MCD HOUSING STOCKS AND CHANGES IN RANK OVER TIME

In order to investigate how the changing mix of housing in each MCD affects the relative position or attractiveness of itself and other MCDs in the metropolitan area, we chose to use rank-order data, based on the median value of owner-occupied housing. This method is useful because the decennial census provides a "median value of owner-occupied housing"[1] for every MCD.

The median values (one per MCD) may be ranked from highest to lowest for the MCDs in the seven-county area, or within a larger multi-county area such as the MSA, or a wider region. Comparison of these ranks inside the seven-county area and in adjacent counties beyond, as well as changes in ranks through time, yields valid and useful summary indices of what happens in the metropolitan area through time and what is happening to specific MCDs' housing prices.

Housing prices move in different ways at different locations. General inflation of most housing prices occurs through time, but housing appreciates in some areas faster than in others. Meanwhile, some housing loses value over time, while some areas just track inflation. Therefore, some MCDs will gain in their value ranking over time, reflecting the fact that they have become relatively more desirable. Other MCDs just manage to maintain their ranking, and some MCDs will lose rank.

Because newly-built housing is almost always priced well above the metro average price, MCDs that recently have received large quantities of newly-built housing tend to rise in their price ranking. Older areas, unless they upgrade their housing stock, or unless fashions of housing tastes change sufficiently to enhance demand for their distinctive locations, environments or housing stock, tend to lose in price ranking over time.

This method of comparing price ranks is based on median values, so it does fail to consider the diversity (homogeneity, heterogeneity) of the housing stock within an MCD. By using the median value rather than the mean value of housing, though, we lessen the skewing influence of the very expensive housing units of an MCD. Finally, this method is beneficial because it simultaneously describes what is going on elsewhere in its sector and in the greater metro area.

[1]Specified Owner-Occupied Homes include one-family homes on less than 10 acres, with no business on the property. (U.S. Bureau of the Census.)

A. MCD Housing-Value Ranking and Rank Changes in the 7-County Metropolitan Area, 1970-1990

A convenient refinement of this method of comparing rankings involves standardizing the rank position of an MCD by considering the *ratio* of a MCD's median value compared with the median value of all single-unit housing within the metropolitan area. An MCD can then be characterized as above, at, or below the metropolitan median value. We can then compare an MCD's position at one census date with its position at another date. For example, in 1970 the city of North Oaks had a median value of owner-occupied housing that was 2.33 times the 1970 metropolitan median, and in the next twenty years its ratio rose to 2.88 times the 1990 metro median.

In 1970, many of the MCDs that were above the metropolitan median value were first- and second-ring suburbs, such as Woodbury, Burnsville, Edina, and Golden Valley (Figure 2.5). A concentration of above-average MCDs is evident to the west and southwest of Minneapolis, including Minnetonka, Plymouth, Eden Prairie and Chanhassen. Those MCDs that were below the metropolitan median value included the central cities of Minneapolis and St. Paul, some inner-ring suburbs, and outlying places such as Farmington, Hastings, East Bethel, and Stillwater Township.

By 1990, the high-ratio MCDs had expanded outward to include places like Dellwood and Stillwater Township to the east, and Lino Lakes and Andover to the north (Figure 2.6). A large concentration of above-average MCDs occurs to the south, the west, and along the St. Croix to the east. The below-average MCDs have expanded outward from the central cities to include inner-ring suburbs such as Richfield, West St. Paul, and Maplewood. Below-average MCDs also have spread northward from Minneapolis, encompassing Brooklyn Center, Brooklyn Park, Fridley, and Spring Lake Park.

For the period 1970-90, we define four different cases of housing value change, with two cases further divided into two groups (Figure 2.7). MCDs of Type A had ratios above (or equal to) 1.00 in both 1970 and 1990, meaning they were at or above the metro average in both years. For example, Minnetonka had a ratio of 1.36 in both years, holding its own. Eden Prairie had a ratio of 1.35 in 1970 and 1.36 in 1990; it began with high-value housing and continued to add high-value housing sufficient for it to hold its own ranking and to improve it slightly. We have classified places like Eden Prairie, which saw their ratios rise, as Type A+. Other MCDs of Type A+ include Plymouth, Wayzata, North Oaks, and Orono (as discussed previously). However, those places that are above average in both years, but saw their ratios drop, such as fast-growing and attractive Woodbury (its high ratio of 1.26 in 1970 dropped slightly to 1.23 in 1990), are classified as Type A-. Other MCDs of Type A- include Edina, Golden Valley and Burnsville.

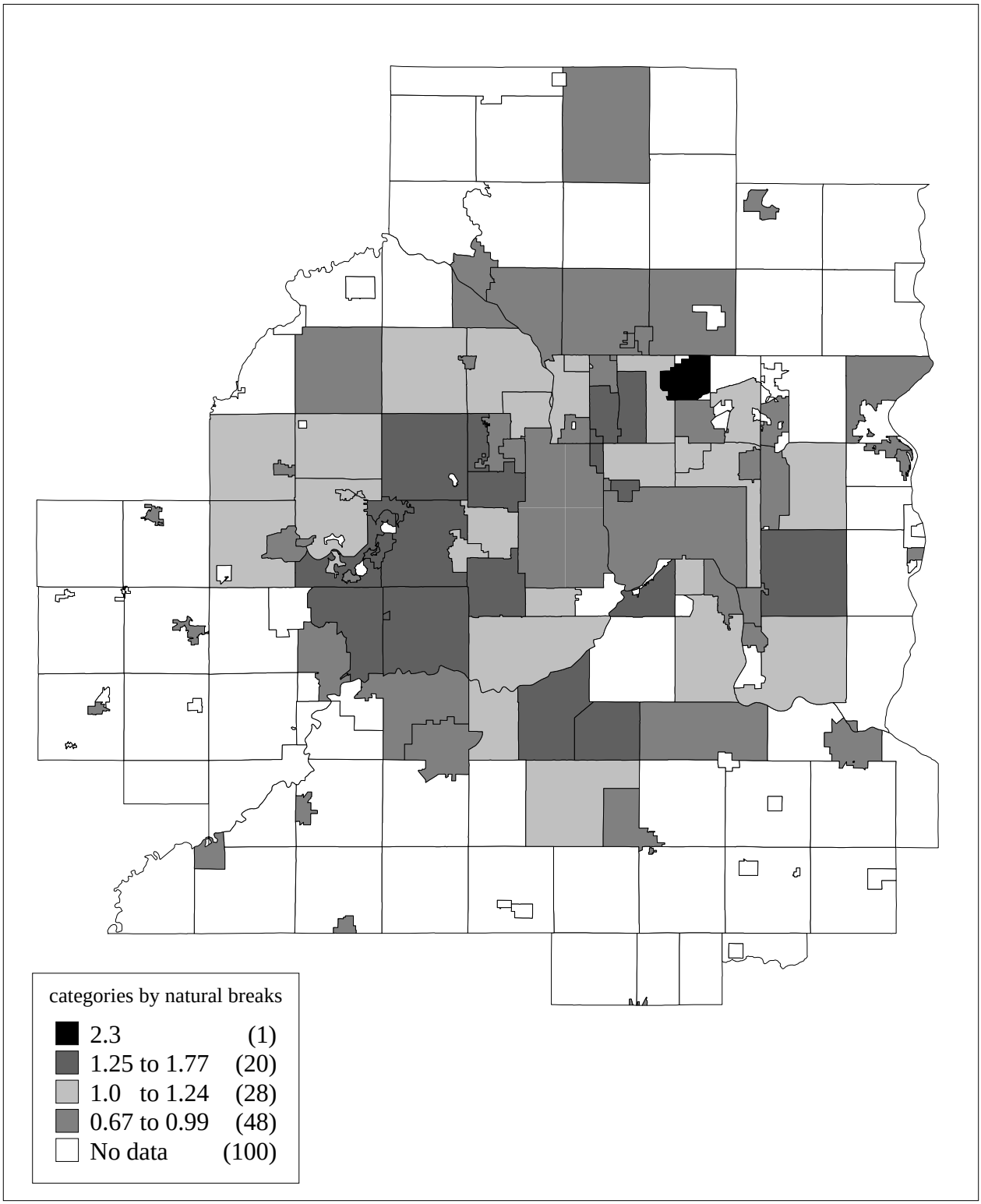


Figure 2.5. Ratio of Median Value of Owner-Occupied Housing by MCD, to Minneapolis-St. Paul SMSA Median, 7-County Area, 1970

Data Source: 1970 Census of Housing. Calculations by authors.

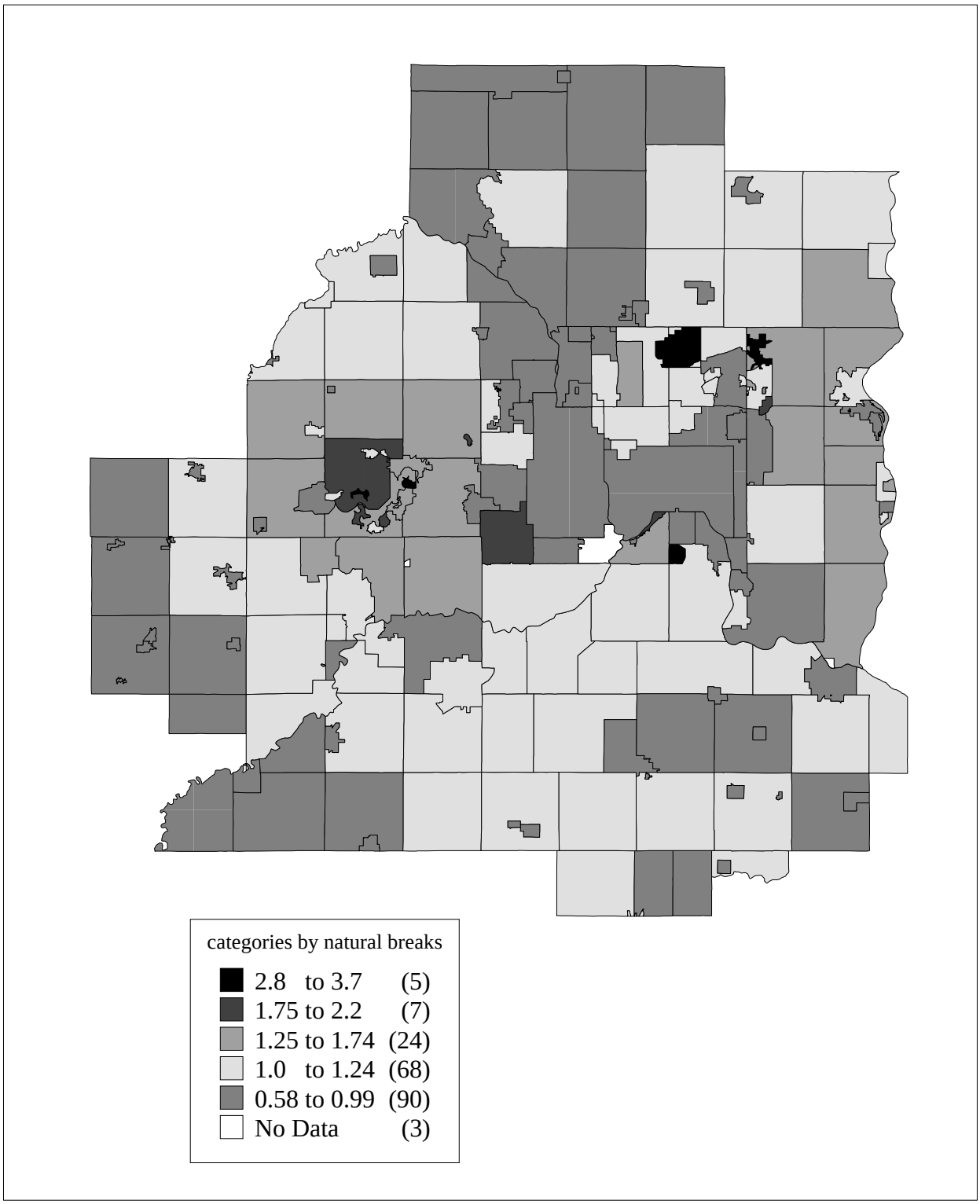


Figure 2.6. Ratio of Median Value of Owner-Occupied Housing by MCD, to Minneapolis-St. Paul MSA Median, 7-County Area, 1990

Data Source: 1990 Census of Housing. Calculations by authors.

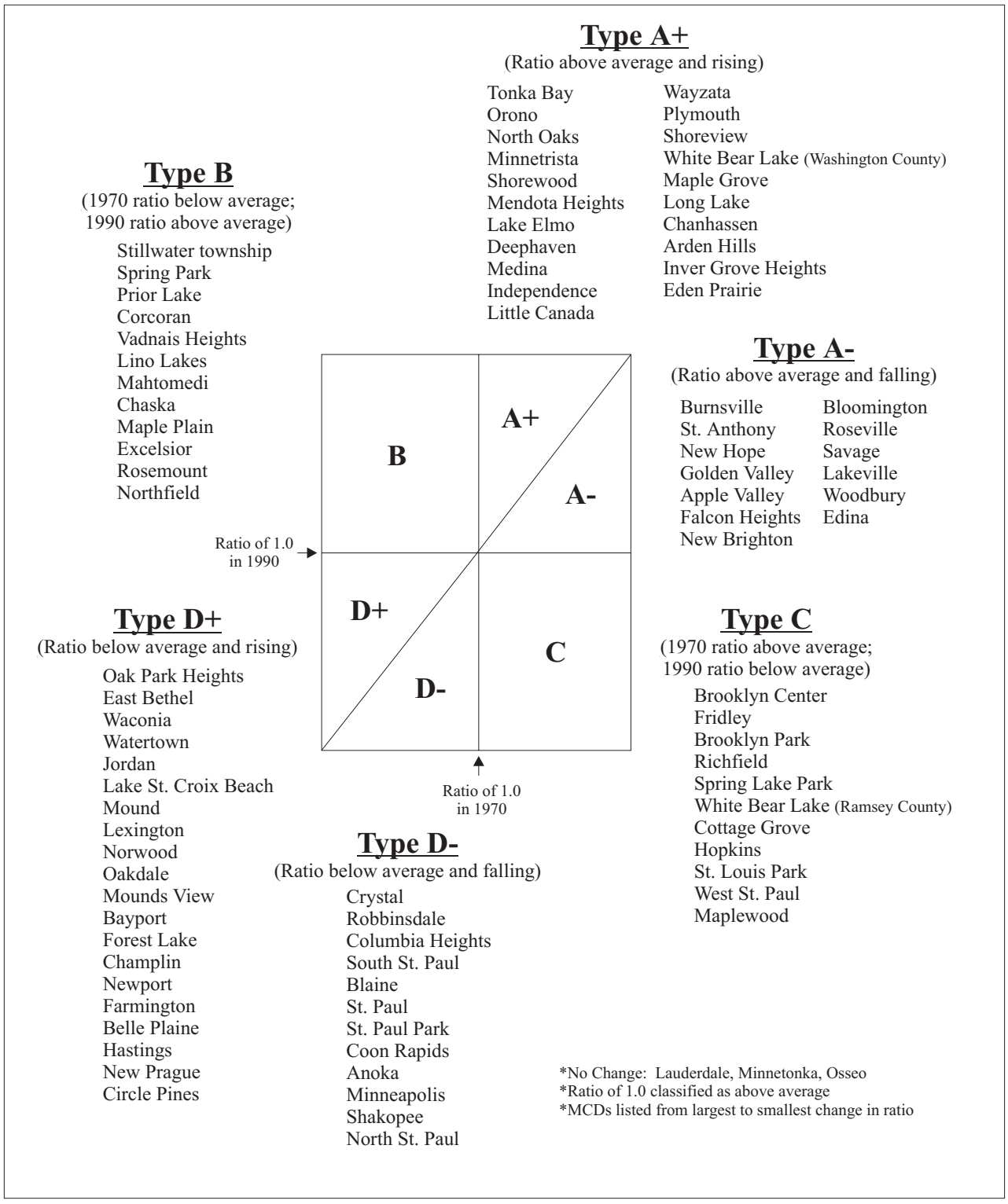


Figure 2.7. MCDs by Type of Change in Ratio, 1970-1990

Data Source: 1970, 1990 Census of Housing. Data not available for 100 MCDs (of 191 total).

The second class of housing value change is Type B. These are MCDs that had below-average ratios in 1970, but improved to ratios above average in 1990. For example, Stillwater Township had a ratio of 0.80 in 1970 and a ratio of 1.62 in 1990, as a result of large-scale construction of relatively expensive new housing alongside an older, lower-priced essentially rural and exurban stock. Other MCDs that improved from below to above average in the twenty year period include Spring Park, Prior Lake, Corcoran, Vadnais Heights, Lino Lakes, and Mahtomedi.

The third class is MCDs of Type C. These MCDs had above-average ratios in 1970 but slipped to ratios below average in 1990. MCDs of Type C include Maplewood, St. Louis Park, Lakeville, Hopkins, Cottage Grove, Richfield, Brooklyn Park, and Brooklyn Center.

The final class of housing value change is Type D. These MCDs had below-average ratios in both 1970 and 1990, but there are two sub-types. MCDs of Type D+ saw a rise in their ratios, as their relative attractiveness within the metro housing market improved. MCDs of this type include Oak Park Heights (0.77 to 0.97), East Bethel (0.74 to 0.89), Waconia (0.82 to 0.95) and Jordan (0.67 to 0.78). The other sub-type, Type D-, consists of MCDs that saw their already-low ratios drop even further. This type includes North St. Paul, Shakopee, Minneapolis (0.83 to 0.80), Coon Rapids, St. Paul Park, Anoka, St. Paul (0.87 to 0.79) and Crystal (0.99 to 0.87).

To summarize, MCDs of Types A+, B, and D+ have experienced a rise in their ratios, and have improved their relative positions. MCDs of Types A-, C, and D- have experienced a decline in their ratios, and have dropped in relative position. A steady ratio means that an MCD is holding its own over time. The four types of MCD change can be mapped separately for the region (Figure 2.8).

Most of the MCDs that have improved their already-strong positions from 1970 to 1990 (Type A+) are those in the outer-ring suburbs, especially to the west, in places like Orono, Chanhassen, and Maple Grove. MCDs that still have above-average positions but have lost ground from 1970 to 1990 (Type A-) include southwestern and southern suburbs such as Edina, Bloomington, and Eden Prairie. Other inner-ring suburbs that have lost ground from their above-average positions are Woodbury, Roseville, and Golden Valley.

The MCDs that improved their positions from below average in 1970 to above average in 1990 (Type B) occur in areas distant from the central cities and beyond the developed suburbs, such as Rosemount, Prior Lake, Chaska, and Stillwater Township. These places may be experiencing the addition of more suburban-type, high-value housing to an essentially rural stock. The MCDs that have declined from an above-average position in 1970 to below average in 1990 (Type C) occur

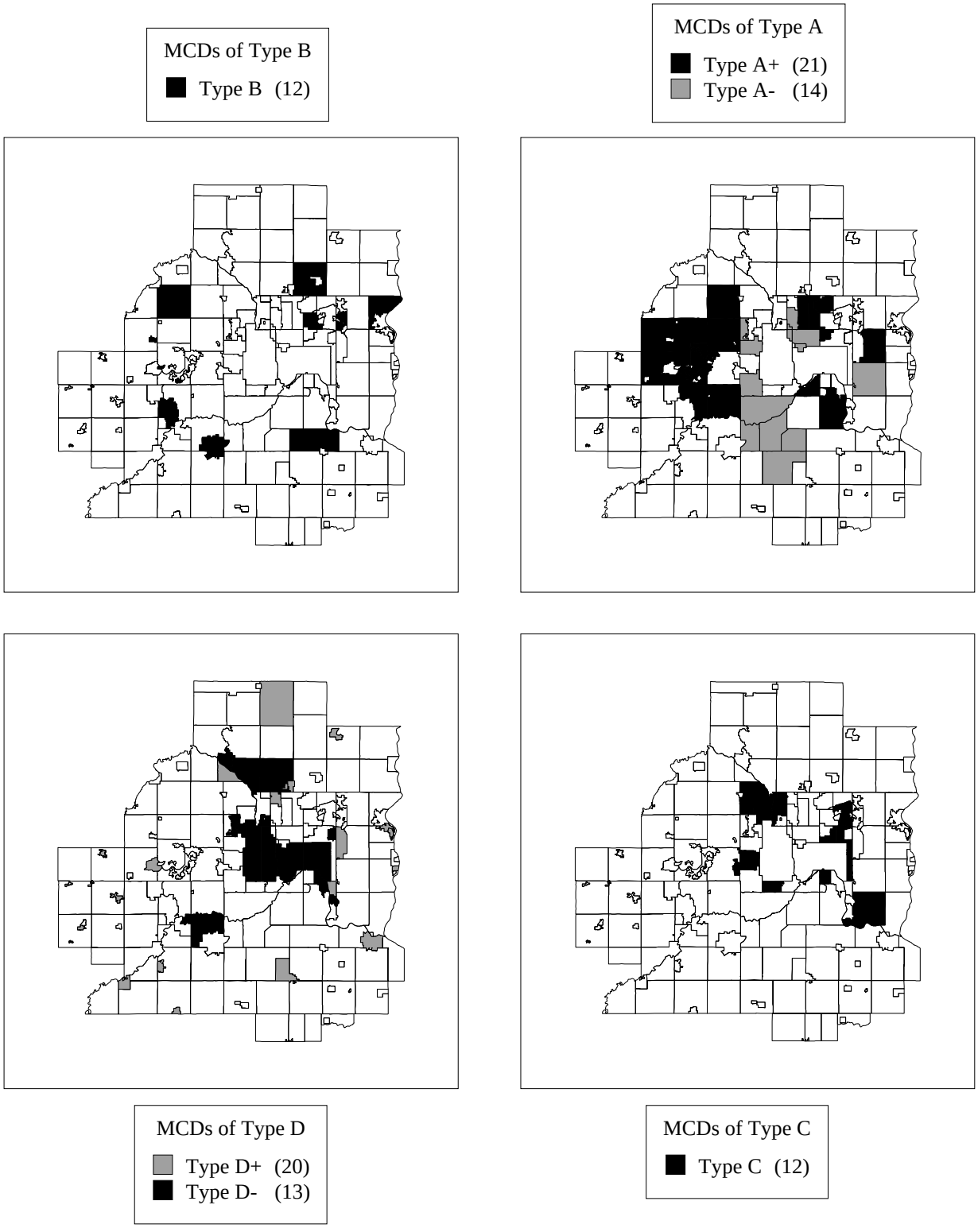


Figure 2.8. MCDs by Type of Change in Ratio, by Location, 7-County Area, 1970-1990

Data Source: 1970, 1990 Census of Housing. Data not available for 100 MCDs (of 191 total).

mostly in the inner suburbs around the central cities, such as Richfield, St. Louis Park, and Maplewood.

The MCDs that are below average but gaining in their relative position (Type D+) are scattered throughout the seven county area; many occurring in small, outlying places such as Belle Plaine, Champlin, and Bayport. The MCDs that are below average and continuing to lose position (Type D-) are concentrated in and around the central cities, and on the north side in Blaine and Coon Rapids.

Looking at changes in housing values in the Twin Cities from 1980 to 1990 posed a challenging set of issues. Exceptional rates of house price inflation during the late 1970s and early 1980s distorted the housing market and people's perceptions of their house values. Prior to the remodeling of the nation's banking laws by acts of Congress in 1980 and 1982, it had been possible for home buyers to obtain mortgage loans carrying interest rates that were below the rates of inflation—in effect, mortgage loans could be obtained at negative real interest rates. The effect of these rates was to increase the rate of house-price inflation for new and existing houses that were sold. Homeowners' knowledge of what nearby houses were selling for implied enhanced values for their own houses, even though they had not been placed on the market. So when the 1980 census queried homeowners about the values of their houses, the prevailing inflationary environment contributed to inflated estimates by owners of the values of their properties.

These distorted estimates from 1980 make it difficult to compare 1980 house prices with either 1970 or 1990 house prices. Calculated rates of change during each decade also are distorted by the distortions in the 1980 values. Thus, a way around this problem of the distortions in 1980 value estimates is again to use ratios of individual MCD median values to the metro median value. Our main concern is the degree to which each MCD has held its relative value, increased it, or slipped behind other MCDs.

The median value of owner-occupied housing is an effective measure of the average value of housing in an MCD. The median is a better measure than the arithmetic mean, because most MCDs contain a stock of single-family houses with an accompanying distribution of housing values that is skewed, with few really low-priced units, but with some or many distributed into the higher-priced ranges.

Over any period of time, housing units are added in most MCDs, as others are removed. The value of units added to an MCD is usually higher than the median value of housing already there,

but not always. When the value of new units exceeds that of existing units in an MCD, the median value of housing in that MCD rises. When the value is lower, it usually falls.

Prices also can rise or fall depending on demographic forces (births, deaths, household composition, moves in, moves out) and changing tastes. A substantial influx of working-class households relative to overall metropolitan population expansion will put extra demand pressure on the submarkets where the newcomers settle, and prices there will rise at above-average rates. A similar outcome occurs when upper-middle-class and professional households are added to the metropolitan population in above-average numbers, which puts excess demand pressure on the submarkets where they concentrate and deploy their higher purchasing power and access to mortgage capital.

B. MCD Housing-Value Ranking and Rank Changes, 24-County Metropolitan Region, 1980-1990

The analysis of changes between 1980 and 1990 is more comprehensive than our 1970-90 analysis, because unlike the 1970 census, the 1980 census data covered all 191 MCDs in the seven-county area. Also, by looking at both the changes from 1970-90 and from 1980-90, we can see longer-term changes as well as recent trends. Because these trends may differ, some MCDs may be classified differently for the two time periods. For example, Shakopee was classified as type D- for 1970-90, but type C for 1980-90, because it experienced a rise in its ratio from 1970 to 1980 and then a drop in 1990 back below its original 1970 ratio.

What looked promising in the 1970s sometimes looks different in the recent period. As some of the first-ring and older industrial suburbs have begun to slide, problems that were formerly considered to be exclusively central city problems are coming to be seen as wider phenomena. This leads to the emergence of coalitions of central city and selected suburban mayors and legislators working together on what they recognize as common problems.

The pattern of 1980 ratios for the seven-county area (Figure 2.9) appears similar to the pattern seen for 1990 (Figure 2.6), although the highest category in 1990 increased from a maximum ratio of 2.80 in 1980 to a high of 3.70. In 1980, the highest ratios occurred to the west around Lake Minnetonka, and to the east along the St. Croix River valley. The lowest ratios occurred in the central cities and the inner-ring suburbs, and in some outlying MCDs.

The 1980 pattern of a below-average core surrounded by a ring of above-average MCDs in the second- and third-tier suburbs, and dropping off to below-average ratios in the outlying MCDs of

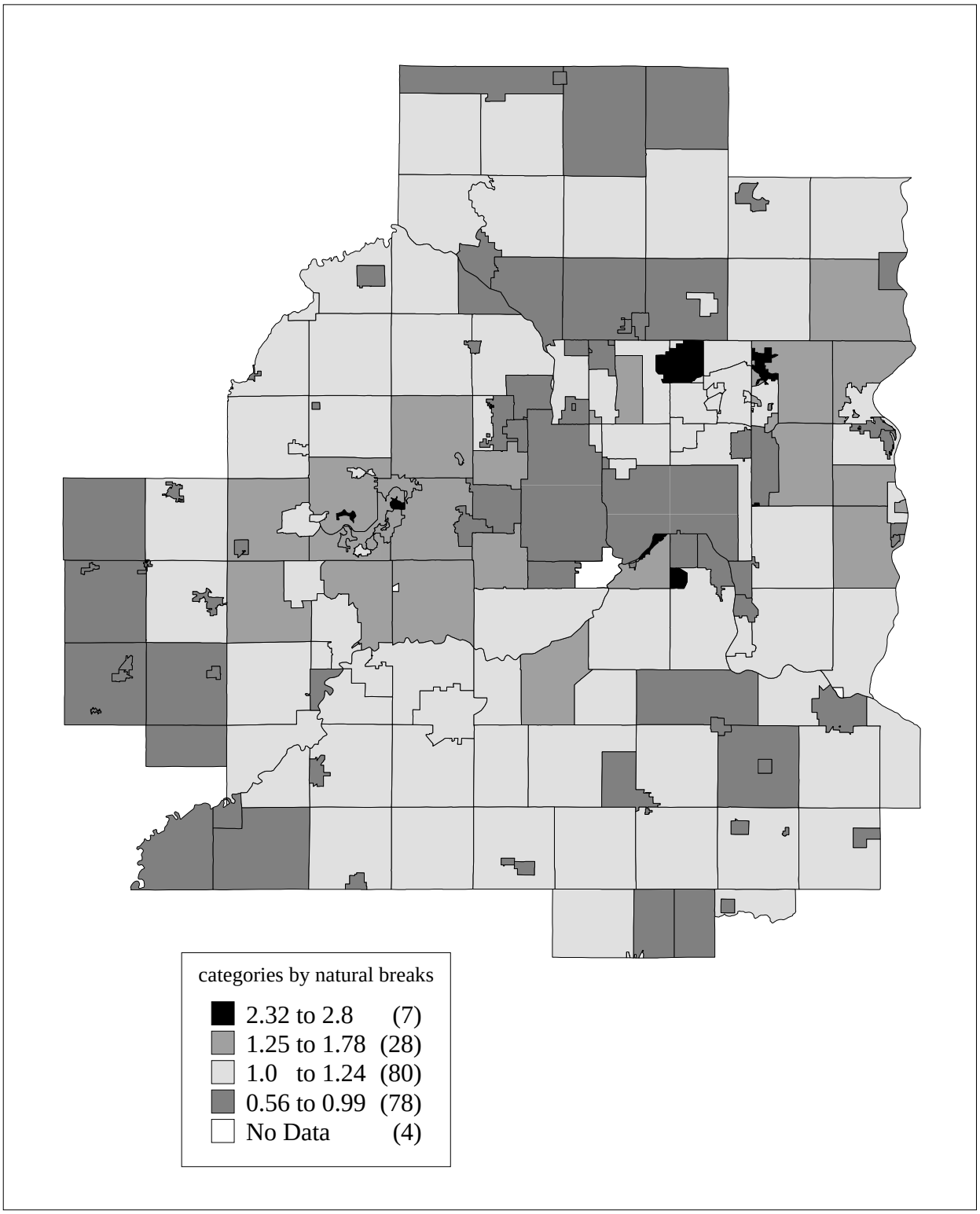


Figure 2.9. Ratio of Median Value of Owner-Occupied Housing by MCD, to Minneapolis-St. Paul SMSA Median, 7-County Area, 1980
Data Source: 1980 Census of Housing. Calculations by authors.

the counties adjacent to the Twin Cities metro area, is evident in the map of ratios for a 24-county area around the metro (Figure 2.10). The strongest MCDs are found on the western edge of the seven-county area, while other above-average MCDs form a ring through the entire seven-county area.

This pattern is refined in 1990 (Figure 2.11). The below-average core has expanded to include some of the inner-ring suburbs, and the MCDs in the sector north of Minneapolis. The ring of above-average MCDs still runs through the seven-county area, although it has retracted from some of the outer MCDs. A little push of above-average MCDs has begun to the northeast, in Lino Lakes and Chisago Lake.

Just as in the 1970-90 analysis, we define four types of MCD ratio change for the period 1980 to 1990 (Figure 2.12). Type A+ MCDs saw their above-average ratios rise between 1980 and 1990, and prominent examples included Orono, Woodbury, Sunfish Lake, Minnetonka Beach, and Mendota Heights. These MCDs are strengthening from an already-strong position. Type A- MCDs saw their above-average ratios drop. This set included Eden Prairie, Roseville, Maple Grove, Burnsville, Prior Lake, and New Hope. These MCDs are weakening in relative terms, but from a strong position.

Type B MCDs rose from a below-average to an above-average ratio, but there were very few members in this class. Only four MCDs made the jump, including Marine on St. Croix, St. Mary's Point, Rosemount, and Lino Lakes. The category of Type C, MCDs that dropped from an above-average ratio to below average, had numerous members. Examples include Maplewood, White Bear Lake, Shakopee, Cottage Grove, and Fridley.

Finally, MCDs of Type D had ratios below 1.00 in both years, but again there are two sub-types. MCDs of type D+ saw a rise in their ratios as their relative attractiveness within the metro housing market improved by adding substantial numbers of new units, raising their 1990 median value, but not enough to lift them above the metro average. Examples of this type include Carver, Belle Plaine, Waconia, Bayport, Vermillion Township, and Bethel. MCDs of type D- saw already-low ratios drop further. Examples include the central cities (St. Paul and Minneapolis), older close-in suburbs (Hopkins, St. Louis Park, Coon Rapids, Richfield), plus some expanding areas farther out that have added important amounts of new housing but with values below the metro average (Osseo, Farmington).

Whether the MCD's median value moves up or down relative to the metro median depends on what is happening in other locations and in other MCDs. Again, the four types of MCD change

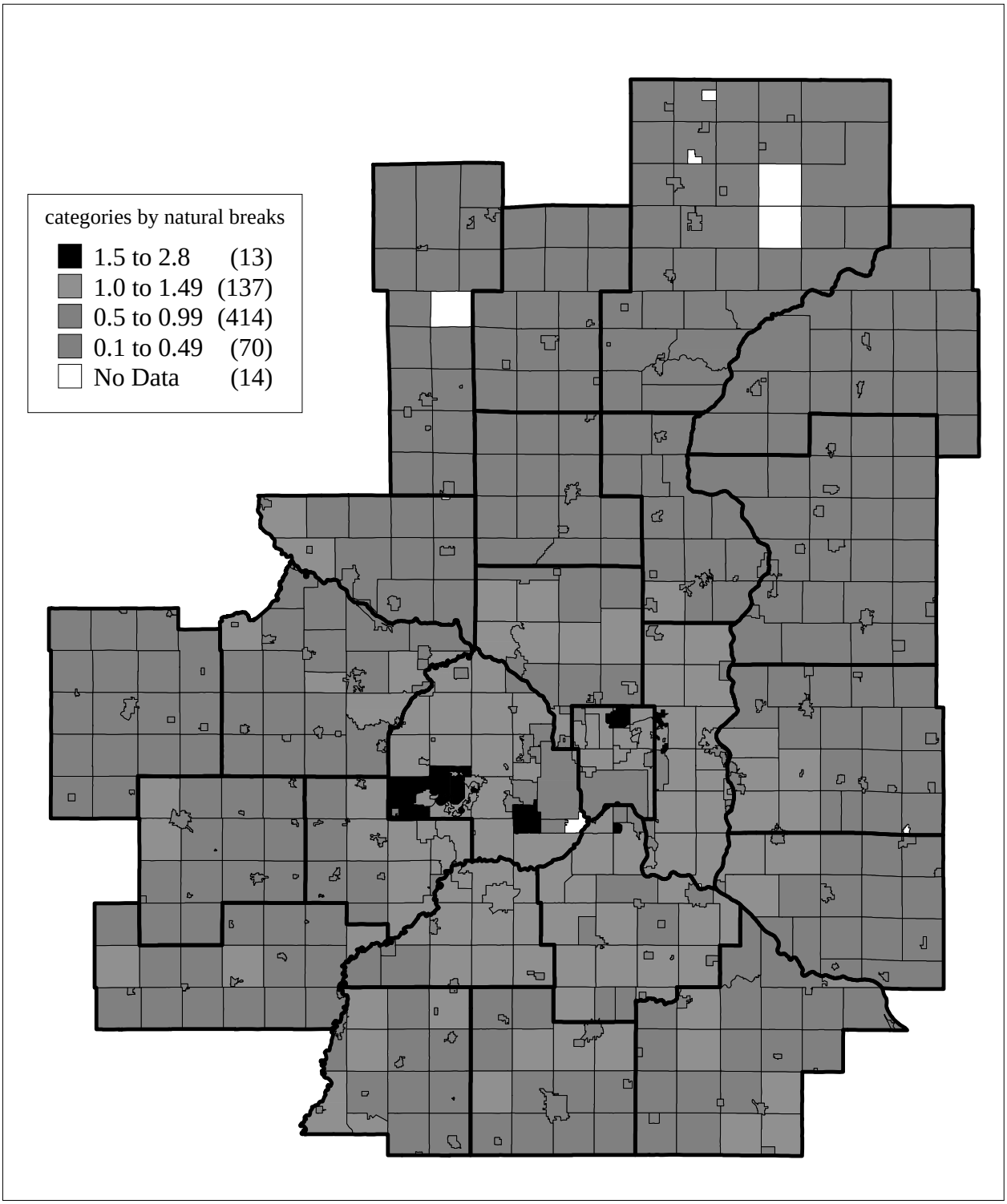


Figure 2.10. Ratio of Median Value of Owner-Occupied Housing by MCD, to Minneapolis-St. Paul SMSA Median, 24-County Area, 1980

Data Source: 1980 Census of Housing. Calculations by authors.

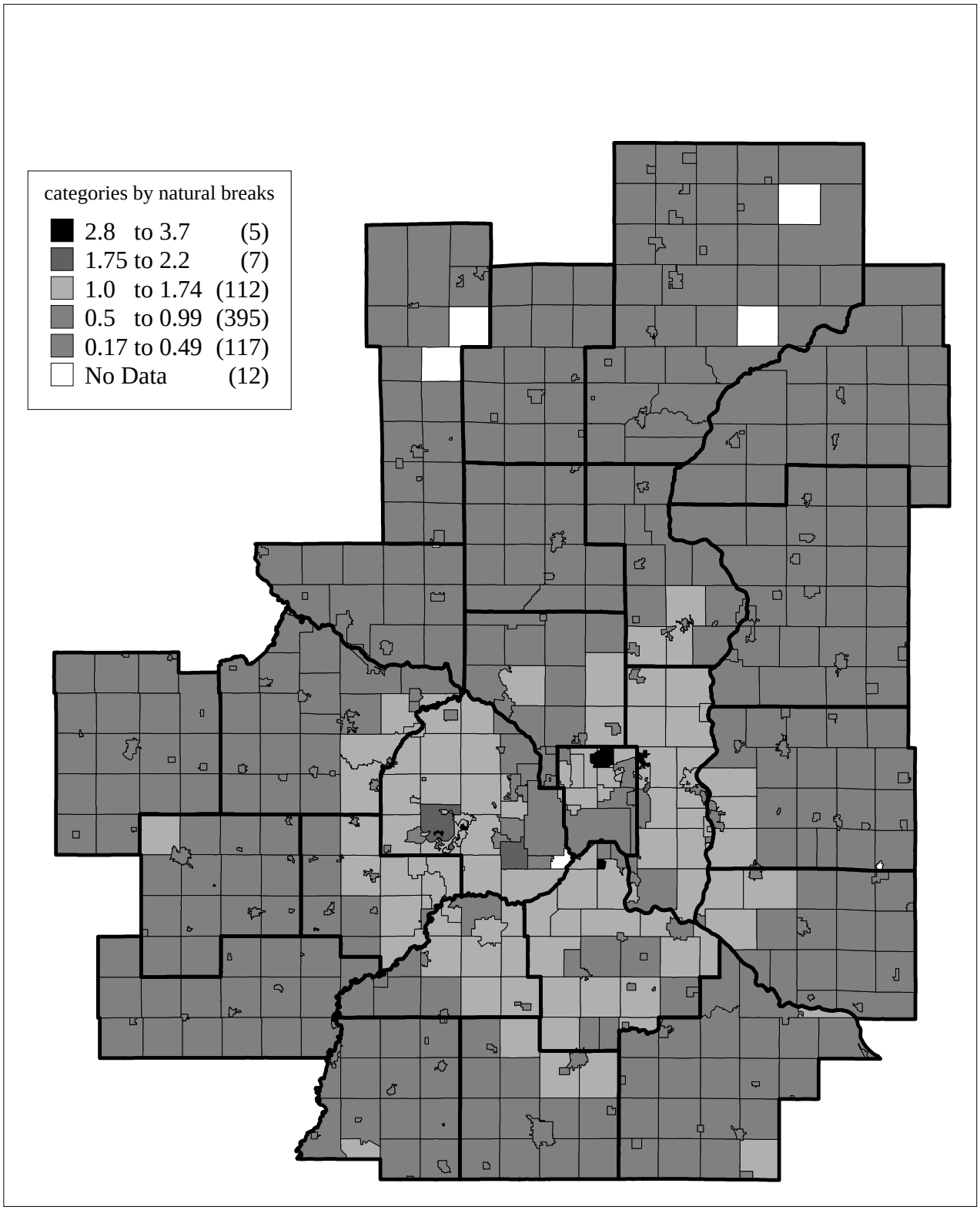


Figure 2.11. Ratio of Median Value of Owner-Occupied Housing by MCD, to Minneapolis-St. Paul SMSA Median, 24-County Area, 1990
Data Source: 1990 Census of Housing. Calculations by authors.

Type A+

(Ratio above average and rising)

Sunfish Lake
Minnetonka Beach
Medicine Lake
Woodland
Tonka Bay
Orono
Greenwood
Mendota Heights
West Lakeland
Shorewood
Victoria
Medina
Dellwood
Stillwater township
Deephaven
Lake Elmo
Wayzata
Pine Springs
Edina
Baytown township
May township
Minnetrista
Independence
Mahtomedi
Afton
Lakeland Shores
Hanover
Marshan township
San Francisco township
White Bear Lake (Washington county)
Grant township
Arden Hills
North Oaks
Denmark township
Waconia township
Jackson township
Eagan
Excelsior
Chanhassen (Carver county)
Plymouth
Minnetonka
New Scandia
Little Canada
Inver Grove Heights
White Bear township
Hugo
Long Lake
Grey Cloud Island township
Shoreview
Andover
Watertown township
Gem Lake
Forest Lake township
Birchwood Village
Corcoran
Hassan township
Vadnais Heights
Maple Plain
Stillwater

Type B

(1980 ratio below average; 1990 ratio above average)

Marine on St. Croix
St. Mary's Point
Rosemount
Lino Lakes

Type A-

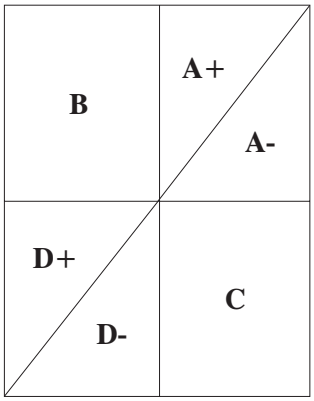
(Ratio above average and falling)

Landfall
Lilydale
Greenvale township
Cedar Lake township
Nininger township
Ravenna township
New Hope
Sand Creek township
Laketown township
Prior Lake
Chaska township
Lakeland
Burnsville
St. Anthony
New Brighton
New Market township
Greenfield
Dahlgren township
Maple Grove
Apple Valley
Roseville
Eden Prairie
Spring Park
Bloomington
Dayton
Hampton township
Savage
Golden Valley
Louisville township
Randolph township
Credit River township
Eureka township
Spring Lake township
Castle Rock township
Chaska
Columbus township

Type D+

(Ratio below average and rising)

Camden township
Blakeley township
Hancock township
Carver
Coates
Benton township
Willernie
Vermilion township
Randolph
Belle Plaine
Bethel
Waconia
Hampton
Young America
Bayport
Vermilion
Forest Lake
Hastings (Dakota county)
Champlin
Lexington
New Prague
Hollywood township
Loretto
New Market



Type D-

(Ratio below average and falling)

Sciota township
Belle Plaine township
New Germany
St. Francis
Hamburg
Hilltop
Elko
Young America township
New Trier
Brooklyn Center
South St. Paul
Blaine
Waterford township
Crystal
Columbia Heights
Robbinsdale
Spring Lake Park (Anoka county)
Anoka
St. Paul Park
Minneapolis
Newport
Richfield
St. Paul
Linwood township
Mayer
Jordan
East Bethel
Lake St. Croix Beach
Mendota
Mounds View
West St. Paul
Coon Rapids
St. Louis Park
Rockford
Farmington
Osseo
Watertown
Hopkins
Rogers
Circle Pines

Type C

(1980 ratio above average; 1990 ratio below average)

Empire township
Helena township
Brooklyn Park
Spring Lake Park (Ramsey county)
Ramsey
Fridley
Cottage Grove
Douglas township
St. Lawrence township
Burns township
Shakopee
Centerville
Oak Grove township
White Bear Lake (Ramsey county)
Mound
Maplewood
Ham Lake

*No Change (15 MCDs): Woodbury, Lauderdale, Falcon Heights, Lakeville, Miesville, Chanhassen (Hennepin county), Fort Snelling unorg., Hastings (Washington county), Oak Park Heights, Oakdale, St. Bonifacius, Cologne, North St. Paul, Norwood, Northfield
*Ratio of 1.0 classified as above average
*MCDs listed from largest to smallest change in ratio

Figure 2.12. MCDs by Type of Change in Ratio, 7-County Area, 1980-1990

Data Source: 1980, 1990 Census of Housing.

can be mapped separately for the region to help discern and interpret the mix of forces operating in each kind of location. The map of the types of MCD change in the seven-county area (Figure 2.13) shows the above-average (Type A) MCDs concentrated in the western suburbs, and the newer eastern suburbs. The above-average MCDs that are improving their positions further are found especially in the west, south of St. Paul, and along the St. Croix River, while the above-average MCDs that are losing some of their status occur to the southwest, and along the southern edge of the seven-county area. The below-average MCDs (Type D) occur in the central cities and the aging first- and second-ring suburbs to the north and the southeast.

The map of the types of MCD change for the seven-county area and 17 adjacent counties (Figure 2.14) shows real estate wealth confined largely to the inner MCDs west, south and east of the central cities. Expansion in these second- and third-tier suburbs, and the push of these sectors outward into the developable land of adjacent counties, contributes to increased transportation demand and increased congestion on already-existing transportation routes. Most of the below-average-value MCDs (Type D), which have less development (or not as much high-value development) and less demand for transportation, occur in the outlying areas of the adjacent counties, along with the below-average and declining-value (Type D-) MCDs of the central cities and inner-ring suburbs.

VIII. HOUSING PRICE MOVEMENTS AND UNDERLYING CAUSES AND CONSEQUENCES OF HOUSE PRICE INFLATION

An array of government policies encourages the production of expensive new housing for middle-class households, resulting in used housing trickling down to lower-income households. First, the deductibility of mortgage interest from taxable income mostly benefits the upper-middle class. Many middle- and most working-class households do not benefit from this tax provision because they take only the standard deduction. Further, the deductibility of residential real estate taxes on first (and second) homes from taxable income benefits mainly upper-income households. Finally, most capital gains on residential real estate are sheltered.

In addition to federal and state tax expenditures (deductibility of real estate taxes and mortgage loan interest) that support excess demand for new housing, the services supplied to new housing are generally underpriced to the home buyer compared with the costs of providing them. Services supplied to the new houses and their occupants include schools, school bus service, parks, fire and police protection, storm and sanitary sewers, electricity, gas, telephone, TV cable, street lighting, city streets, collectors and major arterials serving new developments. In almost all cases, these new

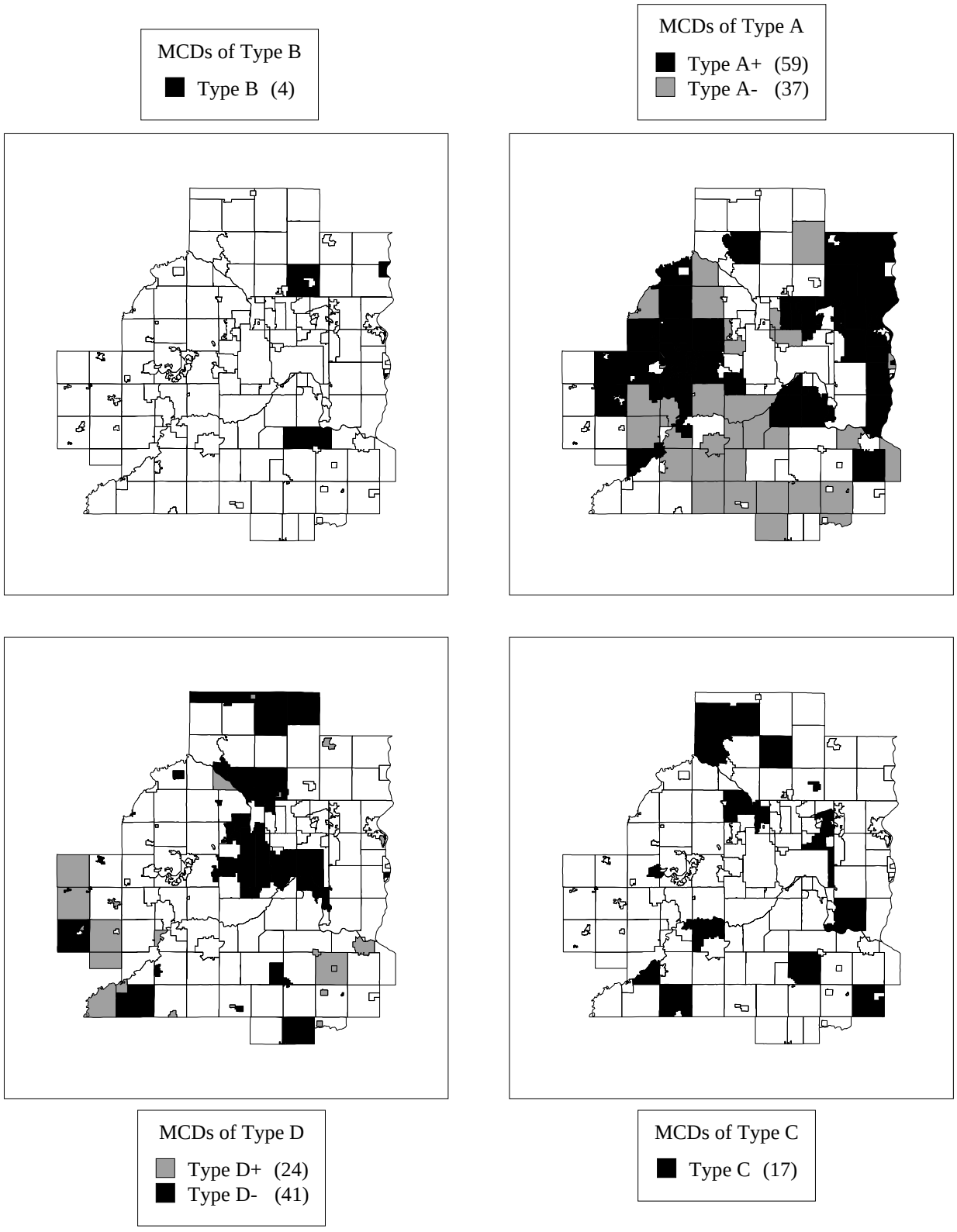


Figure 2.13. MCDs by Type of Change in Ratio, by Location, 7-County Area, 1980-1990

Data Source: 1980, 1990 Census of Housing.

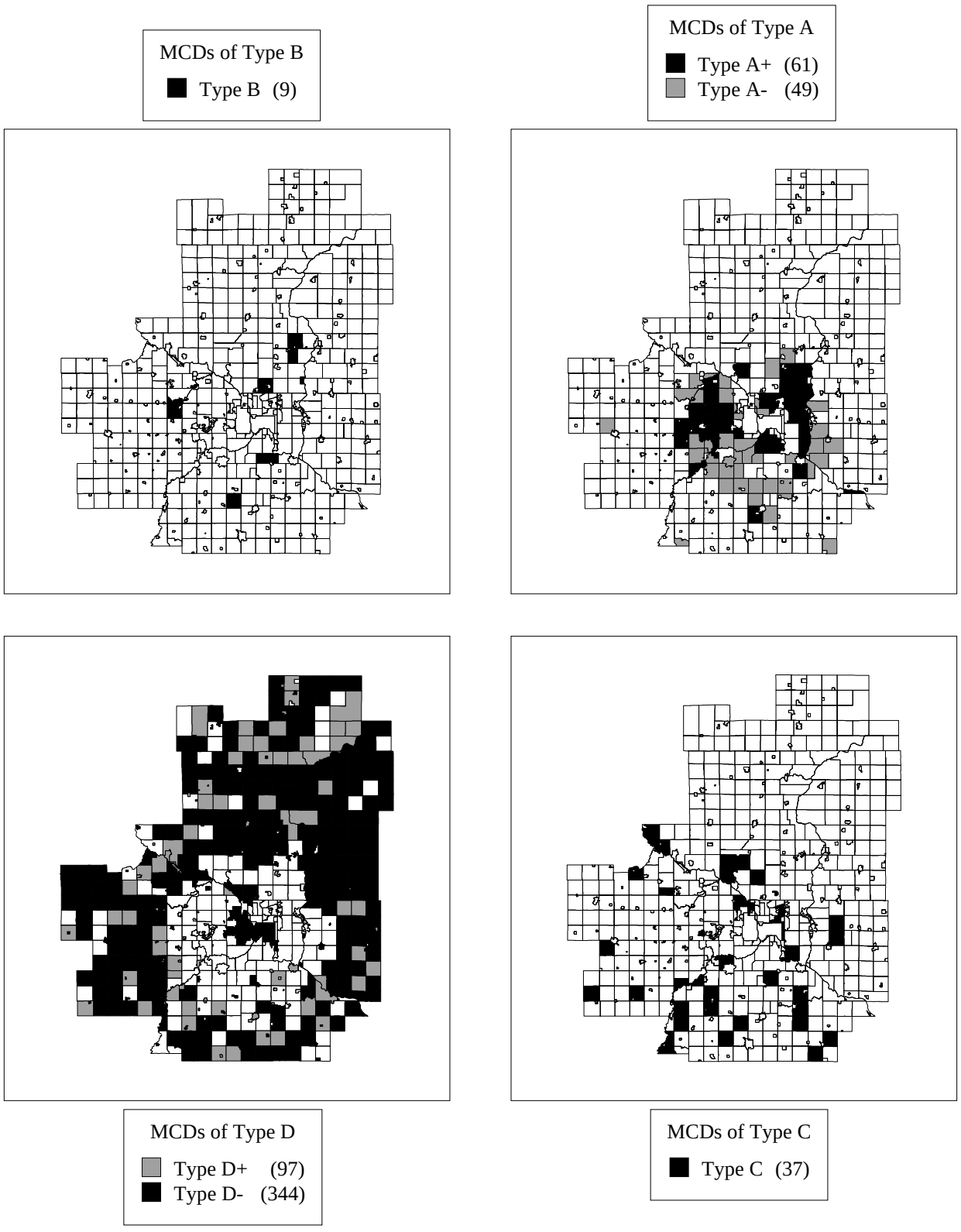


Figure 2.14. MCDs by Type of Change in Ratio, by Location, 24-County Area, 1980-1990

Data Source: 1980, 1990 Census of Housing.

services are provided through *average-cost* pricing schemes, which shift much of the required new infrastructure investment to older-settled areas, their property owners, taxpayers and utility subscribers.

The fact that new development fails to pay full *marginal-cost* prices for the new services that it receives means that major subsidies are provided to the new home buyers. Developers of upper-priced new houses can and do charge a profitable premium for their product because new houses are a good financial deal for the buyers. The net benefit of the capitalized present value of the underpriced services is split between the developers and builders and their customers. The sellers charge more than they could get if full marginal-cost prices were charged for all the new services, and the buyers get more than they pay for, with the remainder of the costs passed on to others in the form of higher service charges. This topic is developed more fully in Chapter 4.

These financial incentives create excess demand for new housing on the edges of the metro area by middle- and upper-middle class households who have access to credit and knowledge of how to exploit this opportunity. Households and their income streams relocate outward to rapidly expanding suburban areas, and commercial and industrial investment follows. Households that have invested in what they believe to be an appreciating asset (new housing) behave as if they had enhanced wealth, and are likely to spend beyond their incomes. These wealth effects on consumer behavior contribute to the overbuilding of commercial establishments in these high-income, high-price housing areas.

IX. SUMMARY AND CONCLUSIONS: THE RELATIONSHIP AMONG HOUSING MARKETS, HIGHWAY DEMAND AND HIGHWAY USE

As income relocates outward from the metropolitan core, following middle- and upper-income households as they move upward socially and outward geographically, the demand for transportation increases on the edges. Faster appreciation of housing on the edges leads to higher spending by these households, which influences the number of cars each household owns and the number of trips made by these households. Increases in these factors place even higher demand on transportation routes. As commercial and industrial investment leads and follows this relocation of disposable incomes and real property wealth to the edges, there is additional demand imposed on the transportation infrastructure in these areas.

Other changes in the population and in household composition also contribute to increased demand for transportation. The greater share of single-family units on large lots leads to more

dispersed development and more travel per household. The greater number of households (due to declining numbers of persons per household or to population growth in the area) and greater numbers of workers per household, also contribute to increased travel demand. Finally, personal household factors, such as higher per-capita rates of personal travel and fewer occupants per vehicle, also increase use of transportation routes.

Housing expansion in the Twin Cities area, especially in the middle- and upper-income sectors, has been pushing outward to the adjacent counties in recent years. The continued expansion on the northwest, west, southwest, and south sides has led to the relocation of income and real property wealth in the metro area, and to increased pressure on the transportation system serving those areas.

Appendix 2-A: Changes in Population and Housing Characteristics, Six Sample Minor Civil Divisions, 1970-1990

	Edina Type A-			Brooklyn Center Type C			Crystal Type D-		
	1970	1980	1990	1970	1980	1990	1970	1980	1990
Population	44,046	46,073	46,070	35,173	31,230	28,887	30,925	25,543	23,788
Households	13,005	17,961	19,860	9,151	10,751	11,226	8,296	8,977	9,272
Persons per Household	3.38	2.55	2.3	3.64	2.89	2.56	3.72	2.82	2.55
Median Household Income (Median Family in 1970)	$19,494	$30,201	$48,936	$12,412	$22,282	$34,168	$12,253	$22,390	$37,093
Total Housing Units	13,299	18,639	20,983	9,485	10,977	11,713	8,484	9,093	9,541
Owner-Occupied Units*	10,486	13,656	15,170	6,763	7,438	7,806	6,619	7,000	7,170
Median Value of Owner-Occupied Housing	$38,100	$99,200	$156,700	$22,200	$61,800	$79,400	$21,200	$60,800	$78,000
Ratio of MCD Median Value to SMSA Median	1.77	1.59	1.76	1.03	0.95	0.89	0.99	0.92	0.87
Owner-Occupied Units by Value									
Less than $5,000	1			5			3		
$5,000-$7,499	3			5			15		
$7,500-$9,999	15			39			53		
$10,000-$12,499	39			99			174		
$12,500-$14,999	83			270			431		
$15,000-$17,499	178			578			883		
$17,500-$19,999	326			1,140			1,223		
$20,000-$24,999	1,062			2,874			2,124		
$25,000-$34,999	2,827			1,624			1,459		
$35,000-$49,999	3,422			120			220		
$50,000 or higher	2,530			9			34		
Owner-Occupied Units by Value									
Less than $50,000		400	33		1,394	85		1,661	129
$50,000-$99,999		5,216	1,448		5,451	6,749		4,768	5,965
$100,000-$149,999		3,358	3,982		53	368		97	516
$150,000-$199,999		1,179	2,576		6	32		6	65
$200,000 or higher		883	3,679		2	15		1	7
Housing Units by Type									
Total One Unit									
One-Unit Detached	10,875	11,947	12,297	7,062	7,248	7,351	6,951	7,136	7,276
One-Unit Attached	84	554	1,080	47	497	953	17	75	194
2 Units	335	278	162	146	104	73	128	134	89
3-4 Units	52	59	110	166	205	174	119	147	142
5 or More Units	1,937	5,777	7,176	2,064	2,915	3,110	1,269	1,601	1,813
(5-49 Units)			*2,418*			*2,355*			*1,003*
(50 or More Units)			*4,758*			*755*			*810*
Mobile Home/Trailer (1970)	16			0			0		
Age of Owner-Occupied Housing Units (by year built)									
1939 or earlier			1,498			271			410
1940-49			1,496			539			556
1950-59			4,636			4,284			4,210
1960-69			3,529			1,544			1,308
1970-79			2,503			717			439
1980-84			614			357			75
1985-88			795			94			172
1989-90			99			0			0
Total Residential Building Permits (Total Units) Issued									
	1970-79	1980-89	1990-94	1970-79	1980-89	1990-94	1970-79	1980-89	1990-94
	5,526	2,263	643	1,792	842	38	553	551	41

*Specified Owner-Occupied Homes include one-family homes on less than 10 acres, with no business on the property.

Source: 1970 Census of Housing; 1970 Census of Population: Characteristics of the Population; Metropolitan Council, Community Profiles: Housing, Population and Households, July 1993; Metropolitan Council, Residential Building Permit Trends in the Twin Cities Metropolitan Area, 1970-1994. Calculations by the authors.

Appendix 2-A (continued)

	Orono Type A+			East Bethel Type D+			Stillwater Twp. Type B		
	1970	1980	1990	1970	1980	1990	1970	1980	1990
Population	6,787	6,845	7,285	2,586	6,626	8,050	979	1,599	2,066
Households	1,976	2,291	2,613	706	1,955	2,542	245	448	639
Persons per Household	3.43	2.99	2.79	3.6	3.39	3.17	3.69	3.57	3.23
Median Household Income (Median Family in 1970)	$12,996	$30,736	$62,858	$9,979	$22,995	$37,754		$27,311	$54,717
Total Housing Units	2,071	2,393	2,787	727	2,034	2,722		463	651
Owner-Occupied Units*	1,500	2,055	2,372	424	1,859	2,455		414	607
Median Value of Owner-Occupied Housing									
	$26,800	$97,100	$173,500	$15,900	$59,300	$79,100	$17,200	$87,900	$144,800
Ratio of MCD Median Value to SMSA Median									
	1.25	1.56	1.94	0.74	0.91	0.89	0.8	1.39	1.62
Owner-Occupied Units by Value									
Less than $5,000	9			21					
$5,000-$9,999	62			70					
$10,000-$14,999	170			101					
$15,000-$19,999	271			104					
$20,000-$24,999	182			84					
$25,000-$34,999	316			35					
$35,000 or higher	490			9					
Owner-Occupied Units by Value									
Less than $50,000		277	43		424	81		26	2
$50,000-$99,999		654	465		824	1,392		144	61
$100,000-$149,999		382	400		47	243		74	185
$150,000-$199,999		185	262		1	34		18	136
$200,000 or higher		303	911		0	4		4	73
Housing Units by Type									
Total One Unit	2,014			709					
One-Unit Detached		2,297	2,711		1,710	2,329		432	628
One-Unit Attached		6	23		4	12		4	3
2 Units	42	29	27	3	6	7		17	10
3-4 Units	5	7	9	5	31	12		2	1
5 or More Units	10	51	5	0	10	4		6	6
(5-49 Units)	*10*		*4*	*0*		*4*			*6*
(50 or More Units)	*0*		*1*	*0*		*0*			*0*
Mobile Home/Trailer (1970)	0			10					
Age of Owner-Occupied Housing Units (by year built)									
1939 or earlier			553			107			49
1940-49			223			116			4
1950-59			432			154			35
1960-69			340			236			74
1970-79			347			1,086			202
1980-84			175			375			104
1985-88			222			331			133
1989-90			80			50			6
Total Residential Building Permits (Total Units) Issued									
	1970-79	1980-89	1990-94	1970-79	1980-89	1990-94	1970-79	1980-89	1990-94
	421	454	147	957	605	492	217	252	140

*Specified Owner-Occupied Homes include one-family homes on less than 10 acres, with no business on the property.
Source: 1970 Census of Housing; 1970 Census of Population: Characteristics of the Population; Metropolitan Council, Community Profiles: Housing, Population and Households, July 1993; Metropolitan Council, Residential Building Permit Trends in the Twin Cities Metropolitan Area, 1970-1994. Calculations by the authors.

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Chapter 3
LAWS AND REGULATORY FRAMEWORKS THAT SHAPE METROPOLITAN LAND DEVELOPMENT

Lena L. Laaken

I. INTRODUCTION

This chapter identifies important federal regulations, state statutes, local laws, and administrative rules and regulations that promote low-density residential, commercial, and industrial land development on the suburban edges of metropolitan areas or inhibit redevelopment and rehabilitation in the fully-developed areas. Where possible, the effect of a statute, law, or regulation on land development is illustrated with a specific example. Emphasis is on the seven-county Minneapolis-St. Paul metropolitan area and adjacent counties, but reference also is made to parallel problems in Minnesota's other major urban regions. The report relates the cumulative effect of these regulatory frameworks to changes in housing market activity.

A. The Problem: Transportation and Low-Density Suburban Development

A variety of tax laws, zoning codes, development rules, and related land use regulations operate in concert to promote low-density, suburban development and to discourage rehabilitation and reinvestment in core areas of the metropolitan region. The result is a creeping outward of low-density development that affects the region as a whole. New development on the suburban fringe requires new infrastructure such as roads, sewers, gas and electrical service, and telephone lines, but as new infrastructure is supplied, capital investment is diverted from the maintenance and improvement of infrastructure that already exists in the fully-developed areas within the region. This tendency toward new low-density development on the edge rather than toward reinvestment in maintaining and improving already-developed areas has particularly noticeable effects on transportation requirements. Sprawling, low-density development carries with it an increase in automobile dependency, increases in distances traveled, higher traffic volumes, greater fossil fuel consumption, reduced efficiency of public transit systems, and persistent calls for additional high-volume, high-speed roads.

Although the transportation problems that accompany low-density suburban development are most pronounced and most serious in the greater Twin Cities area, they occur to some degree in each of Minnesota's other major urban centers as well. Duluth-Superior, Rochester, Fargo-Moorhead,

Grand Forks-East Grand Forks, Mankato, and Willmar, among others, all have contended with similar development-related problems. Even metropolitan areas that are growing only slowly or not at all still are confronted with the problems brought on by the dispersal of population and commercial-industrial activity out of older core areas into new, low-density suburban settings.

City officials, developers, and citizens increasingly use the term "urban sprawl" to describe the continuing low-density residential, commercial, and industrial development occurring on the edges of metropolitan regions throughout the United States. Sprawl is accompanied by a chronic shortage of investment dollars for the central cities even as their suburban counterparts strive to cope financially and administratively with relentless growth. Fingers often point to problems of crime and poverty as causes of investors turning away from the central city. These factors may contribute to but do not necessarily cause disinvestment; instead they are indicators that disinvestment has occurred, and once the cycle of abandonment and disinvestment begins, it often spirals in a downward trend, making it difficult to distinguish cause and effect.[1]

That new real estate development occurs predominantly on the suburban edges rather than in and around the aging cores of our urban areas may be unintentional, but it is not accidental. Laws, ordinances, and regulatory frameworks wield considerable influence on commercial and industrial investment decisions and on the residential development and purchasing choices of households. This report documents the major mechanisms that produce these consequences. The main focus in on the Twin Cities area, but much of the presentation applies to Minnesota's other major urban centers.

B. Purpose

As the Twin Cities area and Minnesota's other major metropolitan areas continue to expand, the demand for transportation within them will grow. A central issue in the long-range planning of transportation facilities for Minnesota is how to coordinate land-use planning throughout the state with statewide transportation planning, especially within and in the vicinity of the state's major urban areas. The Minnesota Statewide Transportation Plan is aimed at ensuring a well-managed transportation system into the 21st century that will:

- sustain economic development,
- connect rural and urban areas,
- encourage wise use of resources,

[1] For further discussion of this subject see: Adams, J. S. and Barbara J. VanDrasek. 1995. *The Path of Urban Decline*. Minneapolis, MN: Center for Urban and Regional Affairs, University of Minnesota.

- take advantage of the latest technologies, and
- meet the mobility and accessibility needs of Minnesotans and businesses. [1]

Minnesota historically has been progressive in its approach to state land use and transportation planning, but recent federal regulations require states to submit their state transportation plans for federal certification. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) expands the involvement of state transportation departments and municipal planning organizations to include public interest groups and private-sector companies. ISTEA's objective is to achieve a "comprehensive examination of transportation needs and the effect of those needs on a number of societal, economic, energy, and environmental factors" [2, p. 26].

ISTEA focuses on a state plan, but it recognizes emphatically that many of a state's most important transportation requirements start at the local level. Transportation needs not only affect social, economic, energy, and environmental factors, but they also are affected by these factors, particularly by economic expansion and population growth. The way in which a community plans for and accommodates its growing businesses and population determines how the land is used, the intensity of use, and the associated transportation requirements.

Local communities–the minor civil divisions within metropolitan regions–do not exist as islands unto themselves. Their actions affect other communities and the region as a whole. In the Twin Cities area, for example, commercial development in Edina may divert potential development from Richfield. Industrial development in Chaska may attract potential development away from Minneapolis. If a company chooses to locate in one place, it has chosen not to go somewhere else. Underlying each of these location decisions is an expectation that transportation facilities will be available.

II. INHIBITING REDEVELOPMENT IN THE CORE

Households are attracted to suburban housing and lifestyles for many reasons. American tastes generally prefer the new over the old, an automobile-oriented lifestyle over reliance on walking or transit, and embody an awareness that newer housing can be a better financial deal compared with older options, because of lower maintenance and higher appreciation. For those whose primary sources of public information come from the media rather than from personal experience, the image of the city may be clouded or distinctly negative. For those with school-age children, newer suburban schools may appear to offer superior opportunities at a lower tax cost than central city

options. The facts may differ from what people think they know, but households base decisions upon what they feel they know and want, objective facts to the contrary notwithstanding.[1]

Businesses generally respond to their bottom lines. Retail goods and services follow the consumer dollar. As purchasing power relocates to the suburbs, businesses and non-profit service institutions follow. When industry needs expansion space and cannot find it cheaply and conveniently at or near its old locations, it may move to greenfield sites on the suburban edge, often encouraged by financial inducements from the cities that see it as a new source of property tax revenue.

A. The Lure of the Suburbs and the Poor Image of the Central City

One of the first considerations that people have when they locate a business or buy a home is "is it a safe and nice place to be?" Many people living in metropolitan areas answer "no" when they consider the central city and "yes" when they consider the suburbs. The image that many people have about the city and the suburbs is rooted in the history of urban development in America, and is reinforced daily by media reports about deteriorating conditions in the inner city.

1. Crime and Education

Central cities have an image problem. Many people prefer to buy homes outside central cities because suburban communities are thought to be safer and to offer better schools for their children. Crime occurs everywhere, but people often perceive that the worst crime is relegated to the city, and their perception has been reinforced by the media's display of violent crime in the central cities. Newspapers and evening news broadcasts sensationalize crime stories that occur in the central city.

People also consider the quality of schools when they decide where to live. Although students in some Minneapolis schools outperform those in the suburbs [3, p. 1], other schools report an overwhelming number of students who do poorly. Given a choice, parents generally prefer to send their children to schools where other children perform well, and this preference affects their neighborhood choice.

Poor student performance long has been associated with poverty, and poverty long has been associated with other negative characteristics. A recent newspaper article in the Star Tribune

[1] For further reading on this topic, see: Downs, Anthony. 1973. *Opening Up the Suburbs: an urban strategy for America*. New Haven, CN: Yale University Press; and Clark, W. A. V., ed. 1982. *Modelling Housing Market Search*. New York: St. Martin's Press.

illustrates this association well because the author grouped many characteristics that analysts and commentators often choose to comment on as an associated group of variables. Mark Brunswick reported figures for the number of families and the number of children in poverty, child abuse, education, health, housing values and ownership rates, public safety, and the environment [4]. Because each statistic shows that the inner city has comparatively worse conditions than the suburban areas, it is easy to link all of these conditions together and assume that one begets the others.

For some people, the idea of "undesirable" households means households of different races or ethnicities. Perceptions of race and ethnicity and poverty often are intertwined, and zoning regulations that exclude affordable housing can result in racial and ethnic exclusion as well. Brunswick's article reflects these perceptions. He stated that:

> "[t]he disparity [between the central city and the suburbs regarding poverty, child abuse, education, health, housing values and ownership rates, public safety, and the environment] parallels changes in the racial composition of the county [Hennepin], particularly the city [Minneapolis]. From 1970 to 1990, the county's black population tripled, the American Indian population more than doubled and the Asian/Pacific Islander population grew 455 percent" [4, p. 1].

2. Societal Attitudes Toward Class, Race, and Ethnicity

Segregated neighborhoods were well-established by 1940 and were reinforced throughout the post-World War II era. Real estate agents steered white and black clients to "appropriate" neighborhoods. Banks and savings institutions discriminated against black applicants trying obtain loans to purchase homes. Even the federal Home Owners' Loan Corporation (HOLC) worked against African-American households.

The HOLC was designed to encourage reinvestment in urban housing to assist households with the refinancing of their mortgage loans and by providing loans to households that previously had defaulted and lost their property. The HOLC developed a four-category system for urban housing that undervalued older housing in the city's core where residents were racially or ethnically mixed. These neighborhoods usually were placed in category two or three while black neighborhoods were placed in category four and thus "redlined." Moreover banks, the Veterans Administration (VA), the Federal Housing Administration (FHA), and even independent property appraisers adopted this system of categorization "thereby institutionalizing and disseminating the practice of redlining" [5, p. 52].

Perhaps attitudes regarding race are changing. A survey by the University of Minnesota's Institute on Race and Poverty in its report, "Examining the Relationship Between Housing, Education and Persistent Segregation," found that:

> "50 percent of white respondents said they'd like to live in a neighborhood that was half white and half people of color. Nearly 75 percent of black respondents said the same. On the school integration question, 55 percent of whites said they wanted to send their children to schools that were half people of color and half white. Eighty-two percent of blacks said they wanted the same mix" [6, p. 2].

The proof of change, however, lies not in what people say, but in their actions, and people continue to disinvest in the city.

B. Recent Commercial and Industrial Location Patterns

> "Land in commercial and industrial use in the seven-county Twin Cities metropolitan area increased from 59,550 acres to 73,920 acres between 1980 and 1990. Over 9,000 of the 14,000+ acres were absorbed in the developing communities; 3,700 acres in the Rural Areas and only 100 acres added in the two core cities" [7, p. 1].

This enormous difference between the volume of commercial and industrial (C&I) uses locating in the central cities and surrounding communities reflects the interplay of several forces throughout the metropolitan area. A University of Minnesota study provided an analysis of factors in the core cities that have helped to pushed C&I uses out of the city and the factors in the suburbs that simultaneously have pulled C&I uses out to the edge [7, pp. 2-3].

1. Major Factors in Location Decisions

The CURA study analyzed the conditions that drive commercial and industrial location decisions. The authors grouped them into the following seven categories:

1) transportation, communication, and energy technologies,
2) environmental regulations and financial liability of owner of contaminated sites,
3) lending institution perception of risk,
4) public incentives and subsidies,
5) amenity and 'quality of environment',
6) land availability and local zoning, and
7) local and state taxes.

First, accessibility to transportation routes and energy sources historically has wielded major influence on the location of industries, especially heavy industry handling major quantities of raw materials and finished products. Water-generated power and water-borne shipping opportunities made water access important 100 years ago. Today, it is more important to be located near highways and other major road arteries.

Second, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Clean Air Act, the Clean Water Act, and other environmental regulations increase the cost of commercial and industrial operations by internalizing into producer costs the costs that formerly were passed on to the public at large in the form of environmental damage, and by assigning the costs of past environmental impacts to present site owners. CERCLA regulations particularly affect older commercial and industrial brownfield sites in central cities due to their history of industrial use and prior contamination. The liability stipulations contained in CERCLA account to a large degree for the reluctance of lenders to assume the risks attached to brownfield sites. CERCLA holds almost everyone even remotely involved with a site liable for its clean-up costs, including current and past owners and operators and those who lent money to the owners and operators. Lenders now require extensive and often costly environmental assessments prior to lending, and in some cases will lend the money but refuse any technical or managerial assistance.

Third, it can be difficult to obtain financing in some areas, if they are perceived by lenders as being economically downward-trending

Fourth, tax increment finance (TIF) districts and tax-exempt bonding are used both by central city governments and by developing ring communities to assist business development. The central cities use their TIF district revenue primarily for site preparation (including demolition and contamination clean-up), while the outer suburbs use their revenues to “write down” land costs, effectively subsidizing developer costs for greenfield land.

Fifth, “edge communities” offer amenities that central cities cannot offer. The edge has greater amounts of previously unused land in larger parcels, lower built densities, more convenient access to highway nodes, and the promise of less crime. The OPUS and Carlson corporations are built on campus-like settings that would not have been feasible in the central cities. Chaska increasingly woos smaller companies to its community by accommodating industrial parks in landscaped settings.

Sixth, while central cities and developing areas have similarly restrictive zoning regulations, rural areas at the outermost edge have generally lax regulations. A CURA report entitled Vacant Lands in Minneapolis and St. Paul: An Examination of the Urban Land Market in the Central City, for example, documented the lack of vacant land in Minneapolis and St. Paul.

Minneapolis had 1,804 acres of vacant land in the early 1990s, of which 1,313 acres were publicly held and 491 acres were privately held [8, p. 6]. Public land held by federal and state governments is permanently removed from development, and much municipally-held land is designated as parks. Parcels held by the Minneapolis Community Development Agency is the land primarily available for development (Table 3.1). Privately-held land is either tax-exempt land held by railroad companies or used as "interim-use" surface parking.

Similarly, the federal, state, and much of the municipal parkland in St. Paul is unavailable for development. Available land is held by the St. Paul Port Authority and the HRA (Table 3.1). Parcel development in both cities may be inhibited by contaminants, a lack of suitable site amenities, or locational drawbacks.

Finally, the report identified state and local taxes as a factor affecting the location of commercial and industrial uses. While the average tax rate for the fully-developed area, the developing area, and the rural edge varied only slightly (121 percent, 120 percent, and 116 percent, respectively) the minimum and maximum tax rates varied significantly among jurisdictions. The lowest tax rate was 83 percent (a jurisdiction in the rural area) while the highest was 159 percent (a jurisdiction in the fully-developed area).

2. Translating Factors into Barriers to Central City Redevelopment

Using the seven factors that determine the location of C&I uses, the authors of the CURA report named 12 specific barriers to C&I business location in the central cities and the fully-developed area immediately surrounding the central cities. They include the following:

1) lack of available land;
2) environmental regulations;
3) costs for reclamation of contaminated sites, coupled with avoidance by lending institutions because of ongoing liability to the owner (and foreclosure by the lender);
4) preference for high-amenity sites along the edge;
5) parking availability and its cost in the central city versus perceptions of "free parking" in the suburban communities;

6) obsolete buildings in the core (construction standards give buildings a longer physical life span than cost-effective functional life span);

7) reduced need for physical proximity among the commercial and industrial firms;

8) linkage of location decisions with where proprietors and decision-makers live (primarily in the higher-income suburban communities);

9) high levels of uncertainty in getting approvals for a project from adjacent property owners (development projects often change the status quo for existing residents);

10) availability of public subsidies for "greenfield" sites which can be used to write down land costs;

11) increasing scale of convenience retail activity, so far fewer grocery, hardware, drug stores, and specialty stores are needed to serve trade areas of a given size; and

12) political fragmentation and lack of a regional planning and management influence for guiding the market, except through the regional infrastructure improvements.

Table 3.1. Publicly-held Land in St. Paul and Minneapolis (acres), 1991

St. Paul			Minneapolis	
Federal	12		Federal	448
State	357		State	41
Ramsey County	296		Hennepin County	19
Metro agencies	339		City of Minneapolis	550
City of St. Paul	1,724		MCDA	177
St. Paul Port Authority	643		Minneapolis Schools	27
HRA of St. Paul	40		University of Minnesota	22
Other	60		Other	29
Public Land Total	**3,471**		**Public Land Total**	**1,313**

Source: Lukermann et al., 1991, pp. 6, 16.

C. Pushing Out Residential, Commercial, and Industrial Development

Rules and regulations that inhibit new residential development, replacement of existing housing, or rehabilitation of existing housing in the central cities and older suburbs differ from those that apply to commercial and industrial development and redevelopment. Many of the effects are similar, though, in the way that they push potential development out of the central city to the suburban fringe.

1. Parking Regulations

Parking regulations have both positive and negatives effects on development in the central city. In downtown Minneapolis, for example, strict requirements linking land development and the provision of parking have the intended effect of steering and confining development to the downtown's core area. In the innermost core of downtown, a building may have as much as 800,000 gross square feet of floor area before the developer must provide parking. The next zone allows 400,000 square feet of space before parking provision is required. Outside the core, however, a developer must provide one space for every 300 square feet for the first 400,000 square feet.

The expense of providing parking makes some locations more inviting than others. This "guidance" results in a compact downtown with blocks linked by heavily-used skyways that facilitate abundant office and retail interchange, but it also results in a shortage of parking at the prevailing parking rates, which are established at levels below market prices to encourage access to the downtown. One result is that paving a vacant lot just outside the core is often more lucrative than fixing older buildings like warehouses, apartment buildings, or hotels.

2. Vacant Land

Parking lots provide such a steady return that, according to an analysis of vacant land in the Twin Cities done in the early 1990s, 75 percent of the market value of privately-held vacant land in downtown Minneapolis was paved as "interim-use" parking lots [8, p. 43]. While vacant land can be viewed as a city reserve used to entice business, it also indicates a market inefficiency [8, p. 1]. The authors contend that the abundance of surface parking on privately-held, commercially-zoned vacant land in both Minneapolis and St. Paul is one of two major market inefficiencies that could be rectified by changes in current municipal regulations.

Another market inefficiency results from exempting railroad properties from property taxes and instead taxing them on gross earnings. This tax-exempt land accounts for 75 percent of the acreage of privately-held, industrial vacant land in Minneapolis [8, p. 12]. Its tax-free status provides no direct incentive for companies to develop or divest themselves of their surplus land. The major indirect incentive is opportunity cost, that is, the earnings foregone from sales of the land not carried out or from potential developed uses of the land that are not undertaken.

3. Tax Forfeiture

When obsolete land uses lose market value, owners often milk their parcels for whatever revenues they can yield, then walk away from the property when current and expected costs exceed current and expected revenues. In the final years of its life, the property–residential, commercial, industrial–may receive little or no maintenance. Roofs, plumbing, heating systems, windows, walkways and other elements of the property are allowed to run down, and frequently real estate taxes go unpaid.

As the property slowly transforms from an economic asset to a public nuisance, and as evidence of neglect slowly diminishes the attractiveness of adjacent properties, the city's opportunity to acquire the property, clear it, and prepare it for a new use is limited. Years may pass before the property is finally abandoned. By that time, nearby sites may be degraded, lessening the attractiveness of the abandoned site, which in most cases is smaller than prospective developers prefer. Nevertheless, once the property owner neglects to pay property taxes, the state and county can act to put the property back on the tax rolls and make it available for redevelopment within two years.

When property owners in Hennepin County, for example, fail to pay their real estate taxes, their land becomes the responsibility of the county. They have two dates on which to pay taxes–15 May and 15 October. If taxes are unpaid on these two dates in 1997, the property is declared delinquent in 1998 and "taken to judgment." In March 1998, county officials must publish a list of the properties twice in a legally-defined source (currently Finance and Commerce), ask the sheriff to serve notice to the property owner, and send a "return receipt requested" notification to the owner. In addition, an attorney for the county seeks out all legally-interested parties such as those who have liens against the property and notifies them as well.

In May 1998 the state becomes the official property owner, and the parcel and buildings on it are no longer available for redemption by the owner. The County Appraiser inspects, classifies, and appraises the property. A list of state-acquired properties is sent to the municipalities within Hennepin County. Various Housing and Redevelopment Authorities (HRAs) may acquire the land from Hennepin County for redevelopment purposes. The Minneapolis Community Development Authority (MCDA), for example, can receive the land free if it is located in a "targeted area," and by this means acquires between 75 and 100 parcels each year [interview with Jeffrey Strand, Program Manager, Taxpayer Services Division, Hennepin County; Minneapolis, 9/10/97]. The MCDA must sell the land to a "productive, profitable entity" and thus non-profit

use is not allowed [interview with Nicki Neuman, attorney, MCDA; Minneapolis, 9/9/97]. The length of time from acquisition to sale varies according to the condition and location of the site, particularly if it is a suspected brownfield site.

If the property is "non-conservation" land and is not picked up by an HRA, it goes to public auction in fall 1998, with a minimum bid assigned. The county advertises the public auction in many sources. It notifies residents within 300 feet of the parcels, it places an advertisement in the community newspaper and the Star Tribune, and it posts the sites on the Hennepin County Web site (www.co.hennepin.mn.us). The public auction page lists the Property Identification (PID) number, the address of the parcel, and the appraised value. Interested parties can seek more information on a parcel using the Web site's Auction page and the Property Information Search page. A user can search the latter page by PID number, property address, partial property address, lot/block/addition name, or partial addition name. At the time of purchase, the county offers various terms of payment for different sale amounts, but the state legislature sets the interest rate for the unpaid balance. The interest rate varies from 10 to 14 percent, but it is always slightly higher than the private interest rate [Strand interview, 1997].

Land parcels and their buildings may be purchased below market value, but extra charges and hidden problems can quickly increase the costs. The Hennepin County Taxpayer Services Division Web page warns prospective buyers of these charges and the potential problems they may encounter. The county asseses a three percent Assurance Fee for all parcels sold above the minimum bid price and $30 for all parties entering into a contract for installment payments. The final payment brings with it a State Deed fee, Deed Filing fee, and State Deed Tax fee. Cities have the authority to reassess special assessments that previously had been "cancelled." While the county will use a percentage of the purchase price toward "cancelled" special assessments, the balance becomes the new owner's responsibility, as well as any new special assessments and local improvements that have not yet been assessed. Furthermore, although the county cancels most mortgages and liens on properties at the time of forfeiture, federal and state tax liens are not cancelled. Finally, because tax forfeiture interrupts the status of the title, the purchaser may have to pay an attorney to make the title "marketable" again.

Redevelopment becomes not only more costly, but it can also become more problematic. The county sells the parcels "as is" and makes no guarantees that vacant lots are buildable, nor that built lots conform to codes. The buyer must contact the respective city regarding zoning ordinances, verify property lines and boundaries, and determine if their land is subject to restrictive covenants such as those for wetlands or marginal lands. If the land is environmentally

contaminated, clean-up becomes the owner's responsibility. If a structure is known to be substandard at the time of purchase, the buyer must file a certificate of code compliance within one year of purchase with the manager of the Hennepin County Taxpayer Services Division. The buyer, however, "shall not during the term of any contract, cause any material to be delivered or labor to be performed without written notice to seller and ... waiver obtained" [Hennepin County Web site]. Land and buildings acquired through tax forfeiture and public auction initially may be inexpensive, but they carry extra costs and regulatory hoops. These do not bar redevelopment but certainly slow down the process, and deter developers who find it easier to use greenfields without environmental contamination, rezoning mismatches, building code violations, and buyer/seller communication delays.

4. Brownfield Site Redevelopment

Industrial development in the Twin Cities has left numerous brownfield sites. Brownfields are parcels of land that contain low- and medium-levels of commercial or industrial pollutants. The term "brownfield" usually refers to urban, fully-developed land, in contrast to "greenfield" which generally refers to suburban tracts of land that are uncontaminated. St. Paul and Minneapolis have considerable brownfield acreage: 1,000 acres at 17 sites in St. Paul, and 1,800 acres on various industrial sites in Minneapolis [9].

The polluted condition of brownfields subjects them to numerous regulations that inhibit their reuse. The most prohibitive of these regulations is the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. Environmental clean-up costs add a considerable amount to development costs and can be a significant factor in development location decisions.

The Northeast-Midwest Institute documented the cost differential between similar projects on a brownfield site and on a greenfield site in Cleveland [10, pp. 8-9]. The Cleveland study compared the costs of an ongoing greenfield project with brownfield figures reflecting a composite of numerous projects (Table 3.2). The construction costs are the same for brownfield and greenfield sites. The land at the greenfield site actually cost $700,000 more than the parcel at the brownfield site, but the brownfield site ultimately cost more to develop due to the legal, consulting, and remediation costs associated with environmental clean-up.

The MCDA compiles data comparing various site costs for environmental remediation of brownfields in Minneapolis (Table 3.3). Some projects have higher acquisition and site preparation

Table 3.2. Development Project Compari
Brownfield vs. Greenfield Sites

Description	Brownfield	Greenfield
Site	20 acres	20 acres
Purchase	25,000 per acre $500,000	60,000 per acre $1,200,000
Legal	$50,000+	$20,000 - $30,000
Consulting	$50,000 - $300,000	$15,000
Remediation	$100,000 - $5,000,000	- 0 -
Construction	$25 per foot - shell $20 per foot - office	$25 per foot - shell $20 per foot - office
Density	30%	30%
Square Feet	261,360	261,360
Construction Costs (assumes 10% office)	$7,056,720	$7,056,720
Land Cost	$500,000	$1,200,000
Total Hard Costs	$7,556,720	$8,256,720
Soft Costs*	$3,677,359	$1,362,359
Total Project	**$11,234,079**	**$9,619,079**

*Assumed costs: remediation: $2,000,000; consulting: $300,000; legal: $50,00
Source: Bartsch, p. 9.

costs than environmental clean-up costs, such as the project at the Seward Place site in the Seward neighborhood in South Minneapolis, but the reverse is more common. The environmental clean-up costs at the Microtron/Wilensky site along Washington Avenue in North Minneapolis, for example, exceeded the acquisition and site preparation costs by more than $5 per square foot. The difference at the Block 43 site, also along Washington Avenue in North Minneapolis, is even more drastic–nearly $10 per square foot.

Some projects contend with more than just financial barriers. The site of the former Warden Oil facility in the Harrison neighborhood in North Minneapolis provides an example of a brownfield site that is not only prohibitively expensive to clean up but also is affected by other situational characteristics. When the site reverted to the county in 1993 for non-payment of property taxes, the estimated market value was $150,000 per acre while the clean-up costs exceeded $23 per

Table 3.3. Brownfield Redevelopment Cost Comparison

	Seward Place	Microtron/ Wilensky Site	TIRO/Deep Rock Site	Block 43
Parcel Size	40 acres	3.7 acres	2.9 acres	2.4 acres
Acquisition and Site Prep Costs	$5.73/sq. ft	$2.05/sq. ft.	Owned by TIRO	$1.39/sq. ft.
Environmental Clean-up Costs	$1.72/sq. ft.	$7.45/sq. ft.	$4.02/sq. ft.	$11.23/sq. ft.

Source: Bjelland, 1997.

square foot and totaled over $1,000,000 [9]. Should funds be found to clean up the site, the site still remains on a floodplain surrounded by impoverished neighborhoods, abandoned housing, and additional Superfund sites.

Environmental remediation costs are not the only barriers to brownfield development. Under CERCLA, clean-up liability for a parcel of land determined to be contaminated extends from the current owners and users to past owners and users, as well as to lenders. In fact, lender liability is proving to be one of the crucial factors of this regulation that inhibits economic development. Banks have become more cautious and restrictive in their lending policies due to this liability. They prefer to loan money to larger companies with the resources to conduct full environmental assessments prior to purchasing the land and which will be able to absorb the cost of brownfield liability should it occur. Small businesses thus find it difficult to obtain loans if the lenders perceive any threat of CERCLA liability.

CERCLA exempts liability on the part of those who have no role in managing or otherwise controlling the use of the land. In some cases, banks lend money using a “hands-off” loan agreement so that they have nothing to do with the business’ management. This practice has had a particularly negative impact on smaller businesses that need technical assistance. Furthermore,

lending practices have resulted in “brownlining,” a situation in which lending institutions refuse to lend money for particular business operations such as dry cleaning establishments and gas stations.

5. Building Codes

Building codes contribute to the cost of rehabilitating residential, commercial, and industrial buildings in the central city. The cost lies not in contending with stricter codes but rather in retrofitting old buildings to comply with new standards. Building codes are desirable and necessary for health and safety, but there is no dispute that constructing a new building that meets codes is cheaper than retrofitting an old building to meet current codes [interview with Ted Griggs, independent contractor; Minneapolis, 9/1/97]. The result is one more addition to the list of factors that make development on the edge more attractive than redevelopment in the core.

When a building owner modifies a structure, the entire building must be upgraded to meet current standards. Old buildings in the central city and in parts of some older suburbs usually contain some combination of outdated wiring, plumbing, or hazardous materials. First, outdated technologies need to be updated to meet current standards, and while the new technology might in itself be relatively inexpensive, the cost escalates with the need to go behind walls, under floors, and into ceilings.

Costs of renovations are further affected by upgrade requirements for disability accessibility. In the case of commercial buildings, the structure must comply with the Americans with Disabilities Act, requiring such features as wheelchair-accessible restrooms. A restaurant owner may need to renovate a kitchen, but doing so would require the renovation of the restroom(s) as well, and resources may not be available for both.

The Fair Housing Act (1990) similarly affects condominium and apartment developers. Residential dwellings with four or more units occupied for the first time after March 13, 1991 are required to provide “wheelchair-accessible entryways, accessible public and common-use areas, extra-wide doorways, reinforced bathroom walls to accommodate grab bars and kitchens usable by handicapped people.” Structures affected by this act include “attached, single-family townhouses separated by fire walls ... garden apartments, condominiums and multifamily rental projects” [11, p. 3]. The Justice Department and the Department of Housing and Urban Development have found extensive noncompliance with the law because the requirements have not been written explicitly into local building codes, but this situation will soon change as legal action takes effect. The costs of building in the city therefore will increase because condominium

and apartment developers operate largely, though certainly not exclusively, in the central city where zoning districts allow higher residential densities.

Second, some materials formerly used in buildings now are considered hazardous and must be repaired or removed at some point during the materials' life cycles. For example, asbestos, an insulating material used in the 1970s, is not a health hazard in buildings or homes as long as the material covering or containing the asbestos remains in good condition. As soon as the material degrades or its structure is compromised, the fibers become hazardous. Asbestos exists in insulation material in walls and around pipes as well as in linoleum flooring and even in the glue used to adhere linoleum and other materials. Owners cannot undertake repair or removal themselves and contractors are expensive.

Property transaction regulations require that the presence of asbestos be disclosed at the time of sale. Local regulations and mortgage companies may, but do not always, stipulate that the asbestos be removed at this time as well.

The presence of asbestos in homes and buildings constructed in the 1970s shows that old buildings, such as those with lead-based paint, are not the only ones that hinder redevelopment. Housing and other structures built in different eras contain different technologies and materials, and each of these presents a different requirement for rectifying the problem. Data that quantifies the costs for renovations in housing and structures of varying ages would be useful in policy discussions and decisions that strive to lengthen the benefits of scarce resources.

6. Historic Preservation

Before and sometimes despite historic preservation laws, urban development efforts razed many fine old buildings in the cities throughout the U.S. Historic designations for buildings and districts in the cities attempt to prevent or at least slow the demolition of structures that reflect the architectural and cultural heritage in our urban history. Good intentions, however, can impede practical decisions regarding renovations and development.

One of the best-known examples of historic preservation problems in the Twin Cities is the Minnesota Army National Guard Armory, which occupies an entire city block in downtown Minneapolis. After the National Guard vacated the Armory, the city tried and failed to obtain private financing to turn the building into a film, video, and sound studio. Hennepin County then acquired the building with the intention of leveling it and building a new jail on the site. After the Minnesota Supreme Court ruled that the Armory should be accorded protection under historic

preservation rules, the building remained vacant, slowly deteriorating and becoming a burden rather than a source for revenue or new public use.

Historic preservation rules do not always stymie development efforts, but they do affect commercial buildings more than they affect housing. Income-producing commercial buildings are subject to federal penalties if their owners do not comply with federal historic preservation guidelines. The only housing owners who also are penalized by the federal government are those "affected by federal programs such as grant funds" [12, p. 4H]. Virtually the only recourse the National Register of Historic Places can take against owners who fail to conform to historic regulations is to remove the house from the Register.

Local historic preservation commissions possess somewhat more power. Commissions in Minneapolis and St. Paul, for example, may withhold building permits if the proposed change fails to comply with prescribed rules for modifying the structure. If the change does not require a building permit, the only recourse is to remove the historic designation. In some cases, owners choose economical renovations because there are few public grants and few low-interest loan programs available to them.

7. Development Impact Fees

Developers and real estate brokers have reacted negatively to impact fees since cities began conditioning the granting of building permits on up-front fee payments for sewer and water service extensions and hookups, road and school construction, and fire and police protection. Cities, particularly suburban communities, try to impose impact fees both as a revenue measure and as a form of land use control. They must contend with the greater infrastructure requirements and service demands that accompany economic and population growth while trying to keep tax rates on existing properties down. They also assess impact fees to increase the cost of development, to direct new development into areas most efficiently served by service extensions, and to slow the rate of growth and service expansion.

Cities justify the new fees by asserting that new infrastructure should be paid for by developers whose actions bring about its need, and by the homeowners who receive the new services. Without impact fees, current residents would pay much of the additional infrastructure and service costs through general taxes and higher utility bills. Impact fees thus become a question of equity as well as land use control.

Although the use of impact fees has been upheld in Florida, California, and New Jersey courts [13, pp. 614-622], the Minnesota Supreme Court in 1997 declared Eagan's use of a road connection fee illegal [14, p. 3]. The Court did not state that the impact fees themselves were illegal, but rather that the state legislature had not conferred the power to levy impact fees to the municipal government. The decision affects not only Eagan, but also Apple Valley, Savage, and Prior Lake, which charge similar fees. Eagan officials stated that they would lobby the legislature to confer the authority to assess fees, but the legislature has killed previous legislative attempts to implement impact fees, one in particular for school impact fees by Senator Leonard Price (DFL-Woodbury). The Metropolitan Council's report, Paying for New Growth, and the Citizens League's It Takes a Region to Build Livable Neighborhoods support impact fees as a legitimate tool for contending with new growth [15] [16].

III. PROMOTING GROWTH AND SPRAWL ON THE EDGE

The land use characteristic that defines urban sprawl is low-density development in suburban areas outside of central cities. Low-density development often occurs because zoning regulations encourage or actively promote it, not necessarily because the market needs such development or because developers determine that it is the best use of a property. Residential, commercial, and industrial development in fully-developed areas also are subjected to municipal zoning requirements, but development in central cities and even in inner-ring suburbs feature development densities that are higher than farther out. The effect of zoning regulations in suburban communities is particularly noticeable in the large-lot residential development that is characteristic of most American suburbs.

A. The American Dream Home and "Family" Neighborhoods

> "The postwar era was a boom time for suburbia. America's birthrate rose, and millions of young families with children abandoned the crowded central cities and invested in suburban homes with yards large enough to accommodate a sandbox and swing set" [13, p. 98].

Faced with a set of equally affordable choices, the large majority of American households report preferences for newer, low-density housing in middle-class suburbs over older, higher-density housing in mixed social-class neighborhoods closer to the metropolitan center. They prefer single-unit structures over multi-unit structures, and they prefer automobile-oriented daily activity patterns over a reliance on public transit and walking.

On the other hand, these are the contrasting choices that have been presented to most households since World War II. Developers have produced what their experience showed them that people wanted, then people bought what was made available to them. Financial institutions, tax laws, mortgage insurers, mortgage guarantee programs, and local governments all endorsed these choices, so the geography of America's suburbs evolved in the post-war period in response to these interlocked forces that dictated and perpetuated distinctive patterns of housing supply and housing demand.

One characteristic of this pattern of housing supply has been the separation of single-family and multi-family housing through zoning regulations. Accompanying the distinction in single-family and multi-family structures came the distinction between a family household and a non-family household. Prior to 1960, community ordinances generally defined a family as one or more people, though often not more than 5 adults, occupying a single dwelling and using common cooking facilities. Such ordinances effectively barred fraternities and elder-care centers, but state courts looked more favorably upon "group homes for juvenile offenders or mentally retarded adults and residential drug treatment centers" [13, p. 260].

The 1960s counter-culture era brought reactionary changes in family ordinances. Numerous communities have defined a "family" as household members related only by blood, marriage, or adoption and have limited unrelated persons to two or four people. The U.S. Supreme Court case *Village of Belle Terre v. Boraas* (1974) upheld an ordinance limiting unrelated persons to two, but numerous state Supreme Court cases have ignored that ruling and declared a variety of family ordinances unconstitutional [13, pp. 260-279]. Unless an ordinance is challenged, however, it can exclude almost all types of group living arrangements. Suburban communities have had yet another opportunity to promote homogeneity in behavior and outlook among its residents and to exclude intentionally those households they deem unconventional and therefore undesirable.

Another feature of suburban residential zoning tradition has been the exclusion from residential areas of all non-residential activity with the exception of schools and places of worship. Housing was allocated to one set of locations, commercial activity to another, institutional uses to a third, recreational areas and open space to a fourth, and industrial areas to still other locations. In the low-density communities that resulted, no two types of areas could be visited except by way of an automobile trip. Dispersal and segregation of various land uses meant longer trips and an expanded number of them. But what may be worse is that these arrangements have taught three generations of people reared in post-war suburbia that such arrangements are normal, natural, desirable–and perhaps inevitable.

B. Exclusionary Zoning

The regulatory framework that encourages low-density development and contributes to urban sprawl on the metropolitan edge also inhibits the development of affordable housing. Limitations in the size of the inventory of modest-priced owner-occupied and rental housing in suburban communities thus constrains geographical mobility for many low-income households. Because members of minority groups are disproportionately represented among lower-income groups, the act of separating urban residential land parcels into higher-priced single-family and lower-priced multi-family zones has segregated households by household composition and income as well as by race and ethnicity.

1. Urban Sprawl and Affordable Housing

Barbara Lukermann and Michael Kane's study, Land Use Practices: Exclusionary Zoning, *de Facto* or *de Jure*? An Examination of the Practices of Ten Suburban Communities in the Twin Cities Metropolitan Area, identified a list of characteristics that influenced the provision of affordable housing [18]. This type of housing tends to be multi-family housing or smaller single-family homes on small lots. Many suburban communities actively discourage affordable-housing development through the use of exclusionary zoning regulations.

Lukermann and Kane concluded that there were two parts to the regulatory framework that influenced residential development: zoning regulations and local policy actions. Their study compiled information on the zoning regulations of ten suburban communities: Burnsville, Coon Rapids, Eden Prairie, Edina, Lakeville, Maple Grove, Minnetonka, Plymouth, Shakopee, and Woodbury, tabulating the terms of the following zoning ordinances:

- zoning of single-family districts with respect to: minimum lot size, minimum floor area, number of garage spaces, minimum lot width, undeveloped acres;
- zoning of multi-family districts with respect to: minimum lot size, maximum density, minimum floor area, number of garage spaces, planned urban development (PUD) ordinances, administrative barriers;
- administrative fees, including pre-plat fee, final plat fee, PUD fee, comprehensive plan amendment fee, conditional use permit fee, variance fee;
- sewer and water connection fees, including sanitary sewer trunk area charge per lot, sanitary sewer connection charge, Metropolitan Waste Control Commission (MWCC) sewer access charge (SAC) per unit, water main unit charge; and

• park dedication fees for single-family and multi-family housing.

Each local planning and zoning office sets its own standards for zoning regulations, resulting in development and settlement density variations across the metropolitan region. This variation prompts two lines of inquiry, one about the economic affordability of housing built and the other about the physical impact on land use and the amount of land that is consumed by new land development and construction. The former will be explored below in the "Case Examples" section while the latter will be discussed in the "Orderly Development, or Leapfrogging?" section.

Local policy action, the second aspect of Lukermann and Kane's regulatory framework, also was observed to influence the development of affordable housing, low-density development, and the conditions that lead to urban sprawl. Two types of local government action have had significant impact on these outcomes: down-zoning, and the (lack of) use of locally available resources. Down-zoning occurs when a planning office approves a request to rezone a parcel of land from a higher-density use to a lower-density use. The approval of down-zoning requests in the ten sample communities from 1985 to 1990 resulted in a loss of 532 acres of higher density land [18, p.25]. "Woodbury [was] the only city requesting a zoning change from 'office' to 'high density residential' to accommodate some low and moderate income housing in a 400-unit rental project" [18, p. 25].

Communities have combined down-zoning with a reluctance to use Community Development Block Grant (CDBG) money for low- and moderate-income housing. Maple Grove, for example, received $1.46 million in CDBG funds but it did not use any of it for assisted housing [18]. Other communities allocated money for senior housing or for helping first-time home buyers with moderate incomes.

2. Case Examples

The information on the ten sample suburban communities shows that extreme variation exists among communities in their zoning regulations for single-family home development (Table 3.4), multi-family housing (Table 3.5), subdivision and administrative fees (Tables 3.6 and 3.7), sewer and water fees (Tables 3.8 and 3.9), and park dedication fees (Table 3.10).[1]

Minnetonka has by far the highest land requirements for single-family and multi-family housing. Minimum lot size for single-family housing is 22,000 square feet, and architectural standards ban

[1] Lukermann and Kane compiled the information from 1977 and 1993; the author updated the information for 1997.

Table 3.4. Locally-Adopted Zoning Regulations for Single-Family Homes, Sample Twin Cities Area Suburban Communities, Selected Years, 1977-1997*

	Minimum Lot Size for Single-Family (in square feet)			Minimum Floor Area for Single Family (in square feet)			Number of Required Garage Spaces			Minimum Lot Width (in feet)		Acres Undeveloped Within Zoning District (as % of total in city)	
	1997	1993	1977	1997	1993	1977	1997	1993	1977	1997	1993	1997	1993
Metropolitan Council Advisory Standards		7,500	7,500		None	None		None	None				
Burnsville	10,000 R-1	10,000 R-1	11,000 R-1-C	1,100	1,100	1,100	Yes 2	Yes 2	Yes 2	80	80	58.59 -	589 3.41%
Coon Rapids	10,800 LDR-2	10,800 LDR-2	10,800 R-2	960	960	960	Yes 2	Yes 2	Yes 1	80	80	115 0.80%	149 1.02%
Eden Prairie	9,500 R1-9.5	9,500 R1-9.5	13,500 R1-13.5	None	None	None	Yes 1	No	Yes 1	70	70	751	751
Edina	9,000 R-1**	9,000 R-1**	9,000 R-1**	None	None	None	Yes 2	Yes 2	Yes 2	75	75	In-Fill Lots	In-Fill Lots
Lakeville	15,000 R-2	15,000 R-2	11,000 R-1-C	1,040/3BR 960/2BR	1,040/3BR 960/2BR	1,040	No*** 3	No*** 3	No	100	100	c. 45% + 4,000 acres outside MUSA	
Maple Grove	10,000 R-2****	10,000 R-2	10,000 R-2	Repealed	960	960	Yes 2	Yes 2	No	80 only R-2	80	8,000 Acres (+ 2,000)^	8,000 Acres outside MUSA
Minnetonka	22,000 R-1	22,000 R-1	18,000 R-1^^	None	None	None	No	No	No	80	80	In-Fill Lots	In-Fill Lots
Plymouth	7,000 RSF-4	15,000 R-1B	18,500 R-1^^^	None	None	None	No	No	No	65	110	n.a.	n.a.
Shakopee	^^^^	9,000 R-2	9,000 R-2	None	None	None	No	No	No	60	60	n.a.	n.a.
Woodbury	10,000 R-4	10,000 R-4	10,000 R-4	1,000	1,000	1,000	No	No	No	80	80	n.a.	n.a.

n.a. = not available
*Single-family minimum lot sizes noted above are the permitted lot sizes within the city's highest-density single-family district.
** The minimum lot area and lot width regulations in Edina apply only when the median lot area and lot width of the existing housing in the neighborhood is equal to or less than the minimum standards.
*** Lakeville requires that each single-family site plan provide space for a three-car garage regardless of whether the garage is constructed.
**** While the R-2 category is still approved by Maple Grove, few developers have submitted a plan under this category during the last four years.
The majority of approvals have gone to PUDs.
^ 2,000 acres also are now available in the Gravel Mining area project
^^ Under Minnetonka's 1977 ordinance, a subdivision of 20 or more acres was permitted to have lot sizes of 18,000 square feet.
^^^ Under Plymouth's 1977 R-1 Residential Subdivision Unit Project ordinance, a minimum lot area of 11,000 square feet was possible.
^^^^ Shakopee operates on a density standard and not a minimum lot size. The SF district allows a maximum of 5 dwelling units/ acre.

Sources: Local planning and zoning offices; local zoning ordinances; data compiled by Minnesota Planning; and Residential Zoning Ordinances (Metropolitan Council, May 1977). Found in Lukermann and Kane, 1994, p. 18.

Table 3.5. Locally-Adopted Zoning Regulations for Multi-Family Homes, Sample Twin Cities Area Suburban Communities,
Selected Years, 1977-1997

	Minimum Lot Size for Two-Bedroom Unit (in square feet)			Maximum Density for Two-Bedroom Unit* (units per acre)			Minimum Floor Area for Two-Bedroom Unit (in square feet)			Number of Required Garage Spaces			Planned Unit Development Ordinance for Multi-Family			Administrative Barriers	
	1997	1993	1977	1997	1993	1977	1997	1993	1977	1997	1993	1977	1997	1993	1977	1997	1993
Metropolitan Council Advisory Standards					20	20		None	None		None	None					
Burnsville	3,000 R3-C	3,000 R3-C	2,500 R3-C	14.5	14.5	17.4	900	800	700	Yes 2	Yes 1	Yes 1	Yes	Yes	Yes	CUP	CUP
Coon Rapids	2,900* HDR	2,900* HDR	2,900 M	15	15	15	700	700	700		Yes 0.75	Yes 0.5		Yes**	Yes	Permitted	Permitted
Eden Prairie	2,500 RM-2.5	2,500 RM-2.5	2,500 RM-2.5	17.4	17.4	17.4	None	None	None	Yes 1	No	Yes 1	Yes	Yes	Yes	Permitted	Permitted
Edina	1,400 PRD-4	2,900 PRD-4	2,500 R-5	31	15.3	17.4	950	950	950	Yes 1.25	No	Yes 1.25	Yes***	Yes***	Yes	Permitted	Permitted
Lakeville	2,500 R-7	2,500 R-7	2,800 R-3C	17.4	17.4	15.5	800	800	None	No	No	No	Yes	Yes	Yes	PUD/CUP for multiple units on one lot	Permitted
Maple Grove	2,500 R-5	2,500 R-5	* R-5	17.4	17.4	15	950	950	900	Yes 1	Yes 1	No	Yes	Yes	Yes	Permitted	Permitted
Minnetonka	None R-5	None R-5	2,500 R-5	No Max. Density	No Max. Density	10	None	None	900	Yes 1	Yes 1	Yes 1	Yes	Yes	Yes	Rezoning	Rezoning
Plymouth	2,200 RMF-4	4,000 R-4	4,000 R-4	20	11	11	None	None	900	Yes 1	Yes 1	Yes 1	Yes	Yes****	Yes	Permitted	CUP
Shakopee	3,000 R-4	3,000 R-4	2,000 R-3B	14	14.5	21.8	None	720	720	None	None	None	Yes	Yes	Yes	Permitted	Permitted
Woodbury	3,600 R-4	3,600 R-4	3,100 R-4	10^	10^	10	850	850	850	Yes 1	Yes 1	No^^	No	No	No	CUP	CUP

n.a. = not available
* Relates to three-story apartment buildings.
** Coon Rapids' PUD ordinance permits a 25-percent density increase if lot amenities are provided.
*** Edina's PUD ordinance permits density bonuses for underground parking, lot size and coverage, distance from R-1 districts and freeways.
**** Plymouth provides density bonuses based on size of development, mix of residential uses, and provision of open space.
^ The maximum permitted density per acre is lower than the density that would result from employing the minimum area requirements to regulate density per acre (i.e., while Woodbury's minimum lot area requirement would allow a density of 12.1 (43,560/3,600), the zoning code permits a maximum of 10 units per acre).
^^ Woodbury's flexible zoning regulations are incorporated into zoning districts, and are based on provision of enclosed parking, open space, and landscape amenities.
NOTE: Administrative barriers note whether multi-family developments are permitted uses, require a Conditional Use Permit (CUP) within high-density zoning districts, or require a rezoning to accommodate multi-family housing developments.
Sources: Local planning and zoning offices; local zoning ordinances; data compiled by Minnesota Planning; and Residential Zoning Ordinances (Metropolitan Council, May 1977). Found in Lukermann and Kane, 1994, p. 19.

Table 3.6. Subdivision/Administrative Fees, Sample Twin Cities Area Suburban Communities, 1997

	Pre-Plat Fee	Final Plat Fee	Planned Unit Development Fee	PUD in lieu of Platting*	Comprehensive Plan Amendment Fee	Conditional Use Permit Fee	Variance Fee
Burnsville	$300 + $10 per lot (+$1000 escrow)	$150 + $10 per lot (+$500 escrow)	$900 (+$2,000 escrow)	No	$175	$600 (+$1000 escrow)	$175
Coon Rapids	$250	$125	$880 with concept $630 w/o concept	No	$315	$315	$125
Eden Prairie	$400 + $5 per lot	$40 per lot	$500 + $5 per lot	No	$550 + $5 per unit	Not Applicable	$275
Edina	$400 + $50 per lot	$0	$750	No	$400	$500	$150
Lakeville	$250 + $5 per lot $3,200 maximum	$150 + $5 per lot $500 maximum	$500	No	$500	$200 SF/ $300/MF	$200 SF/ $300 MF
Maple Grove	$250 + $5 per lot	$100	concept/development $200 +$5 per lot	Yes	$200	$200	$150
Minnetonka	$300 + $10 per lot over three lots	$150	$500	No	$500	commercial $350 residential $75	$75
Plymouth	$21 + $10 per lot (+ legal fees**)	$135	400***	No	$500	$200	$100
Shakopee	$330 +$6 per lot or $200 + $4 per lot	$150	$700 + $35 per acre	No	Minor-$500 Major-$1,000	$200	$85
Woodbury	$300 +$5 per lot	$200 + $5 per lot	$500	Yes	$300	$200	$75

* Some cities do not require that a developer pay both platting fees and Planned Unit Development fees. This column notes whether the city waives the platting fees for a new development if the developer pays the Planned Unit Development fee.
** Plymouth has a $285 minimum fee for preliminary plats.
*** The Plymouth PUD fee is the total fee for review of the PUD concept plan, preliminary plat, and final plan. The fee does not cover rezoning, conditional use fee, or the cost of erecting a sign for public notification.

Source: Local planning and zoning offices.

the use of certain materials, i.e., cheap ones. Minimum lot width for single-family homes is 80 feet, the highest requirement of the ten but equaled by four other communities. Multi-family housing has no density restrictions or lot requirements for two-bedroom units, but is permitted only by rezoning. Mixed-use development projects are allowed only along the Interstate Highway 394 corridor [18, p. 57].

Plymouth has the least restrictive requirements for single-family and multi-family housing. Minimum lot size for single-family housing is 7,000 square feet. Minimum lot width for single-family homes is 65 feet, the second-lowest requirement. Maximum density for two-bedroom units is 20 per acre, the highest density allowed among the 10 suburban communities. Multi-family housing is a permitted use.

Table 3.7. Subdivision/Administrative Fees, Sample Twin Cities Area Suburban Communities, 1993

	Pre-Plat Fee	Final Plat Fee	Planned Unit Development Fee	PUD in lieu of Platting*	Comprehensive Plan Amendment Fee	Conditional Use Permit Fee	Variance Fee
Burnsville	$200 plus $10 per lot	$50 plus $5 per lot	$750	No	$550	$550	$150
Coon Rapids	$225	$115	$820**	No	$285	$302	$134
Eden Prairie	$400 plus $5 per lot	$40 per lot	$500 plus $5 per lot	No	$400 plus $5 per lot	Not Applicable	$125
Edina	$350 plus $10 per lot	$0	$600	No	$400	$500	$100
Lakeville	$250 plus $5 per lot	$150 plus $5 per lot	$500	No	$500	$200 SF/ $300 MF	$200 SF/ $300 MF
Maple Grove	$250	$250	Pre=$250 plus $20 per acre Final=$200 plus $5 per lot	Yes	$100 plus $20 per acre	$200	$150
Minnetonka	$300 plus $10 per lot over three lots	$150	$500	No	$500	$350	$75
Plymouth	$21 plus $10 per lot (+ legal fees***)	$135	$670****	No	$390	$200	n.a.
Shakopee	$330 plus $6 per lot or $200 plus $4 per lot	$150	$700 plus $20 per acre	No	Minor-$500 Major-$1,000	$200	$85
Woodbury	$300 plus $5 per lot	$200 plus $5 per lot	$500	Yes	$300	$200	$75

n.a. = not available

* Some cities do not require that a developer pay both platting fees and Planned Unit Development fees. This column notes whether the city waives the platting fees for a new development if the developer pays the Planned Unit Development fee.

** The PUD fee in Coon Rapids includes the $235 concept plan review, $470 preliminary plan review, and a $115 final plat review.

*** Plymouth has a $285 minimum fee for preliminary plats.

**** The Plymouth PUD fee is the total fee for review of the PUD concept plan, preliminary plat, and final plan. The fee does not cover rezoning, conditional use fee, or the cost of erecting a sign for public notification ($165).

Sources: Local planning and zoning offices; Metropolitan Council Development Cost Comparative Analysis Draft Summary; 1991 Municipal License and Permit Survey. See Lukermann and Kane 1994, p. 21.

These wide differences in zoning rergulations produce significantly different densities. Low-density land use practices on the edge of the metropolitan area translate into large acreages of land brought into use for each house or commercial or industrial structure. More land and greaterdistances require larger expenditures to link development with sewer pipes, water pipes, electrical power lines, telephone service, and roads.

Table 3.8. Sewer and Water Connection Fees, Sample Twin Cities Area Suburban Communities, 1997

	Sanitary Sewer Trunk Area Charge per Lot		Sanitary Sewer Connection Charge per Unit		MWCC SAC Charge per Unit		Watermain Unit Charge	
	Single-Family	Multi-Family	Single-Family	Multi-Family	Single-Family	Multi-Family*	Single-Family	Multi-Family
Burnsville	$669	$536	$208	$167	$950	$760	$831 (+meter and PRV)	$664 (+meter and PRV)
Coon Rapids	$0	$0	$29**	$29**	$975	$975 (indiv. laundry) $785 (common laundry)	$29	$29
Eden Prairie	$300	$2,660 access charge	$520	$520	$950	$950	$1,190	$1,190
Edina	$0	$0	$1,000	$0	$950	$950	$0***	$0***
Lakeville	$654	$654	$791	$791	$950	$950	$2,290	$2,290
Maple Grove	$0	$0	$465 or $585****	$465 or $585****	$950	$950	$1,170	3-8 units (=$936/unit) 9+ units (=$585/unit)
Minnetonka	$965	varies	varies	varies	$950	$950 (with variation)	varies	varies
Plymouth	$0	$0	$370	$370	$950	$950	$630	$630
Shakopee	$1,360 per acre	$1,360 per acre	$400 per unit	$400 per unit	$950	$950	$491	$491
Woodbury	by acre, not lot	$0	$345	$235 - $330	$800	$800	$495	$495

* The Metropolitan Waste Control Commission (MWCC) reduces the per-unit Sewer Availability Charge (SAC) per multi-family development by 20 percent if the development has common laundry facilities. The MWCC reduces the per-unit multi-family SAC by 40 percent if the development provides subsidized housing and does not have dish-washers or garbage disposals.
** Cost of plumbing permit to attach sewer line from house to sewer main in street.
*** There are no municipal charges for sewer and water hook-up in Edina when there are no outstanding sewer or water assessments on the property.
**** Local sewer charge in Maple Grove depends on the location of the housing unit.

Source: Local planning and zoning offices.

Rather than loosening the restrictions on high-density development, many suburban communities have tightened the restrictions.

• Burnsville increased minimum lot size for two-bedroom units from 2,500 to 3,000 square feet, and decreased maximum density allowed from 17.4 to 14.5 units per acre.

• Edina increased its minimum lot size for two-bedroom units from 2,500 to 2,900 square feet, and decreased the maximum density allowed from 17.4 to 15.3 units per acre.

• Lakeville downzoned seven R-7 (high density) areas from 1987 to 1994 [18, p. 48].

Table 3.9. Sewer and Water Connection Fees, Sample Twin Cities Area Suburban Communities, 1993

	Sanitary Sewer Trunk Area Charge per Lot		Sanitary Sewer Connection Charge		MWCC SAC Charge per Unit		Watermain Unit Charge	
	Single-Family	Multi-Family	Single-Family	Multi-Family	Single-Family	Multi-Family*	Single-Family	Multi-Family
Burnsville	$634	$507	$190	$152	$800	$800	$760	$609
Coon Rapids	$0	$0	$29**	$29**	$825	$825	$29	$29
Eden Prairie	$0	$0	$490	$490	$800	$800	$615	$615
Edina	$0	$0	$0	$0	$800	$800	$0***	$0***
Lakeville	$600****	$600****	$725	$725^	$800	$800	$2,100	$2,100^
Maple Grove	$0	$0	$465 or $585^^	$465 or $585^^	$800	$800	$1,100	$1,100
Minnetonka	$0	$0	varies	varies	$800	$800	$0	$0
Plymouth	$0	$0	$370	$370	$800	$800	$630	$630
Shakopee	$0	$0	$0	$0	$800	$800	$400	$400
Woodbury	$0	$0	$345	$235 - $330	$800	$800	$495	$495

* The Metropolitan Waste Control Commission (MWCC) reduces the per-unit Sewer Availability Charge (SAC) per multi-family development by 20 percent if the development has common laundry facilities. The MWCC reduces the per-unit multi-family SAC by 40 percent if the development provides subsidized housing and does not have dishwashers or garbage disposals.
** Cost of plumbing permit to attach sewer line from house to sewer main in street.
*** There are no municipal charges for sewer and water hook-up in Edina when there are no outstanding sewer or water assessments on the property.
**** Lakeville's sanitary sewer trunk charge is assessed per acre, not per unit.
^ Lakeville reduces local water and sewer charges by 20 percent when a multi-family development is eligible for MWCC discounts.
^^ Local sewer charge in Maple Grove depends on the location of the housing unit.

Source: Local planning offices; Metropolitan Council Development Cost Comparative Analysis Draft Summary; 1991 Municipal License and Permit Survey. Found in Lukermann and Kane 1994, p. 22.

• Shakopee increased its minimum lot size for two-bedroom units from 2,000 to 3,000 square feet, and decreased the maximum density allowed from 21.8 to 14.5 units per acre.

Tightening restrictions on multi-family housing results in lower-density development and thus greater sprawl.

Table 3.10. Park Dedication Fees per Housing Unit, Sample Twin Cities Area Suburban Communities, 1993 and 1997

	Single-Family		Multi-Family	
	1997	1993	1997	1993
Burnsville	$805	$512	$893	$752
Coon Rapids	$384	$384	$238	$238
Eden Prairie	$1,140	$900	$1,400	$900
Edina	8% of the undeveloped land value		8% of the undeveloped land value	
Lakeville	$900	$650*	$900	$650*
Maple Grove	$1,060	$630	$1,060	$630
Minnetonka	$550	$400	$500	$250
Plymouth	$1,400	$885	$1,400	$885
Shakopee	$900	10% of the undeveloped land value	$750 per unit	10% of the undeveloped land value
Woodbury	$1,000	$725	$800	$500

* In addition to the park dedication fee, Lakeville charged a trail dedication fee of $150 per unit in 1993, and $250 in 1997.

Source for 1993: Local planning and zoning offices; Metropolitan Council Development Cost Comparative Analysis Draft Summary; 1991 Municipal License and Permit Survey. Found in Lukermann and Kane 1994, 23.
Source for 1997: Local planning and zoning offices.

C: Orderly Development, or Leapfrogging?

The Builders Association of the Twin Cities, in its report The High Cost of Sprawl: A Twin Cities Metropolitan Area Urban Land Supply Analysis and Recommendations for Managing Growth, identified numerous factors that in its view contribute to urban sprawl on the edges of the metropolitan area.[1] The report defined urban sprawl as "the random development of unsewered large lots and the non-contiguous, leapfrog development of sewered subdivisions that create physical and social barriers to the orderly and economical extension of urban services" [19, p. 3].

The "non-contiguous" low-density development that has occurred, and in BATC's view is likely to continue, has the effect of increasing the cost of delivering essential urban services, costs that are then passed from the developer to the housing consumer and to the public at large. Developer costs are further raised by the review process, particular ordinances, and the imposition of impact fees. This "leapfrog development" results when the high cost and low supply of land within the Metropolitan Urban Service Area (MUSA) line and the barriers to residential development in the area between the MUSA line and the UltiMUSA[2] line drive up the cost of housing and force developers and middle-class families to build or seek housing beyond the UltiMUSA line and beyond the seven counties.

1. The High Cost and Low Supply of Housing

The 1996 BATC study focused on the increasingly restricted acreage of available, developable, residential land within the MUSA line which in the face of steady or increasing demand has driven up its cost and thus the cost of housing built on it. The BATC developed an inventory of the land available for residential development in 23 communities lying on the border of the MUSA line. It estimated that expected regional growth[3] could be accommodated for only 2.6 years within the MUSA line, assuming that residential densities would average 2.0 units per acre [19, p. 17].[4]

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[1]The BATC report defines the "metropolitan area" as the 7-county metropolitan area, while it uses the term "metropolitan region" for the 13-county metropolitan area plus 5 counties, included on the basis of commuting patterns.

[2]The UltiMUSA is the outer boundary of land inside the 7-county area that is scheduled for development by 2020.

[3]The BATC used figures from the Metropolitan Council that predict the (7-county) metropolitan area will increase by 330,000 households between 1995 and 2020 [21, p. 10].

[4]The BATC report assumes that families want to buy single-family homes and that developers want to provide them. The density of 2.0 units per acre sounds low given the densities in most mixed-housing and single-family home neighborhoods in Minneapolis and St. Paul. Many suburban zoning requirements, however, stipulate that density must be lower.

Developers contend with numerous barriers within the MUSA line that they do not face in most rural and exurban settings. These barriers include:

- the MUSA expansion review process,
- the urban-scale development,
- lifestyle preferences, and
- urban problems.

MUSA expansion review, for example, frequently falls under 25 jurisdictions. Urban-scale development refers to zoning codes that force the developer to build with minimum floor sizes and minimum lot sizes that restrict the type of housing they can provide for the market. When these restrictions are implemented in areas with limited supplies of land, they drive up the price of housing. The BATC contends that the metropolitan area needs to increase its density in order to "compete effectively for consumer dollars" [19, p. 51].

Many families cannot pay the high cost of new single-family homes, but their lifestyle preferences dictate large lots. They jump beyond the MUSA line where land and housing are cheaper for them, even though their choice carries with it publicly-borne costs that are significantly higher than would accrue with more compact development, closer to the fully built-up area. Furthermore, urban problems such as traffic congestion impede the approval of development projects and MUSA expansions because the city decides that local infrastructure such as local roads cannot handle more residents. This restriction is justified as a constraint on both local roads and regional highways.

2. The Cost of Extending Urban Services

The BATC recommended that the MUSA expansion review process at the very least be simplified, and preferably, that the line itself be extended to the UltiMUSA line. Of the 550,619 acres in the BATC study area lying between the current MUSA line and the UltiMUSA line, 290,064 acres potentially would be available for residential development. The MUSA line extension, BATC argued, would increase the supply of housing land, lower the cost of housing, and stem the "need" or tendency for leapfrog development into the counties surrounding the seven-county metropolitan area. There are, however, barriers identified in the BATC study area that would impede orderly residential development and maintain the high cost of urban services:

- wetlands,
- large lot residential development,

- public parks, and
- commercial/industrial land.

Wetlands and public parks are environmental assets and necessities but should be recognized as land uses that raise housing costs. Wetland protection along with large-lot residential development and public parks can impede efficient urban service extensions and thereby increase housing costs. Finally, while the BATC encourages brownfield cleanup and maintaining a bank of land for commercial/industrial development, it also contends that managed growth and clustering of industrial uses would reduce the cost of sewering residential lots and thus contribute to a lowering of housing costs.

The analysis presented in the BATC report focused on the provision of sanitary sewers, water systems, local streets, and storm drainage. The study projected the costs of these services in four regional development scenarios (Table 3.11). Each scenario represents a situation in which land has been removed from the market and constitutes a barrier to urban service extensions. Sewer systems, roads, and storm drainage systems must be connected through or around these barriers. The extra cost is either absorbed by the government and passed on to citizens through taxes or passed to the housing consumer via the developer. Whenever government or a private supplier can deliver essential services in an orderly and compact fashion, costs are lower.

Table 3.11. Local Infrastructure Cost Estimates

Development scenarios	Estimated Cost	Cost Increase over Ideal Situation
Ideal case: All at urban densities, without large lot impacts	$4.950 billion	
Scenario 1: 75% of study area land developed at urban densities	$5.599 billion	+$650 million
Scenario 2: 50% of study area land developed at urban densities	$6.252 billion	+$1.302 billion
Scenario 3: 25% of study area land developed at urban densities	$6.678 billion	+$1.782 billion

Source: Builders Association of the Twin Cities, 1996, p. 43.

3. Further Commentary on Development Costs

Interviews with developers revealed additional barriers to inexpensive and orderly development. They include:

1) plat approval time frame,
2) standards and ordinances,
3) city engineer delays,
4) impact fees (discussed earlier),
5) new home-buyer fees passed to the developer,
6) lack of uniformity among communities,
7) fees applied without cost/benefit analysis, and
8) environmental regulations.

With regard to the time needed for plat approval, "one developer cited a 2-year time frame to get a preliminary plat approval, which added $1.6 million to the overall cost of a proposed development" [19, Appendix B, p. 4]. The BATC report recommended a regulation that requires city staff to act within 60 days of an application for preliminary plat approval. Standards and ordinances such as "large minimum lot sizes, excessively wide street widths, materials required, wetland setbacks, parkland set asides, tree ordinances, and the method of calculating density" make development more expensive [19, Appendix B, p. 5]. Furthermore, developers prefer to carry out required improvements themselves rather than be required to allow the city engineers or city-hired engineers do them.

Many developers believe that city employees lack an incentive to finish jobs within a deadline, and these delays cost the developer money. Even if there is no argument concerning the value of many environmental regulations, many developers contend that environmental regulations such as water quality control regulations (specifically, National Urban Runoff Program (NURP)), erosion control ordinances, and wetlands regulations increase housing costs.

IV. SUBSIDIES FOR WHOM?

For all of its strengths, the market-based economy in the United States fails to provide for all of the needs of everyone in society, and businesses seldom or never account for many of the "external" costs of productio not usually assessed in economic terms–such as pollution and congestion. Moreover, all levels of government intrude into the marketplace by levying taxes,

handing out subsidies, and imposing regulations in order to provide public goods and to compensate for the market's insufficiencies.

Some regulations add to costs of production and consumption while other government actions subsidize production costs or consumption expenditures. The federal government expended huge amounts of money during the War on Poverty and accompanying urban renewal programs, but federal expenditures on similar programs declined dramatically during the 1980s and 1990s. Congress passed the 1996 Welfare Reform Act reducing subsidies to the poor amidst debates and arguments over who deserves subsidies, who should work, and who should pay? Similar debates over public housing have taken place, but the nature of various housing subsidies should be reexamined. Who really has received housing subsidies or tax expenditures? The consensus is middle-class households in suburban communities.

A similar question can be asked of commercial-industrial development inside metropolitan areas. State and local governments provide incentives to developers for projects located inside central cities, but developers operating on the outlying edges take advantage of some of the same incentives.

A. The Federal Role in Urban Expansion

The federal government participates directly in the housing market through programs that assist low-income households to acquire affordable housing, but it has subsidized and continues to subsidize middle-income and upper-income households throughout the 20th century, particularly during the post-World War II era. A series of subsidies and tax expenditures institutionalized a system that encourages urban sprawl–disorderly, low-density development along the edges of urban areas.

Mortgage insurance and financing subsidies encouraged investment in the housing industry and secured home ownership's place as the pinnacle of the American dream. Highway and road construction and water and sewer expansions have facilitated housing construction on the edges of cities rather than the renovation of older housing stock. Tax deductions for mortgage loan interest and local real estate taxes have promoted home ownership of single-family homes instead of multi-family living. Moreover, a tax deferment on capital gains has produced a housing market wherein it is economically highly advantageous to move away from the core of an American city to suburban and exurban locations where residential price appreciation rates exceed general inflation.

1. Mortgage Insurance and Financing

Home ownership during the 1930s Depression declined dramatically as households lost their homes and banks repossessed houses that could not be sold. The government established numerous agencies to bolster the housing market. The Home Owner's Loan Corporation (HOLC) established in 1933 provided money for refinancing and standardized a method for appraising housing values. This system enabled private banks to refinance home loans, but it also institutionalized a national system of "redlining" which withheld housing finance from minority neighborhoods and thereby contributed to undervaluing older homes in the city and diminished or eliminated the opportunity for minority homeowners to accumulate real estate equity.

The Federal Housing Authority (FHA) attracted capital to the housing market by insuring housing loans and by guaranteeing mortgage interest rates that were 1 to 2 percent lower than loans that were uninsured. In 38 years (1934-1972) the FHA helped 11 million households buy homes while insuring only 1.8 million multi-family units [20, p. 185]. The federal government continued to emphasize ownership of single-family homes through the Veterans Administration by guaranteeing home loans for veterans, through the Federal National Mortgage Association (FNMA) in 1938, the Government National Mortgage Association (GNMA) in 1968, and the Federal Home Loan Mortgage Corporation (HLMC) in 1970.

2. Highway and Road Construction

The physical development of cities during the 19th and early 20th centuries was significantly shaped by transportation, communications, and energy technologies and infrastructure. The invention of the automobile, however, signaled the coming of a new era that would not have been achieved had it not been for federal support for construction and operation of roads and highways after World War II. Road improvements and highways allowed families and businesses to move out of overcrowded and polluted central cities. Families wanted a home with a lawn on a cul-del-sac where the children could play safely in the streets; businesses relied increasingly on truck transport rather than railroad shipments and sought better access with less congestion and fewer delays.

The federal government paid for 90 percent of the costs for what was initially planned to be 42,000 miles of limited access freeways built for the Interstate Highway System under the 1956

[1] This TIF district was a bit unusual because it was non-contiguous due to a flood control project in the redevelopment area in the lower part of the city.

Defense Highway Act. This network of roads included 5,000 miles of road in cities as "belts and spokes to facilitate commuter travel from the suburbs to central cities" [20, p. 187].

Not only did the government pave the way for households to move to the suburbs, it also facilitated profits from land speculation and housing investments. People have made millions of dollars by buying land, predicting the direction of development, waiting for developer interest, and selling parcels for many times more than they paid. Although many speculators have predicted incorrectly, the enterprise has worked in large part because governments have spent billions of dollars paying for roads and infrastructure that opened millions of acres to urban development.

The unearned gain by homeowners, though a lesser amount, has worked the same way. A household purchases a new home in a developing suburban community. Development continues and the demand for housing in that area increases, causing the price of the house to rise faster than inflation. The return on the homeowner's investment results from the government expenditures on roads and other infrastructure that supports continuing development. Eventually, the price of the house will peak and decline as development continues to expand outward, but the decline of housing prices in suburban communities is so recent that the phenomenon has not yet begun to influence consumers' housing choices.

3. Water and Sewer Expansion

The federal government funded water and sewer line construction through the Public Works Administration briefly during the 1930s Depression, but its role grew after a 1956 amendment to the Federal Water Pollution Control Act. This amendment authorized federal grants for such items as sewer treatment facilities and treatment plant sewer connectors. Its role increased as construction costs grew and suburban communities could no longer rely on backyard septic tanks. By 1966: "47 percent of sewer expenses and 22 percent of water expenses were paid for by the federal government (U.S. National Commission, 1968:410)" [20, p. 188]. During the 1970s the federal government spent $30 billion on the federal sewer construction program [20, p. 188]. Thus, a significant portion of the cost of servicing new, low-density suburban development was not borne by those occupying new homes, but by the federal treasury and all the nation's taxpayers.

Numerous studies have tried to document the relationship of federal subsidies for water and sewer expansion with enhanced land values and distributional equity. A 1976 study conducted

by Urban System Research and Engineering, Inc. showed that federal expenditures on this type of infrastructure inflate the value of land from two to four times that of unsewered land, in effect acting as a federal subsidy to landowners [20, p. 188].

These federal expenditures produce an inequity between multi-family residents (generally lower-income households) and single-family, detached homeowners (generally middle- and upper-income households). A study by Real Estate Research Corporation in 1974 illustrated the unequal distribution of benefits between single-family and multi-family communities. The study focused on two communities–one with low-density and another with high-density development (Table 3.12).[1] (These data will be updated in subsequent studies.)

Table 3.12. Infrastructure Cost Comparison, Per New Housing

	Sanitary and Storm Sewers		Water supply	
	1973	in 1987 dollars	1973	in 1987 dollars
Low-density community	$2,859	$7,147	$2,723	$6,807
High-density community	$1,049	$2,622	$962	$2,405

Source: O'Connell, 1989, p. 189.

The infrastructure costs in this particular case study were much more per unit for the low-density suburban community than for the higher-density community. This difference makes sense; if the government spends the same amount for a sewer trunk line, storm sewers, and water pipes in two areas, the cost per unit will be lower in the area where a fixed investment is spread among more recipients. The inequality of benefits is exacerbated by the time at which the infrastructure was built. Most cities paid for sewer and water infrastructure prior to the 1960s through local taxes, while most suburbs that grew after the mid-1960s received federal aid for sewer and water line expansion.

4. Tax Deductions

Mortgage-interest deductions encourage people to buy more expensive homes which generally lie outside the central city [21, p. 142]. If a household's mortgage interest payment is large

[1] In the low-density community, 75 percent of the area had 3 units per acre and 25 percent had 5 units per acre. The high-density community had "40 percent high-rise apartments, 30 percent walk-up apartments, 20 percent town houses, and 10 percent clustered single-family homes" [20, p. 189].

enough, it can benefit from itemizing deductions from taxable income on its tax return. As "interest payments decline substantially during the latter years of the mortgage, the incentive encourages selling and buying another house with the largest mortgage affordable" [21, p. 142]. The impacts of this benefit are substantial; tax deductions for mortgage interest and local property taxes produce a tax expenditure that exceeds the amount of direct federal expenditures for housing [21, p. 187].

5. Tax Deferment: Internal Revenue Code, Section 1034

Prior to 1951, anyone who sold a home had to pay tax on the capital gain.[1] The Revenue Act of 1951 changed that requirement. Internal Revenue Code Section 1034 eliminated the capital gains tax for those who bought a home of equal or greater value within 24 months of the selling date of their residence.[2] If someone bought a home of lesser value, they avoided the capital gains tax only if the cost of renovations of their new home made up the difference. Thus, for nearly a half century there has been an economic incentive to purchase a home of equal or greater value. The only exception to this value stipulation applied to those 55 and over who received this exemption only one time.

Bier and Maric analyzed the relationship of Section 1034 with disinvestment in central cities and the push of development outward toward the edge of metropolitan areas. They concluded that in cities where housing values increased as distance from the core increased, Section 1034 encouraged home-buyers to move away from the core of the city toward the edge of the metropolitan area. They divided Cleveland and its adjacent suburban area into 16 concentric rings extending outward around the downtown core, then tallied the number of houses in each ring in various value categories using census data. They compared the geographical distribution of housing opportunities with statistics on the tendency of households to move from one value category to another, and estimated the proportions of households expected to move out from and move into each of the rings.

For example, a household in Ring 6 faces 87 percent of the housing options outward beyond Ring 6, so it was expected that 87 percent of buyers from this Ring 6 would move toward the edge. Next, they obtained actual sales data and matched the names of buyers and sellers to determine where households actually moved. They predicted that 63.5 percent of all the home sellers/buyer in all 16 rings would move farther out based on geographic location, but in actuality

[1] A capital gain occurs if the sale price of a home is greater than the purchase price.
[2] This tax liability changed in mid-1997, but it had an effect on home buying and the shaping of American cities for 46 years. The new tax applies only to those who receive a capital gain of over $500,000.

73.8 moved out. Their findings are consistent with behavior that would be expected due to capital gains treatment.

Bier and Maric based their conclusions on findings in the Cleveland area, but the general pattern of urban development in Cleveland reflects the pattern of urban development in most American cities. Most cities have a downtown Central Business District and a Warehouse or Garment District with a street pattern oriented toward former shipping or railroad transportation. Central cities typically are surrounded by rings of inner suburbs that are connected to downtown with highways, and beyond the inner-ring suburbs lie outer-ring suburbs. Each postwar-era suburban community contains relatively lower densities than those closer to the central city. Newer, larger housing on larger lots typically has higher values than older, smaller houses built at higher densities closer in.

New housing is appealing because it is new, but what happens to the housing that people leave behind? Housing values are typically higher as distance from the city center increases, and those newer houses typically increase in market value at rates that are greater than for older houses of lesser value closer to the urban core. This outcome occurs because effective demand for housing is generally expressed outward toward a relatively fixed supply of more desirable houses. In the older, less desirable portions of the housing market, the supply of available houses exceeds effective demand for them and prices remain stable or slowly decline.

Put another way, when a household buys a typical new home on the suburban edge and development continues in that vicinity, the value of the home increases, usually at a rate that for many years continues to exceed inflation. Meanwhile, older housing left behind by out-migrating households continues to decline in real value. In time, housing stocks in the older suburbs edge toward the lower half of the desirability scale and begin experiencing relative and sometimes absolute declines in market values as well.

What about people who value older homes, and who prefer to live in older sections of the city even though they have the means to live in upper-priced housing elsewhere? The Twin Cities has been fortunate in that it has large areas of well-kept, highly desirable, and exceedingly expensive older housing stock. For example, the shores of Lake of the Isles, Lake Calhoun, and Lake Harriet in Minneapolis, and the tree-lined lots of Summit Avenue, Merriam Park, Mississippi River Boulevard, and Highland Park in St. Paul feature many hundreds of houses that are among the most expensive and most desirable in the entire Twin Cities metropolitan region.

Home-buying is a complex decision-making process, and people decide on a location, a neighborhood setting, and a particular house for a variety of reasons. People do not buy a house based solely on the mortgage interest rate or the desire to avoid capital gain taxation, but these do act as disincentives to look at a particular group of homes.

B. State and Local Intervention in Development

1. Using TIF on the Edge

Tax increment financing (TIF) has gained notoriety in the Twin Cities in the recent scuffle over development in downtown Minneapolis. The Minneapolis Community Development Agency (MCDA) offered tax increment financing to Ryan Companies Inc. for its proposed Target store and office tower on the 900 block of Nicollet Avenue. Opus Corporation, however, owns part of the site and secured $103 million in financing for a proposed office tower [22]. Minnesota law requires that TIF be used only in situations where no development will occur without the nudge supplied by tax increment financing. With alternative financing in hand, Opus Corporation sued the City of Minneapolis in June, 1997.

Tax increment financing seldom entails such prominent pieces of real estate and proceeds as a relatively unpublicized matter. The purpose of tax increment financing is to aid redevelopment of blighted areas, to encourage affordable housing, and to boost economic expansion at sites with little market potential.[1] Its use, however, has repeatedly come under criticism as more cities subvert its purpose and use TIF to subsidize private developers of greenfield sites.[2] The

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[1] Tax increment financing has been allowed in Minnesota since 1947, but it was not used until federal funding for urban renewal declined after the 1960s. In 1979 the Minnesota Legislature passed the 1979 Minnesota Tax Increment Financing Act consolidating TIF regulations. In general, the authority establishes a district and writes a detailed plan. The plan includes the type of development, estimated costs and the amount of bonded indebtedness, and the duration of the project. When the municipality approves the plan, the district's property is assessed and the assessment is frozen. Tax-exempt municipal bonds are sold to finance "land acquisition, public improvements, site preparation, resident relocation, and the sale of land to private developers" [23, p. 632]. Taxes are collected based on the new property values, but the tax increment (tax on the new value minus tax on the frozen value) is kept by the authority to pay for the bonds.

[2] Four types of TIF districts exist–redevelopment, housing, economic development, and those established prior to the 1979 act. Conditions are attached to each district, but only a few differences will be noted here. A public hearing must precede the approval of any TIF district, and all districts must pass the "but for" test, in which development would not occur "but for" tax increment financing. A redevelopment district must establish a finding of "blight" as defined in the Act, while an economic development district has no such requirement. The duration of a redevelopment district cannot exceed 25 years from the date of receipt by the authority of the first tax increment, while the duration of an economic development district is only 8 years from the date of receipt and 10 years from the plan approval, whichever is less. Housing districts require the construction of affordable housing for low- and moderate-income households, and the duration limit is set at 25 years.

subsidies involved produce an “edge advantage” for development with which central city redevelopment efforts have difficulty competing.

Perhaps one of the most controversial uses of TIF by cities has been its use to write down land acquisition costs by private developers. As early as 1985, Chaska approved a Redevelopment and Tax Increment Financing district that was composed of a TIF district within a larger redevelopment district.[1] The TIF district revenue enabled the city to provide public infrastructure for Jonathan Industrial Park, Jonathan Industrial Park North, and Crosby Industrial Park, as well as to improve an industrial area along the Minnesota River. The public infrastructure provided included sewer, storm sewer, water, and roads improvements. To entice commercial and industrial companies, Chaska also used tax increment financing to write down land costs, water and sewer connection charges, building permit fees, and special assessments.

Numerous companies have taken advantage of the write-down policies provided by Chaska. For example, Lewis Engineering received a “three-year write-down on the land equivalent to the first three years of tax increment” and bought 12 acres of industrial land for only $25,000 an acre [7, p. 53]. Another company, Lifecore Biomedical, required a site larger than its current one, a new building, and high quality water supplies, and it wanted convenience for its management and local financial assistance.

Chaska’s Jonathan Industrial Park had a suitable 33-acre site with an aquifer, so the city floated Industrial Revenue Bonds to build the building, and the city wrote down land costs through a 3-year increment subsidy. As further incentive, the city allowed the company to discharge waste water into a lake to avoid sewer charges. A third company, JAMCO International, also benefited from Chaska’s TIF policies. It qualified for a write-down on land costs equivalent to 3 years of tax increment financing and purchased a 6+ acre site near the Hazeltine golf course.

A less controversial use of TIF is to underwrite the costs of site improvements. Tension between the city and the suburbs, however, has increased as the results of losing commercial tenants appears on the urban landscape as vacant buildings and in the budget as lost tax base. Brown Institute, for example, was located on East Lake Street in Minneapolis for 42 years before it moved to Mendota Heights. While numerous factors contributed to the decision by Career Education, Brown Institute’s owner, one of the pivotal enticements was the approval of over $300,000 in tax increment financing to pay for site improvements [24, p. 1]. While Mendota

[1]Tax increment financing has been allowed in Minnesota since 1947, but it was not used until federal funding for urban renewal declined after the 1960s. In 1979 the Minnesota Legislature passed the 1979 Minnesota Tax I

Heights officials said that the site improvements were needed regardless of Brown Institute's move, Hennepin County officials deemed the act as unabashed "stealing" from one metro community by another [25, p. 7].

Sometimes the identity of the "losing" community is not so explicit, as in the case of "Dayton's deal boosts Eden Prairie" [26]. General Growth Properties, Inc. (the owner of Eden Prairie Center) and the City of Eden Prairie negotiated tax increment financing to help General Growth upgrade the mall, and obtain a commitment from Dayton-Hudson Corporation for a Dayton's department store. General Growth will spend $60 million for redevelopment, and the city agreed to earmark $10 million over 17 years to repay General Growth [27].[1] Dayton-Hudson subsequently backed out of its agreement to locate at Eden Prairie Center, but still is seeking a site within the city.

The goals of this arrangement are consistent with TIF's general purpose of assisting economic expansion, but the method–public reimbursement of private capital expenditures–runs counter to TIF's intended use. Furthermore, a new department store at Eden Prairie Center would affect the regional dynamics of retail shopping in the southwestern part of the metropolitan area. There already are Dayton's stores just seven miles east in Edina's Southdale Center and eight miles north in Minnetonka's Ridgedale Center. Chuck Ballentine, deputy director of community development for the Metropolitan Council, has implied that this new store will serve the growing populations in Eden Prairie as well as Chaska and Chanhassen [26]. Jerry Storch, Dayton Hudson senior vice president for strategic planning, is quoted as saying "[w]e want to make it easier for people to shop at our stores locally ... and if that means keeping them from driving to Bloomington [to the Mall of America], great" [26]. Thus in this case, the impact of a TIF arrangement would reach far beyond the municipality employing it.

Finally, the use of TIF can surpass subtle competition and place suburban communities in open conflict with each other. Richfield and Edina are using tax increment financing to entice office development along their respective sections of Interstate 494. Richfield officials claim that Edina, its "well-to-do neighbor with no pressing need to enlarge its tax base," offered a tax rebate to United Properties [28]. The tax rebate would subsidize United Properties' development expenses and enable it to reduce rents, thus undercutting TOLD Development Company, which was in the process of developing Richfield's Meridian Crossings. State Representative Edwina Garcia reacted negatively to news of Edina's actions [28]. Her reaction reflects that of many

[1] Numbers vary in different newspaper stories. Wascoe and Feyder report costs as $90 million and repayment as $15 million.

legislators who view the use of TIF by cities who do not need to offer development assistance as an abuse of the tool, and who lobbied successfully for TIF legislative reforms in 1988, 1989, 1990, and 1995.

2. Effects of the Fiscal Disparities Law

The State Legislature in 1971 passed the fiscal disparities law, officially known as the Charles R. Weaver Revenue Distribution Act, in order to reduce tax base differences among Twin Cities communities. This reduction was viewed as an equitable way to encourage communities "to work for the growth of the area as a whole" [Minn. Statutes § 473.01(3)]. Using 1971 as a baseline, communities contribute 40 percent of their commercial and industrial tax base growth to a regional pool of money. The property values used to determine each year's tax-base sharing lags by one year; the tax base for 1997, for example, will use 1996 property values. Each contributor then receives a portion of the pool based on its share of population and tax base in the seven-county area.

Through the Act, the legislature intended to help communities at various development stages for the benefit of the metropolitan area as a whole. Tax-base sharing would "increase the likelihood of orderly urban development by reducing the impact of fiscal considerations on the location of business and residential growth and of highways, transit facilities and airports" as well as "help communities in different stages of development by making resources increasingly available to communities at those early stages of development and redevelopment when financial pressures on them are the greatest" [Minn. Statutes § 473.01(2) and (5)].

The legislature has changed the law two times, one time altering the objective of tax-base sharing and another keeping in the spirit of the Act. In 1986 the legislature passed a surcharge to be levied from 1988 to 1999 on pool contributors. The surcharge was earmarked for the City of Bloomington, to pay the interest on bonds used to build the Mall of America. Bloomington will repay the money from 2006 to 2015, but in the meantime, Twin Cities communities are subsidizing Bloomington's enormous development project. The second change in the law constitutes a form of subsidy as well, but instead of funding a single development project, it supports a regional housing program. The legislature enacted the Livable Communities surcharge in 1995 "to finance the metropolitan livable communities fund, which is available to communities that elect to participate in the local housing incentives program" [29].

New changes to the fiscal disparities law have been proposed in the last two years. Critics argue that the revenue-sharing pool has not reduced "the fiscal considerations on the location of business and residential growth" and that communities continue to compete for C&I tax base. In 1995 Governor Arne Carlson vetoed a bill sponsored by Myron Orfield and passed in both houses of the legislature that would have added "the growth in value of all residential homestead property over the first $200,000 in market value per homestead" [29]. Orfield would like to include residential homestead value and raise the C&I tax base to 60 percent [29]. Tom Luce, a professor at the University of Minnesota's Humphrey Institute, supported Orfield's objectives but also suggested that the allocation process should be changed to focus on a community's expenditure needs. Minneapolis, for example, contributed more than it received through much of the 1980s and 1990s due to its high C&I tax base, yet also has high expenditure needs for housing, education, social programs, and parks.

V. CONCLUSIONS

The cumulative effects of federal, state, and local regulations during the last 50 years have pushed residential, commercial, and industrial development out of the central city and pulled it into the surrounding suburban fringe. Disinvestment in the central cities is part of an ongoing cycle that began with electric streetcar suburbs that allowed people to escape overcrowding and pollution. Federal subsidies such as highway funding and mortgage financing for housing construction and consumption then solidified the suburb's position in the model for the American family neighborhood.

Crime and its sensationalization by the news media, in combination with relatively poorer schools, have become the central city scapegoats to explain disinvestment and the hesitation for reinvestment, but the cause lies in a repertoire of regulatory push-pull factors. These factors include parking regulations, vacant land, tax-forfeiture proceedings, brownfield site redevelopment, building codes, historic preservation regulations, development impact fees, "family" regulations, exclusionary zoning, barriers to orderly development, the cost of urban services, environmental regulations, federal subsidies, and state/local intervention in development.

Regulatory constraints on redevelopment and regulatory incentives for suburban development have created a housing market that consistently undervalues older homes and constantly pushes the boundaries of new, low-density housing out toward the edge. Likewise, commercial and industrial development have sought low-density, campus-like settings with highway access in the

suburban fringe. This low-density, sprawling development on the edge of the fully-developed area, however, cannot be sustained without steadily increasing costs. The cost to simultaneously maintain current infrastructure and build new infrastructure is too great. Based on current projections, funds available for Minnesota's transportation system will be inadequate even to the year 2020 [30]. Consideration of the factors that restrict redevelopment and encourage sprawl will facilitate policy discussions and decisions that can attempt to reverse the trend of the last half-century.

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Chapter 4
METROPOLITAN GROWTH AND LOCAL GOVERNMENT FINANCES

Mark D. Bjelland

I. INTRODUCTION

During the post-World War II era, the growth in vehicle miles traveled on the Twin Cities metropolitan highway system has significantly outpaced growth in population. The increase in traffic volumes reflects population growth, increases in disposable incomes and discretionary spending, more cars per capita, increased number of daily trips per household, longer average trip lengths, and an increasing proportion of trips made in single-occupant vehicles.

Since 1980, the most rapid traffic volume increases have occurred in the outer-ring suburbs, which also have experienced the most rapid growth in population. The fastest job growth has occurred in beltway suburbs, contributing to the decreasing use of transit and carpooling, because these new job centers with few exceptions are at best only marginally accessible by means of public transit. Thus, the demands for transportation in the metropolitan area are intimately linked to the geographic distributions of population and employment growth.

Among the major factors influencing the locational arrangements of regional growth are the fiscal incentives and anticipated fiscal consequences for local governments and utility providers. Complementing previous chapters that discussed the dynamics of metropolitan housing markets (Chapter 2), and the legal and regulatory controls directing regional growth (Chapter 3), this chapter examines the interrelationship between regional growth and local government finance.

Overall population and economic expansion may benefit the metropolitan region, but new residential, commercial and industrial growth occurring at one or more specific locations is harder to evaluate. Growth may benefit the entire region, or it may benefit some areas at the expense of other parts of the region. The vivid picture of new housing, shopping centers, office parks, roads and schools may represent increasing prosperity for the whole region and expanded economic and social opportunities for residents, or it may simply reflect decline elsewhere accompanied by congestion, environmental degradation, declining quality of services, and rising property taxes in the apparently-prospering host community.

This chapter explores the relationship between rapid metropolitan growth at the periphery, changing patterns of highway usage, and the finances of municipalities, counties, school districts,

and other units of local government. Local governmental finances and in turn the quality of services governments provide, such as schooling, parks, streets, and so forth, are deeply affected by the outcomes of metropolitan growth patterns. However, local governments possess only a limited range of tools they can use to shape growth.

Here we consider the ways in which existing policies regarding property taxation, the pricing of basic services and infrastructure, and the use of development inducements encourage or discourage certain patterns of metropolitan growth. Also of primary importance is the question of whether growth pays its own way, and more specifically, which types of development (e.g., residential, office, or industrial) and which locations (e.g., central city, inner-ring suburb, or outer-ring suburb) are most likely to produce favorable results. To answer these questions equitably we need to consider the related question of "from whose perspective?" This question raises an issue concerning the appropriate scale of analysis. Conclusions from an economic impact study may change strikingly as the geographic scale of analysis zooms outward from a single municipality to include surrounding communities, the entire metropolitan region, or the state.

The next section of this chapter provides a review of some of the empirical literature on the fiscal costs and benefits of metropolitan development. The review highlights the many methodological issues and problems associated with fiscal-impact studies and illustrates the special importance of questions regarding the scale of the analysis. The third section describes the ways customers are charged for basic infrastructure services within the Twin Cities Metropolitan Area (TCMA) and examines the effect that these pricing structures seem to have on new residential developments. The final section discusses the changing fiscal status of six different cities within the TCMA during the period 1970 to 1995, and illustrates variations among them and the relationship between their fiscal status and their individual development histories.

II. FISCAL IMPACTS OF GROWTH: WHAT WE KNOW

Many urban scholars argue that the desire for growth, termed the "growth machine," has been the major driving force in urban and suburban politics [1]. Growth and its associated revenues traditionally have been promoted as the answer to nearly all urban, suburban and rural community woes that are thought to stem from a lack of development and an inadequate property tax base. Yet increasingly there are voices of citizens and professionals within urban planning and public finance circles who question the conventional emphasis on growth and its supposed benefits. Some writers draw a distinction between *growth*, which is quantitative, and *development*, which is qualitative. They see growth as more cars, more houses and more congestion on the road, while

development implies increasing quality of life, which may be imperiled by unplanned growth. Growth often is linked to traffic congestion and even fiscal stress and thus is questioned as a panacea for the financial woes of a community.

If taxes and other revenues generated by a new development are insufficient to cover the additional requirements for infrastructure and public services, the development will lead either to increases in local property taxes or add to an existing backlog of underfunded infrastructure and services. Since poor quality of infrastructure and local government services are almost as unpopular as tax increases, local politicians are growing particularly sensitive to concerns about whether growth pays its own way and whether growth contributes to the overall quality of life in a community if the result is congested roads and underfunded basic services such as education.

A. Conventional Wisdom Regarding Growth

The conventional wisdom that emerged from fiscal-impact analyses carried out from the 1940s through the 1970s was that housing for low- and moderate-income families generally would not pay for the local services that it and its occupants would require while most other types of development would [2]. The rationale was that lower-income families imposed greater burdens, particularly for schooling, yet contributed relatively small amounts of property taxes. On the other hand, commercial, industrial, or medium- to high-end residential developments were thought to require fewer services, while generating higher revenues. This conventional thinking shaped much postwar land use zoning and economic development planning, and continues to shape the policies of most municipalities which therefore seek to attract commercial and industrial development and upper-income residences while keeping out lower-income housing. Recently, this conventional thinking about fiscal impacts has been challenged by both the changing circumstances of public finance and by challenges to the assumptions and methodology of conventional fiscal-impact analysis itself.

B. Methodological Issues in Fiscal-Impact Analysis

Fiscal impact analysis as a refined set of concepts and analytical procedures has matured, and detailed manuals, statistical techniques, and analytical software are available and widely used to estimate revenues and expenditures associated with different local development scenarios. Criticisms of early fiscal-impact studies point to methodological problems related to accounting for capital costs, incremental or marginal-cost pricing of services versus average-cost pricing, differences in levels of service, choosing the proper geographical scale of analysis, and accounting for non-fiscal and non-monetary impacts.

1. Capital Costs

Prior to 1980 most fiscal analyses focused exclusively on operating costs to the exclusion of capital costs. Estimates of capital costs are more difficult to obtain and are often based on historical costs, book values, or bond repayment costs, none of which are accurate or useful measures. Replacement costs are often higher than historic costs or book values. Annual bond repayment costs are not a true measure of the economic costs of a capital investment except in the rare case that the terms of the bond are identical to the useful life of the facility [3]. For example, if the terms of local-government bonds used to finance a facility are limited to 20 years but the facility's useful life is 80 years, then current generations end up subsidizing future generations. The best method to estimate real capital costs is to spread the cost of the facility over its expected life at a discount rate representing the real interest rate.

2. Incremental Pricing vs. Average-Cost Pricing

Most fiscal-impact analyses have focused on average costs rather than the marginal or incremental costs that are imposed on a community by a new development. On the other hand, economists argue that marginal costs rather than average costs are the relevant measure of financial impact because they provide a true measure of actual costs and therefore provide correct economic signals to decision makers.

Marginal costs differ from average costs because some newly developing areas are more expensive to service than were earlier-developed locations. Some capital investments have economies of scale that permit low-cost extensions, while extension of other services may require "lumpy" new investments. For example, many urban services are more expensive to provide in low-density areas than in high-density settings. In other cases, additional population may not require proportional increases in general government and thus can take advantage of economies of scale. On the other hand, a small growth in population may overtax certain facilities, such as schools, and require expensive, new "lumpy" capital investments. Marginal costs generally exceed average costs most dramatically when growth prompts expensive retrofitting of existing facilities [2].

3. Level of Service Differences

Many studies exploring the costs of development compare measures of growth in population and employment with growth in local-government expenditures and property tax levies. From comparison studies it is inferred that specific types of growth led to increased government expenditures and conclusions are drawn as to whether they pay their way. The problem lies in distinguishing between core expenditures and quality of life expenditures, both of which are

difficult to quantify. If spending rises faster than tax-base growth it could indicate fiscal stress or it could be due to local residents' desire for increased spending to enhance the local quality of life. Alternatively, spending increases may appear to be held in check while a city is experiencing fiscal stress but is unable to raise property taxes for political reasons. Thus, expenditure data may be misleading because one city may be spending more to provide a higher level of service and another may be spending too little as they defer maintenance, necessary capital investments, or desirable social spending.

4. Scale Issues

Fiscal impact analyses generally are performed by the unit of government that has jurisdiction over a particular development, generally the local municipality. However, within a metropolitan region the fiscal impacts of most development projects are seldom confined within municipal borders. Studies by Oakland and by Persky and Wiewel discussed below point out the importance of spillover effects on neighboring municipalities and the entire region. Thus, the scale of analysis will determine whether or not certain impacts are included in the analysis.

5. Non-Fiscal Costs and Benefits

By definition, fiscal impact analyses include only direct fiscal costs and exclude all other costs and benefits. However, non-fiscal costs and benefits may have significant long-term fiscal impacts and to ignore them may be to miss the most important features. To take a recent news event as an example, the draining of wetlands might have had little or no initial fiscal impact on a municipality but can have a major fiscal impact when flooding occurs. Growth has an impact on everything from transportation to education to environmental systems. For example, ecological economists have priced the economic services provided by the earth's natural systems at 33 trillion dollars per year [5]. These ecological services such as the purification of air and water go unnoticed until their ability to perform is hindered by human activity.

6. Summary

Despite their statistical and economic rigor, attempts to quantify fiscal impacts of development are subject to distinct limitations. The analyst needs to exercise judgment in measuring capital costs, distinguishing between marginal and average costs, assessing the level of service, selecting the scale of analysis, and deciding whether to include non-fiscal impacts. Thus, while fiscal impact studies provide important insights, they remain sensitive to the assumptions of the analyst and are open to alternative interpretations.

C. Recent Fiscal-Impact Studies

Advocates of wilderness or agricultural preservation have produced numerous studies refuting the conventional wisdom that development of rural lands to urbanized uses will strengthen a city's fiscal status. A study performed by the American Farmland Trust and the Cooperative Extension Service of the U.S. Department of Agriculture compared the revenue and expenditure streams for agricultural versus residential land. Residential land required $1.36 in services for each $1.00 paid in property taxes while rural land demanded an average of only $0.21 [6]. Thus, the lower revenues generated by rural land are made up for by the much lower service demands as "cows don't go to school" [7].

In 1988 developed land cost the city of Boulder, Colorado $2,500 per acre to maintain or $3,200 when utilities, flood control, transportation, and government costs were included, compared with just $75 an acre for undeveloped land [8].

The World Wildlife Find cites two studies where preservation of a parcel of land is preferable to development from a fiscal perspective. In Yarmouth, Maine, developing a particular parcel of land was projected to impose public costs in excess of tax revenues about twice the cost of purchasing the property [9]. In Huntsville, Alabama the infrastructure for a proposed development approached $5 million with annual service costs of $2,500 to $3,000 per acre, compared with acquisition costs of $3.3 million and annual maintenance costs of $75 per acre [9].

Statistical studies of fiscal impacts of growth sometimes produce conflicting conclusions, perhaps reflecting the methodological difficulties mentioned above as well as differences in the way different authors interpret the same data. A Duke University study of 248 large U.S. counties found that growth of more than one percent per year was associated with higher per-capita spending [10]. Ladd concluded with a decidedly anti-growth statement to the effect that established residents of fast-growing areas may be burdened by declining service quality and rising local tax burdens. Danielson and Wolpert of Princeton University found that growth in suburban fringe areas of northern New Jersey provided benefits of property value appreciation and a shift of tax burden to commercial property and new residents.

An Urban Land Institute study of 59 cities and counties in Virginia concluded that population and jobs growth increased local government expenditures by enhancing revenue-generating capacity [11]. The investigators offered a pro-growth interpretation, stating that growth allowed cities to spend more on resident services without increasing tax burdens. However, slow-growth advocates cited the same study as evidence that growth leads to higher per-capita government

spending [12]. After surveying a number of statistical studies of fiscal impact, a Tulane University study concluded that business development does have positive fiscal consequences while population growth has negative fiscal consequences [13].

1. DuPage County, Illinois

DuPage County is a rapidly growing suburban area west of Chicago described by some as the quintessential "Edge City" [14]. The former suburban bedroom county has become a major employment center featuring a thirty-one story skyscraper, McDonald's corporate headquarters and numerous high-technology office and research parks. Following the conventional wisdom that non-residential development is the key to a strong tax base, between 1985 and 1990 municipalities in the county rezoned 4,000 acres of residential and open space land for non-residential uses. In response to the rapid growth, the county planning commission undertook a major study of the fiscal impacts of land use changes, particularly the growth of non-residential development.

The starting point of the study was a comparison of the rate of increase of population, employment, and tax levies. Since 1974, employment growth outpaced population growth, but most significantly the tax levy grew significantly faster than both population and employment. For example, from 1986 to 1989, population grew by 1.9 percent a year, employment by 9.3 percent, and the tax levy by 16.5 percent [15]. DuPage County planners then performed an ordinary least-squares regression analysis to try to discover which variables were correlated with increases in the tax levy. They took data from 133 tax codes and used as independent variables empirical measures of residential development, non-residential development, the residential share of the property tax burden, median-income levels, and the degree of government fragmentation. The regression model succeeded in explaining 67 percent of the total variation in property tax levy increases. While each of the above variables was found to contribute to tax levy increases, the most surprising finding was that the amount of non-residential development was the largest contributor.

The authors of the study explained to those surprised by their results that this study looked at all taxing districts, (e.g., county, city, municipality, school district) and thus picked up indirect, spill-over and cumulative effects. The DuPage planners explained that development brings new people and high-paying jobs which in turn bring demands for higher-quality schools, a more attractive environment and more urban services. The study authors qualified their findings by noting that increased levels of service often were provided by the higher tax levies, but concluded by cautioning cities against pursuing non-residential development merely as a panacea for fiscal woes.

The DuPage Planning Commission's study generated a firestorm of negative responses including formal commentaries from a consortium of developers, a group of realtors, and a group of mayors and city managers. Several of these groups gathered expert testimony from academia to critique the methodology and conclusions of the study. The numerous academic critics who reviewed the study agreed that the study was insufficiently rigorous to draw firm conclusions about the fiscal impacts of development and offered suggestions for refinement of the statistical model, and yet many agreed that it was sufficient as an exploratory effort and raised important questions about the conventional wisdom regarding development [16].

2. Metropolitan Chicago Study

The Metropolitan Planning Council of Chicago and the Federal Reserve Bank of Chicago contracted with William Oakland of Tulane University to examine the fiscal consequences of business development in the host community and in neighboring communities. This study restricted itself to fiscal impacts and ignored non-fiscal or long-term effects. Oakland studied 115 suburban Chicago communities and examined assessed value of business property, employment, residential property tax rates, and property tax burdens as a percentage of residents' income for the period 1980 to 1990. The results of a regression analysis indicated that:

1) High tax rates seemed to deter development.

2) High residential property values were associated with more rapid development.

3) Housing values appreciated faster in areas with higher incomes and farther from the central city.

4) Business development was associated with lower residential tax rates, confirming the conventional wisdom that businesses pay their way, from a purely local fiscal perspective.

5) Population growth was associated with increased residential tax burden, probably reflecting the need for greater spending on education.

6) Population growth was associated with employment growth in the host and neighboring communities. A community's population growth was four times more strongly associated with employment growth in neighboring communities than with its own employment growth. Thus, business development in one community may result in greater residential tax burdens in adjacent communities that gain population but do not share in the fiscal rewards of the business development.

One of the important conclusions of Oakland's study of the Chicago area was that people do follow jobs, and thus while job decentralization provides fiscal benefits to the host community, its indirect effects on the broader area have negative fiscal consequences [13].

3. Summary

In summary, since the 1970s the net revenue stream generated by development projects has been squeezed by rising standards for infrastructure and services (e.g., stricter water treatment standards, solid waste disposal, computers in schools) combined with cutbacks in federal support for local infrastructure and popular resistance to property tax increases. Under these new conditions Altshuler and Gomez-Ibanez of Harvard University's Kennedy School of Government concluded, in their study of land exactions, that most development fails to generate enough revenue to cover the public costs it imposes on local governments. This result is particularly true, they write, if the growth occurs in rapidly-growing cities, at difficult-to-service locations, or if it over-burdens existing infrastructure beyond expansion capacity.[2] Additional recent studies question the conventional wisdom regarding the fiscal benefits of new development and suggest that most new development with the exception of office/industrial does not pay its way.

D. Costs of Decentralization

Since the 1970s, numerous studies have pointed out the high economic, social and environmental costs of existing patterns of low-density development at the fringes of our nation's metropolitan areas [6, 17, 18]. A report on the consequences of low-density development in California was issued jointly by the Bank of America, California's largest bank, the State of California Resources Agency, and non-governmental conservation and low-income housing groups. The report entitled Beyond Sprawl: New Patterns of Growth to Fit the New California argued that California cannot afford to continue to accommodate growth by continuing the post-World War II tradition of low-density, automobile-dependent decentralization of jobs and residences.

The report recommends 1) delineation of where development should and should not occur, 2) strengthening investment and efficient use of existing developed areas though land-use and transportation policies, 3) using the telecommunications revolution to strengthen existing developed areas rather than to promote further decentralization, and 4) sending developers correct economic signals. The latter step involves streamlining permit approval processes, charging developers the full marginal costs of development, and reducing competition among neighboring municipalities for tax-generating land uses [4].

A recent study performed at the University of Illinois at Chicago compared the distribution of costs and benefits for a hypothetical industrial plant and residential development in central city versus suburban locations. The study quantified a wide variety of social costs including traffic congestion, traffic collisions, air pollution, loss of open space, housing abandonment in core cities, and spatial mismatches in the labor market. While cost estimates were specific to the Chicago area, the study found a significantly different mix of costs and benefits depending on whether a development was placed in a central city or suburban location. Compared with a central city location, developments in outer suburban areas generated more private benefits but also were accompanied by much higher and often unpaid public costs.

The benefits of outer suburban development accruing to private firms included lower land and construction costs, lower wages for skilled female workers and lower taxes. However, these private benefits of employment decentralization were outweighed by increased publicly-borne consequences including traffic congestion, traffic collisions, air pollution, inner-city unemployment and housing abandonment, and public-sector infrastructure requirements and increased service costs. Businesses generated a fiscal surplus for suburban governments but even more so in the central city. According to this study, middle-income households are subsidized in outer suburban locations, but generate a surplus in the central city [19]. Inner-ring suburban locations were unable to offer the benefits of either core-city or outer suburban locations and faced many of the problems of both city and suburb.

1. Wright County, Minnesota

Similar in approach to the Chicago area study, a study performed by Resource Management Consultants estimated the costs and benefits of three different development scenarios in Wright County, Minnesota. The first scenario placed fifty residential units at a density of ten per acre adjacent to the existing city of Buffalo and served them with city sewer and water. The second and third scenarios used lower-density (one unit per acre and one per 7.5 acres) developments in rural townships.

Interestingly, all three residential scenarios generated less revenue than cost. However, the lower-density developments generated approximately four times larger operating revenue/cost deficits when city, county and school district finances were considered. Further, the lower-density developments removed more agricultural land from production and would eventually require greater capital investments for water, sewage treatment and schools. The study concluded that it is fiscally sound to discourage large-lot development in agricultural areas and to concentrate development in areas with existing infrastructure [20].

2. State of New Jersey

Rapid suburbanization in New Jersey provided a high quality of life for many but also was accompanied by a loss of natural resources, blighted urban centers, loss of rural and small-town character, and growing traffic congestion. New Jersey claims the highest number of highway miles per square mile in the U.S. and over 60 percent of New Jersey's interstate system is at or above capacity during peak periods [21]. In 1985 New Jersey passed a State Planning Act to provide a framework for protecting the environment, revitalizing decaying urban centers, stimulating economic development, and providing adequate housing and public services at a reasonable cost.

To address concerns about the costs of implementing strategies that would concentrate growth near existing centers, the State of New Jersey contracted with leading planning professors at Rutgers University to perform an environmental impact assessment of proposed plans. The impact assessment estimated that the state could save as much as $1.3 billion in infrastructure capital spending over the next twenty years and up to $400 million in annual operating costs by concentrating growth closer to existing urban service systems rather than continuing the current decentralized pattern [22].

E. Equity Issues in Infrastructure Finance

The question of who should pay for infrastructure improvements raises issues of equity across both time and space. For example, who should pay for the new school or sewage treatment plant required by a rapidly growing area? How shall costs be apportioned between current and future taxpayers, and between residents of that particular area and the broader political body such as the school district, the sewer district or state. If it is more expensive on a per-unit basis to provide urban services to larger lots, then should owners of these lots be forced to pay higher marginal costs that their choices carry with them, or should they be subsidized through average-cost pricing?

Issues of fairness center around questions of who benefits, who has responsibility, and who has the ability to pay. Clearly, the goods and services required by new housing developments range along a continuum from purely private to those where there is a demonstrable public interest. Examples of *private* goods might be the private driveway, the telephone lines inside a house, or television cable service. Examples of *public* goods no doubt include elementary and secondary schools and perhaps city streets.[1]

[1]In this chapter *public* is construed broadly, as public facilities and issues addressed by public agencies, as well as activities having a general social benefit or consequence, whether publicly or privately funded.

It is argued in the state and local public finance literature that if a capital investment with a useful life of eighty years is paid for with twenty-year bonds, then existing taxpayers are subsidizing future taxpayers who receive a benefit without paying its true cost. The question of intergenerational equity is complicated by legal restrictions that limit the terms for revenue bonds.

Recently, there has been much attention to the question of who should pay the cost of infrastructure associated with new development. In response, in high-growth areas of the U.S. and Canada there has been growing use of impact fees levied on new development. Most impact fees have arisen out of fiscal necessity combined with anti-growth sentiment. Local governments, constrained in their ability to raise money through property taxes, have resorted to impact fees where permitted by state and local laws. Development impact fees shift some of the burden of infrastructure financing from existing residents of a community to newcomers.

A study at the University of California at Berkeley examined the ethical justification for impact fees. The authors argued that if growth-induced tax increases were anticipated, they would tend to depress property values. The lowered property values would in turn translate into a cost savings for homeowners which could be drawn upon to finance future growth. Following this logic, impact fees were not felt to be justified to mitigate an unfair burden on established residents, but only to prevent windfalls to owners of developable land. If, however, the growth-induced tax increases were not capitalized into property values, then financing future growth places an inequitable burden upon existing residents and impact fees are justifiable [23].

F. Fiscal Disparities and Regional Growth

There are two opposing viewpoints on the fiscal disparities between tax-base rich and tax-base poor cities within a metropolitan area. One position termed the *urban reform* or *regionalist* model is to attempt to correct fiscal disparities through greater metropolitan governance or tax-base sharing or both. The regionalist position is motivated by a desire for greater equity and a belief that metropolitan solutions are necessary to manage metropolitan-wide systems and property markets.

An opposing position developed in the 1950s by Charles Tiebout is termed the *public choice* model. The public choice model supports jurisdictional fragmentation because it is thought to provide self-determination, fiscal accountability, and competition among local jurisdictions. In the public choice model a region is viewed as a market composed of cities, with each city offering different tax levels and service bundles and residents sorting themselves out among the options by "voting with their feet." According to the public choice model, competition should produce efficient and optimal outcomes even though many of the assumptions of market competition are not

met. One problem, however, is that non-competitive firms go out of business while cities generally cannot. Nonetheless, the debate between public choice and regionalist advocates has generated interest in whether fiscal disparities among cities are self-correcting or exacerbated over time.

A study of communities in Allegheny County, Pennsylvania (metropolitan Pittsburgh) examined the changing fiscal health of communities over the period 1981 to 1991 [24]. All cities in Allegheny County were ranked in 1981 and 1991 according to their level of fiscal stress, a measure of their tax rate and their tax yield. The best predictor of a city's ranking in 1991 was its status in 1981, with the majority of cities in the top and bottom quartiles remaining in the same quartile ten years later. Over the ten-year period, the fiscal health of the best-off communities increased at the greatest rate, allowing these cities to have the smallest property tax rate increases and to direct more government spending to quality-of-life items. The greatest property tax rate increases were in the two middle quartiles of cities which also experienced only moderate growth in quality-of-life spending. On the other hand, the most stressed quartile of cities saw the smallest increases in property valuation and had to direct spending away from quality-of-life items and into core services. In summary, the worst-off communities became less competitive while offering a more expensive and less competitive bundle of services, and disparities among cities increased over time.

A study of northern New Jersey's rapid expansion through the 1970s and 1980s found that growth was highly uneven though there was some distribution or sharing of benefits [25, 26]. Growth bypassed the built-up communities and low-income communities in favor of distant middle-income suburbs with large supplies of undeveloped land. Jobs and business expansion took place in areas where poverty populations were lowest. Economic expansion resulted in greater income disparities between communities with older areas experiencing decline while newer areas experienced rapid housing appreciation, and growth in tax base, employment and population [26]. The redistributive effect of state revenue sharing and school aid allowed some of the benefits of growth to flow to communities not experiencing growth [25].

III. INFRASTRUCTURE FINANCING POLICIES AND THEIR EFFECT ON RESIDENTIAL CONSTRUCTION IN THE TWIN CITIES

This section examines financing policies for new infrastructure of roads and various utilities and their effect on the type, cost and location of residential construction in the Twin Cities. When a new housing unit is built, it becomes habitable only when plugged into a variety of urban services

that may include roads, water, sanitary sewer, storm water drainage, electricity, natural gas, telephone, and cable television. If the incremental costs of providing these new facilities are passed on to the developer and builder through hook-up charges and development-cost levies, the cost of new construction will certainly increase. But if the costs of providing new infrastructure are passed on to others and absorbed system-wide, economic efficiency and equity issues arise and the existing housing stock is placed in a position of relative disadvantage, as its owners and occupants are forced to subsidize new development. This section first attempts to quantify some of these costs where data are available, and concludes by briefly discussing some of the policy arguments for and against various development charges.

In addition to the infrastructure financing policies examined here, many other governmental policies affect the cost, type and location of new or rehabilitated housing supply added to the market. At the federal level these policies range from tax deductibility of mortgage interest and real estate taxes to the federal funding of interstate highway construction and publicly-owned wastewater treatment works. At the state and regional level, the housing supply produced by the market is affected by highway, transit, and wastewater treatment systems as well as by such policies as the differential property tax rates for multiple-family housing versus homesteaded single-family housing. Chapter 3 discussed the importance of zoning, building codes, environmental regulations and other factors in influencing the cost, type and location of the housing supply that is ultimately produced.

A. Wastewater Collection and Treatment

In 1992 three University of Minnesota professors performed a study of the Twin Cities regional sewer rate-structure system [27]. Their goal was to compare the effect of the current system of average-cost pricing with a system that allocated costs to cities in proportion to the cost of actually providing the service. They calculated the unit cost for treating sewage at each of the region's nine sewage treatment plants and the cost per gallon-mile for conveying the sewage through interceptors. Capital costs were calculated based on discounting the initial cost of the facility over its expected life at a four percent rate of interest.

The investigators first noted that total charges for sewage treatment services did not cover total system costs, a reflection of past federal construction subsidies. By not charging users the true costs, consumers fail to receive adequate incentives to economize on their use of sewage treatment services. New customers are charged a one-time service availability charge (SAC) to cover costs for holding capacity. The study found that the SAC is less than the cost of holding capacity by

about $270 per household equivalent. Further research into the SAC structure is being undertaken by the Metropolitan Council.

Further, the University study noted large differences in treatment costs with some of the smaller plants exhibiting costs more than double that of the largest plant, the Metro plant located in St. Paul. Thus, while Metro plant users paid approximately full costs for services, the other system users were subsidized. Higher-density areas are served at a lower unit cost because they permit economies of scale in treatment facilities without incurring large interceptor costs. The uniform fee system results in an estimated flow of $6 million per year out of the developed portion of the metropolitan region, primarily from Minneapolis, St. Paul, and inner-ring suburbs to subsidize the rest of the system. The cost to each individual homeowner in the developed area is relatively modest. However, twenty suburban and outlying municipalities receive subsidies from the uniform fee system that amount to a present value of between $1,000 to $3,700 per household.

Another research project on the Philadelphia area found that firm locational decisions were significantly influenced by property tax differences among communities [28]. Based on a review of the literature the authors felt that the amount of these sewer subsidies, which were of the same magnitude as property tax differences that influenced firm locational behavior, probably were enough to influence settlement patterns and municipal budgets.

Accustomed as we are in the Twin Cities to individual water meters and volumetric charges, we tend to view as inefficient the water utilities of many older East Coast cities that do not have water meters and use flat fees for water and sewage services. Similarly, Luce, Lukermann, and Mohring argue that the Twin Cities' uniform fee system is inefficient because it does not provide proper incentives for households to economize on water usage and to locate where they may be served less expensively.

B. Electrical Service

In most of the U.S., when developers and builders create new housing subdivisions they are not charged the costs of extending and hooking up electric service. Rather, publicly-regulated utility companies such as Northern States Power roll those marginal infrastructure costs into the rates they charge customers across their franchise territory. The stated rationale is that the investment in serving the new customers is eventually recovered through revenues from future electrical service (as these customers begin subsidizing the next wave of residential construction). However, the immediate effect is that new owners save as much as several thousands of dollars on the prices of

their new houses, and electric rates for existing customers are higher than they otherwise would be.

With pending legislation that would deregulate the nation's electric utilities, the National Association of Home Builders issued a press release in the summer of 1997 asserting that market-driven competition would force utilities to end current practices of subsidizing new service extensions and would result in increased prices for new houses. In California, where electrical utilities are not allowed to subsidize new construction and pass costs along to other ratepayers, an average of about $3,500 is added to the price of a new house to cover the cost of new transformers, power poles, electric lines and service hookups [29].

The electric rate book for Northern States Power Company provides for a service extension of 100 feet of combined distribution and service lateral at no charge to the customer [30]. Additional distances are charged excess footage rates of $4.55 per service foot [31].

C. Natural Gas

As with electrical service, natural gas utilities generally do not charge builders the actual marginal costs of extending and hooking up new service. Minnegasco is the largest natural gas provider in the Twin Cities metropolitan area but Northern States Power (NSP) also serves a significant area of the Twin Cities.

NSP's rate book states that service extensions will be made following the principle that "rendering of service to an applicant will not create an undue burden on other customers" [32]. NSP uses an equation to calculate whether or not a gas main extension is subject to an excess footage charge and also provides at no charge a residential service line up to 75 feet inside the property boundary [33]. Excess footage charges range from $1.50 to $5.25 per foot. For trailer parks, NSP provides a gas main to a common delivery point such as the office or laundry and installation of the individual service lines is the responsibility of the trailer park owner.

The Minnegasco tariff agreement provides for the free installation of up to 150 feet of gas main and 105 feet of service line to a new residence. Where these distances are exceeded, Minnegasco is to charge $3.00 per foot for gas mains and $2.00 for service lines [34]. Minnegasco's tariff agreement gives the company general discretion to waive excess footage fees, presumably in unusual cases. The practice of existing ratepayers subsidizing new service extensions is highlighted by a rather extreme example from a recent Minnegasco rate increase case. Anticipating increased competition in the energy industry and increased growth at the fringes of

the Twin Cities metropolitan area in areas typically served by propane gas, Minnegasco decided to identify and move into areas with high growth potential.

Between 1993 and 1995, Minnegasco made major service expansions into 23 sparsely populated areas that would require major subsidies from other ratepayers. These service extensions included areas surrounding Hastings, New Prague, Savage and along the Interstate I-94 highway corridor between the Twin Cities and St. Cloud. These service extensions would have required exorbitant per-customer contributions under the existing tariffs, but desiring to capture those markets, Minnegasco waived the excess footage fees, placed the costs in their rate base, and then applied for a rate increase. The Public Utilities Commission found that the economic interests of ratepayers and the public interest in fair competition, efficient resource allocation, and sound rate-making all coincided, and judged that Minnegasco would not be allowed to position itself for increased competition at the expense of monopoly ratepayers. Detailed information on the costs associated with the waived footage charges was unavailable but the Public Utilities Commission ruled that ratepayer harm clearly was present and disallowed $3,268,994 from the rate base calculation [35].

D. Impact Fees

In contrast to rapidly growing portions of North America such as Florida or Vancouver, British Columbia, impact fees have not seen widespread use in Minnesota and it is unclear whether they are authorized under Minnesota law. For example, new developments in the city of Vancouver are assessed a development cost levy based on the square footage of the development, its type (commercial, residential, etc.) and its location (higher fees in areas with strong demand). These development cost levies are high by American standards and cover costs for non-market housing, transit improvements, day-care facilities, parks and schools.

Eagan, with its recently struck-down road unit charge, was the most notable user of impact fees in Minnesota. Back in 1977 consulting engineers for the rapidly growing city of Eagan projected a shortfall in street construction funds and proposed a road unit connection charge patterned after water and sewer connection charges. The inflation-adjusted charge increased from $75 to $410 per unit by 1994 when home building contractors filed a lawsuit contesting the charge. The Supreme Court of Minnesota ruled in March 1997 that the road unit charge was not a true impact fee but rather a tax, since the city did not earmark the funds but used them for general street construction and did not prove that the fee was proportionate to the need created by the development [36]. Thus, as a statutory city without a home-rule charter, the Supreme Court ruled that a road unit charge was invalid under Eagan’s power of taxation.

Nationally, the most common form of impact fee is the sewer or water connection charge. In the TCMA, 53 communities reported to the Metropolitan Council that they assessed one-time sewer and/or water connection charges. While many cities have no fee for new residential connections, fees range as high as $6,100 per household in Shorewood and $3,800 in Apple Valley and Hugo [37].

E. Summary

New residential construction requires significant investments in public infrastructure, the costs of which are often not paid by the direct beneficiary. Drawing on studies from Florida and California, an American Planning Association guidebook estimates that it costs $20,000 per house to provide the necessary public infrastructure, facilities, and services [38]. Historically, the goal of public utility regulation was to ensure low, uniform rates so that services such as electricity, telephone and sewage treatment could be enjoyed universally. For example, earlier in this century the concern in telecommunications policy was to keep rates low for lower-income customers living in more expensive-to-serve rural areas. Recently, some concern has been expressed that dwellers of developed cities and suburbs might be subsidizing the costs of new moderate- to high-cost residential construction in more expensive-to-serve, low-density, outlying areas. Another trend is towards utility deregulation which might result in geographical de-averaging and marginal cost pricing, both of which likely will increase prices for new construction in sparsely-settled areas.

One argument for not charging new developments the actual costs of providing urban services is that the price of new housing will increase and the price increases will be felt most acutely by households with lower to moderate incomes. However, since most new construction is occupied by upper- and middle-income households, and lower- to moderate-income households rely on the existing housing stock, the strength of this argument is significantly muted.

The arguments for charging new developments a price close to the actual costs of providing service derive from economic efficiency and equity concerns. The economic efficiency argument is that by failing to charge consumers “honest prices”—that is, the incremental costs they impose on the system—the housing market does not receive correct cost signals and households in the aggregate fail to make economically efficient decisions regarding housing consumption. The equity argument is that by not charging new developments for directly-related private-benefit infrastructure costs, the developed areas of the regions are forced to subsidize the developing areas, which may be a regressive transfer of payments.

IV. REGIONAL GROWTH AND FISCAL STATUS OF LOCAL GOVERNMENTS IN THE TWIN CITIES AREA

This section examines the effects of growth on the finances of local governments and school districts in the Twin Cities. The relative fiscal strength of various Twin Cities communities are compared at different time intervals, followed by detailed fiscal profiles for six communities with a range of housing values and at different stages of the growth process.

A. Municipal Finance in Minnesota

Taxes and state grants comprise the two largest sources of revenue for Minnesota's cities. Taxes are more important for cities over 2,500 population, and contributed 36 percent of all revenues in 1995 compared with 26 percent for cities under 2,500 population [39, 40]. State grants are the largest source of revenue for the state's smaller cities. Cities also obtained revenue from fees for services, special assessments, municipal enterprises, interest earnings, fines, licenses, and county and federal grants. State aid comes in the form of local government aid, homestead and agricultural credit aid, and highway aid. Property taxes are the dominant source of tax revenues for cities, though lodging taxes and local sales taxes are important in some cities.

Many cities in Minnesota use tax increment financing (TIF) where the city establishes a TIF district and diverts property taxes to pay redevelopment costs rather than paying for general city services. Small cities use tax increment financing less often (used by 23 percent of cities under 2,500 population) than larger cities (90 percent of cities over 2,500 population). Tax increments average 9.2 percent of city revenues for cities over 2,500 population and 3.3 percent for smaller cities, but range as high as 39 percent of total city revenues.

For Minnesota's cities the three largest categories of spending are streets and highways, public safety, and debt service for various capital outlays. In 1995, streets and highways were the costliest function for cities in Minnesota and a large proportion of the debt service stems from street and highway construction [39].

B. Property Taxes in Minnesota

Recent discontent with rising property tax bills and perceived inequities have prompted serious discussions of property tax reform. Major contributors to this discontent are large disparities in the amount of property taxes paid in different parts of the state, disparities in the way different classes of property are taxed, and disparities in property-tax bases across the state. Complicating the matter are the flows of intergovernmental revenues that mitigate some disparities but "hide the true

costs of government services and obscure the lines of accountability between state and local governments and their constituents" [41].

Property taxes in Minnesota are levied on a taxing jurisdiction's *tax capacity*. Each parcel of taxable real estate is assigned to a property class. Each property is assessed at its market value. Depending on the class of property, a specified proportion of the assessed value, called a *class rate*, is identified as taxable, and forms a component of the jurisdiction tax capacity. Tax rates are then applied to tax capacity of each parcel. The class rates for commercial and non-homesteaded residential property are several times higher than for homesteaded residential or agricultural properties, though recent reforms have aimed to compress these class rate differences. There are 28 different property tax classifications and corresponding class rates in Minnesota. The major categories and their class rates for taxes payable in 1998 are [42]:

Residential Homestead:
- First $75,000 ..... 1.0 percent
- Over $75,000 ..... 1.85 percent

Rental Housing
- One to three units ..... 2.3 percent
- Four or more units ..... 2.9 percent

Commercial-Industrial and Public Utility
- First $150,000 ..... 2.7 percent
- Over $150,000 ..... 4.0 percent

The above class rates reflect changes enacted by the 1997 Minnesota Legislature which attempted to reduce the burden borne by apartments and commercial-industrial properties. For residential homestead properties the first tier was moved from $72,000 to $75,000 and the top rate was reduced from 2.0 to 1.85 percent. For rental housing, the rates were reduced from 3.4 to 2.9 percent. For commercial-industrial properties the first tier was raised from $100,000 to $150,000, the rate on the first tier was lowered from 3.0 to 2.7, and the rate on the second tier was lowered from 5.06 percent to 4.0 percent. Even with the recent rate compression, Minnesota's property tax laws make it more fiscally attractive for cities to pursue commercial-industrial development. The 1997 Legislature also enacted levy-increase limits and limits on market-value increases, both of which act to control rising property tax bills but constrain the ability of local governments to respond to changing demands.

In 1989 the Minnesota Legislature changed the method of calculating property taxes. The previous system involved converting market value to assessed valuation by applying a formula, and then multiplying by the mill rate to determine the tax. The new system of tax computation involves multiplying the *market value* by the appropriate *class rate* to determine the *tax capacity*, and then multiplying by the local *tax capacity extension rate* to determine the *tax* that is owed.

Local officials set the proposed tax levy by subtracting estimates of state aid and other revenue sources from estimated budget needs. Tax rates are set by dividing the *tax levy* (what the taxing jurisdiction decides that it must collect from property tax) by the total net tax capacity for all properties in the jurisdiction. An individual's tax bill is equal to their individual property's tax capacity multiplied by the local tax capacity extension rate. The local tax rate reflects the combined tax levies for all jurisdictions governing a piece of property such as the city, county, school district, and watershed district.

C. Tax Capacity by Minor Civil Division

The tax capacity of a city determines its ability to pay for essential government services from its own resources, and its prospects for maintaining an environment attractive to existing and prospective residents and businesses. A city with a declining tax capacity is faced with the prospect of raising taxes on properties with declining values, or cutting spending, or attempting to increase efficiency, or garnering more intergovernmental aid.

The fiscal capacity of each minor civil division (MCD) in the seven-county metropolitan area was determined using data from the Office of the Minnesota State Auditor. The assessed valuations for years prior to 1989 and the net tax capacity for years after 1989 were divided by respective MCD populations to provide a proxy for fiscal capacity. A population-weighted mean was computed for the seven-county Twin Cities metropolitan area by summing the tax capacity for all MCDs and dividing by the seven-county population.

In 1985 the group of cities with the highest per-capita tax capacities were located in the southwest quadrant of suburbs of Minneapolis (Figure 4.1). Cities with less-than-average tax capacity were clustered in northern Anoka County. Ten years later in 1995, the pattern of higher-than-average tax capacities in the southwestern suburbs had intensified and spread into adjacent areas (Figure 4.2) The highest tax-capacity city had gone from 305 percent of the mean in 1985 to 435 percent in 1995. The St. Croix valley also emerged with a cluster of higher-than-average tax capacity communities. In the period 1985 to 1995, the highest gains occurred in a ring of second-, third-, and fourth-ring suburbs around the core cities (Figure 4.3). Relative declines in tax capacity

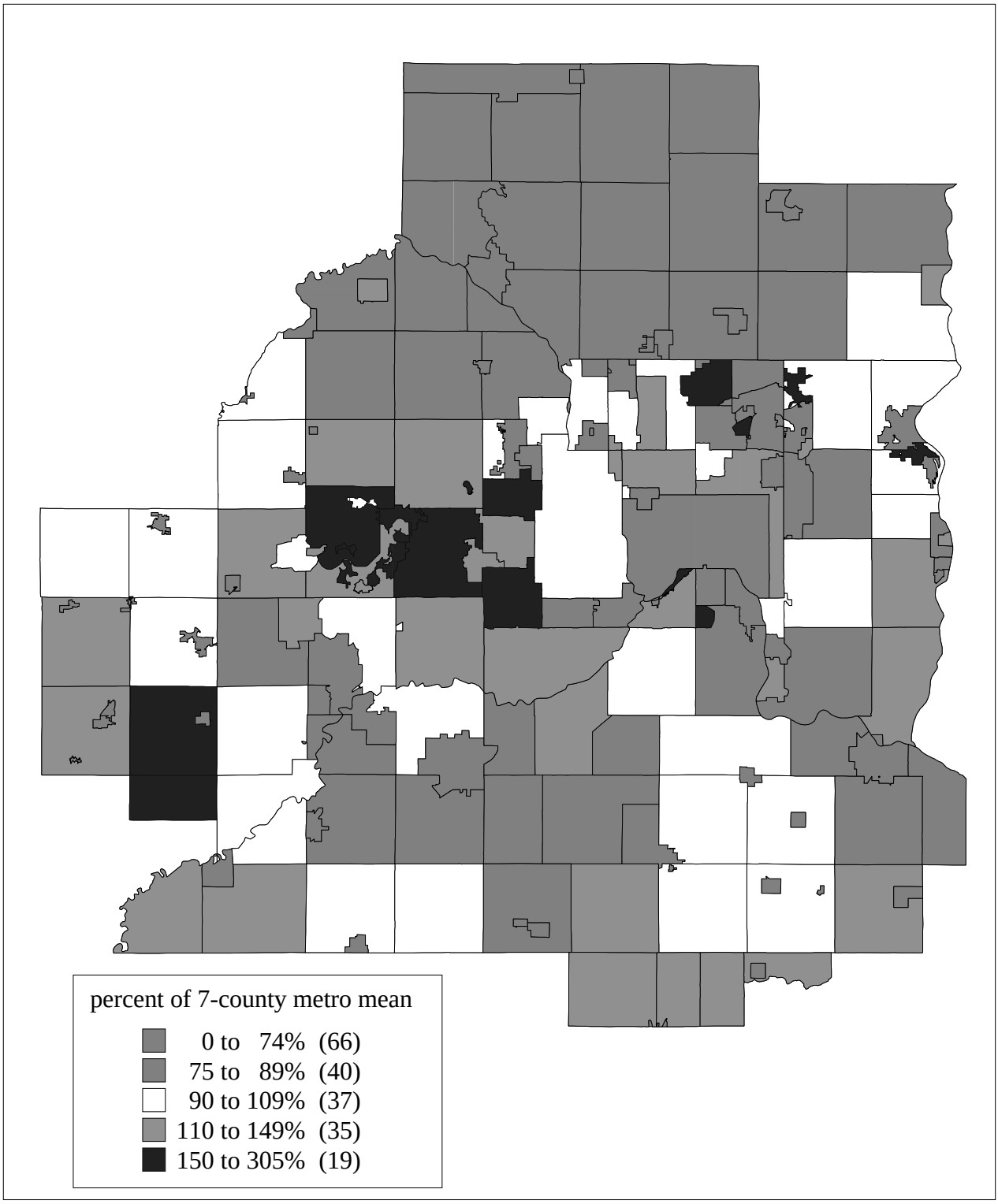

Figure 4.1. Per-Capita Tax Capacity by Minor Civil Division, Twin Cities 7-County Metropolitan Area, 1985

Data Source: Office of the State Auditor. Calculations by the authors.

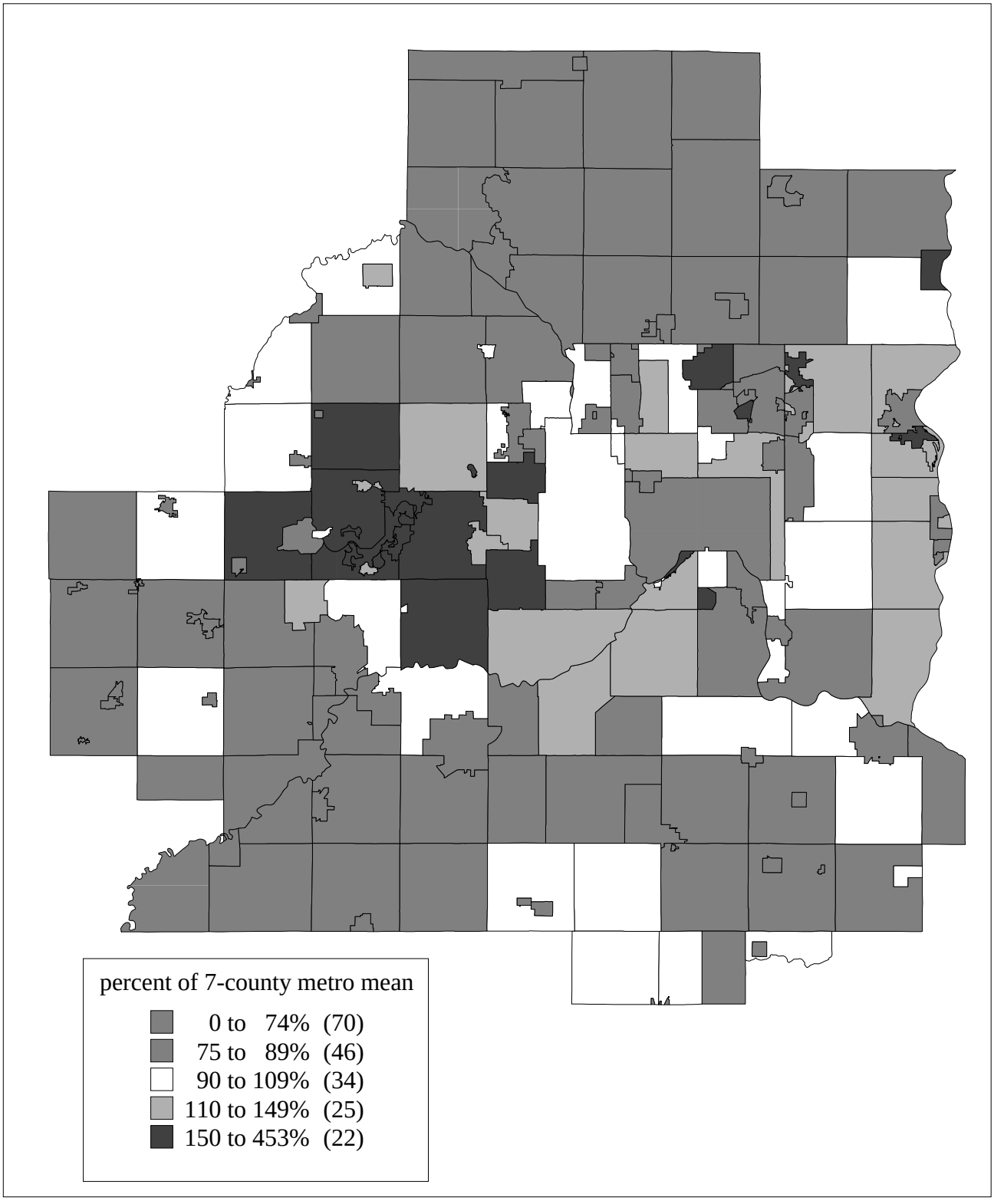

Figure 4.2. Per-Capita Tax Capacity by Minor Civil Division, Twin Cities 7-County Metropolitan Area, 1995

Data Source: Office of the State Auditor. Calculations by the authors.

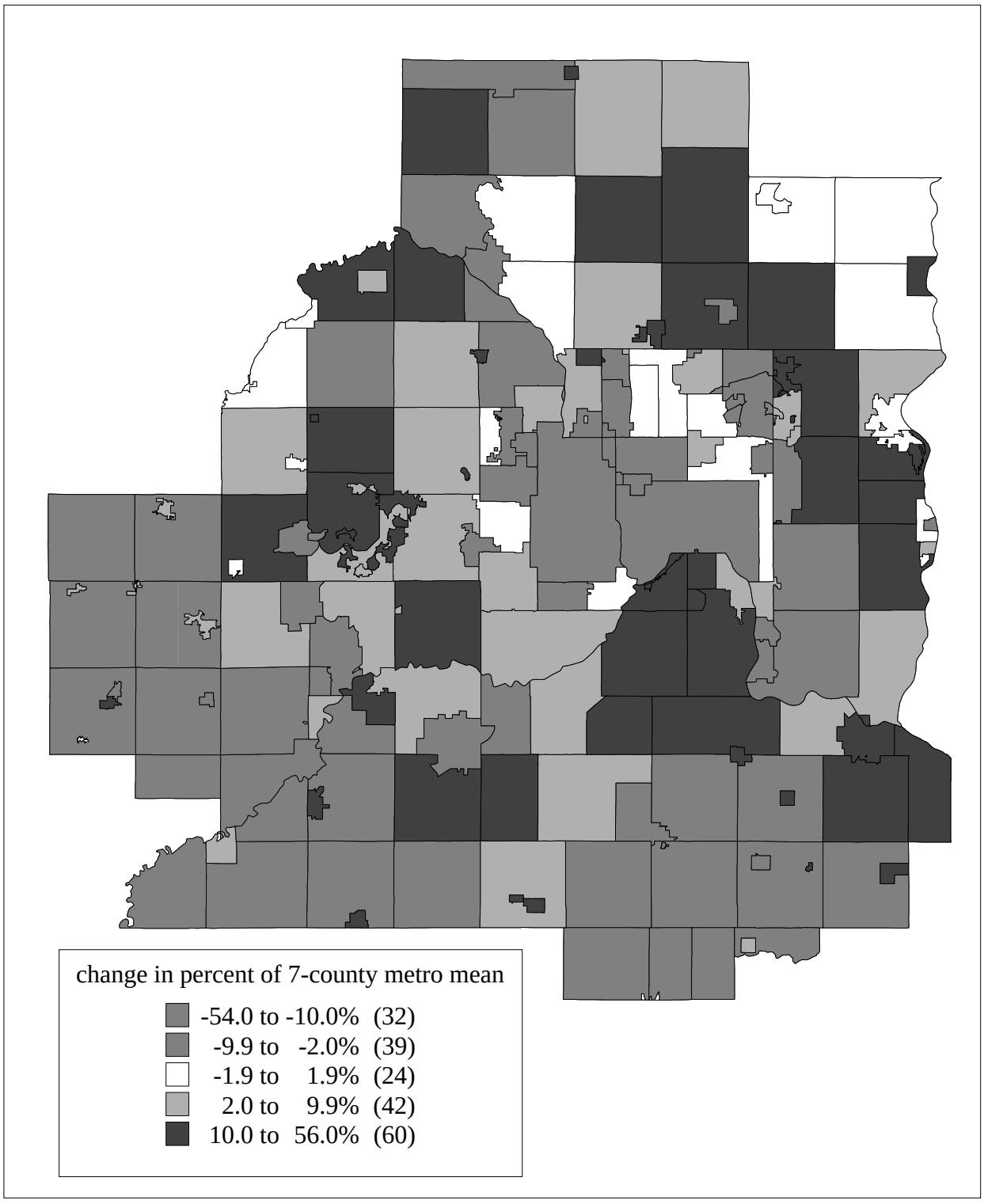

Figure 4.3. Change in Per-Capita Tax Capacity by Minor Civil Division, Twin Cities 7-County Metropolitan Area, 1985-1995

Data Source: Office of the Minnesota State Auditor. Calculations by the authors.

occurred in the central cities, many inner-ring suburbs, and in outlying townships in the extreme south and west edges of the region, which did not share in the region's growth and property value appreciation. St. Paul declined from 88 percent of the mean to 80 percent by 1995, but Minneapolis fared better, declining from 102 percent in 1985 to 100 percent in 1995.

All metropolitan-area cities were ranked in terms of per-capita tax capacity in 1985 and in 1995. Townships were excluded from the ranking because they provide a more limited scope of services and their small populations magnify the effects of small changes. At the top of the rankings in 1995 was Woodland and at the bottom was Young America. Four of the top five cities in 1985 remained in the top five in 1995. Cities were divided into quartiles with the top quartile labeled *high* tax capacity communities, the second *medium*, the third *low* and the bottom quartile *very low*. A comparison of the relative positions of cities in 1985 and 1995 indicates relatively little mobility among categories (Table 4.1). Ninety-one percent of cities in the top quartile remained in the same category ten years later. Similarly, 76 percent of *very low* communities remained in that category ten years later. Seventy-seven percent of all cities remained in the same quartile ten years later, and only one of 137 cities moved more than one category.

Table 4.1. Change in Per-Capita Tax Capacity for Cities in the 7-County Twin Cities Metropolitan Area

		Position in 1995				
		High	Medium	Low	Very Low	**Total**
Position in 1985	High	31	3	0	0	34
	Medium	2	27	6	0	35
	Low	1	4	21	8	34
	Very Low	0	0	8	26	34
	Total	34	34	35	34	137

Data Source: Office of the Minnesota State Auditor

The actual property tax rates in a community are a function of fiscal resources (tax capacity per capita), and needs and wants (per-capita spending). Townships and smaller cities that provide fewer services than larger cities generally have lower tax rates. A 1997 Citizen's League and Minnesota Taxpayers Association survey of taxes on a typical $110,000 house found that the ten communities with the lowest taxes included seven townships and three small outlying cities (Afton, Ham Lake, and Grant). New Prague had the lowest per-capita tax capacity in 1985 and second-lowest in 1995, so it is not surprising that it also had the highest tax rates in the seven-county metropolitan area [43]. These tax rate comparisons should be viewed with caution since houses of

similar size and quality vary widely in price from one community to another. The comparisons do, however, illustrate the importance of tax capacity and level of service in determining the local tax burden.

D. Longitudinal Profile of Selected Cities

Six communities with differing tax capacities and at different stages in the growth process were selected for further analysis. Longitudinal profiles of population, tax capacity, and local government expenditures from 1970 to 1995 were constructed using annual reports and database files obtained from the Minnesota Office of the State Auditor. Tax capacity and expenditure figures were converted to constant 1995 dollars. To account for the change in tax calculation methodology in 1989, the 1979 to 1985 assessed valuation figures were divided by eight to make them roughly equivalent to the tax capacity values reported for years 1990 to 1995.

The conversion factor of eight is based on the average class rate for a typical of mix of properties, and is less accurate for cities with an unusually small or large commercial-industrial component in the tax base. Tax rates for the period 1989 to 1997 were obtained from the city manager of each city. Tax rates for previous years are not comparable because of law changes in the way taxes were computed. Tax rate increases translate into higher tax bills even though the property's value is unchanged. The effects of rising tax rates are magnified for properties appreciating in value faster than other properties in their taxing jurisdiction.

1. Brooklyn Center

Brooklyn Center is a first-ring suburb north of Minneapolis with a significant commercial tax base but below-median housing values. Brooklyn Center's population declined 0.8 percent per year during the study period, dropping from 35,000 in 1970 to 28,000 in 1995. Tax base in Brooklyn Center increased through 1985 but since then has been stagnant or in decline (Figure 4.4).[1] Over the past ten years, the change in the valuation of commercial and residential properties in Brooklyn Center failed to keep pace with the rest of suburban Hennepin County. From 1981 to 1987, apartments increased in value an average of 7.7 percent and commercial properties increased an average of 5.7 percent. But, from 1990 to 1996 the total valuation of apartments declined by 14.8 percent and from 1992 to 1996 commercial properties declined by 16.6 percent. Notable among the declining commercial properties is the Brookdale regional shopping center, which dropped in assessed value from $50 million to $21 million with the owner requesting a further reduction to $14 million. Industrial and single-family residential properties have fared better in Brooklyn

[1]The figures in the charts in this chapter are indicated in real dollars.

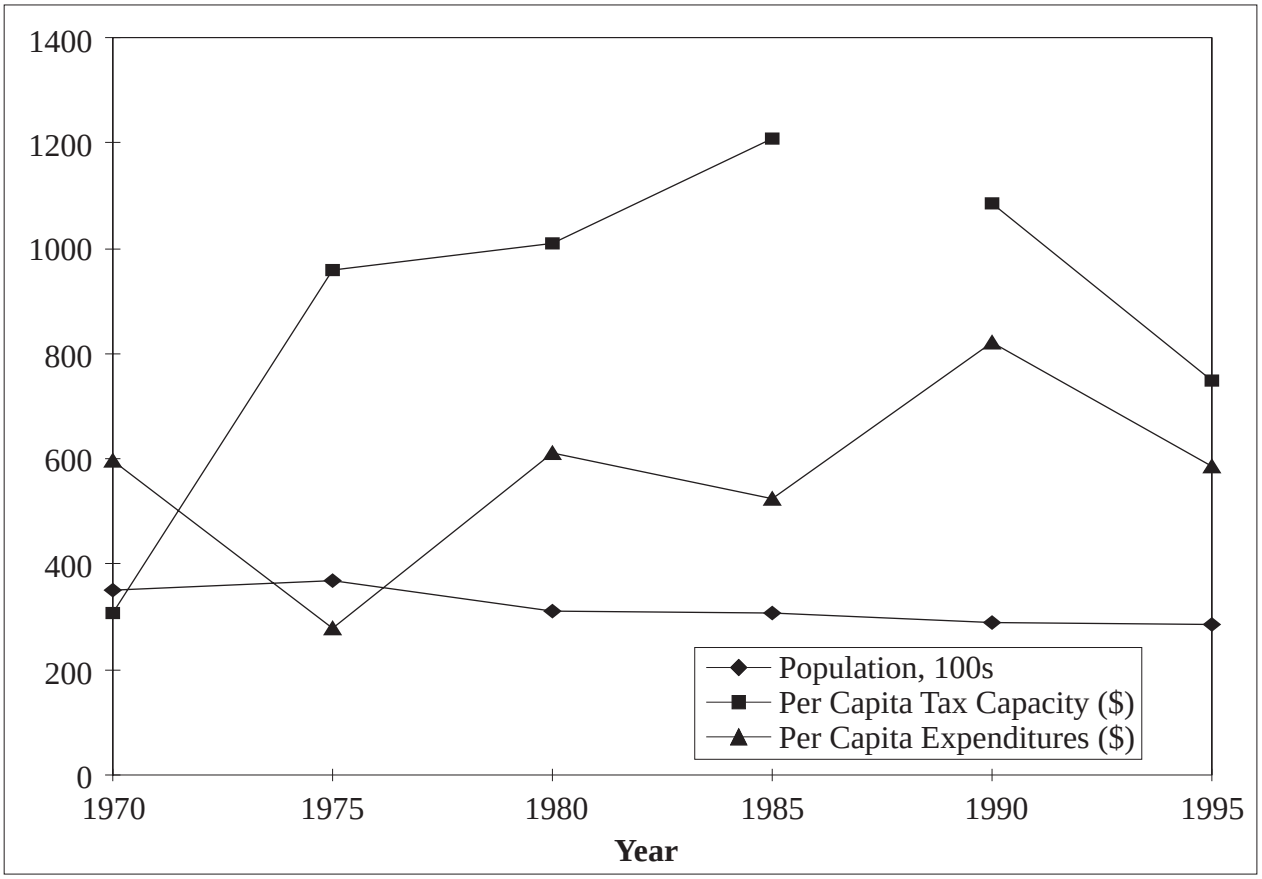

Figure 4.4. Population, Tax Capacity and Expenditures, Brooklyn Center, Minnesota, 1970-1995

Data Source: Office of the Minnesota State Auditor

Center though even single-family housing failed to gain in value as well as the rest of suburban Hennepin County.

Total expenditures in Brooklyn Center have been relatively constant but per-capita spending has trended upward because of shrinking population. With the decline in commercial valuation, the share of the tax burden borne by residences has increased and the shrinking tax base has led to significant property tax rate increases (Figure 4.5).

2. Crystal

Crystal is an inner-ring suburb northwest of Minneapolis with housing values below the metropolitan median. Since 1970 Crystal's population has declined about one percent per year, going from 31,000 to under 24,000. During the 25-year study period, per-capita tax capacity first rose, leveled off, and then declined to under $3,000 per person (Figure 4.6). Government

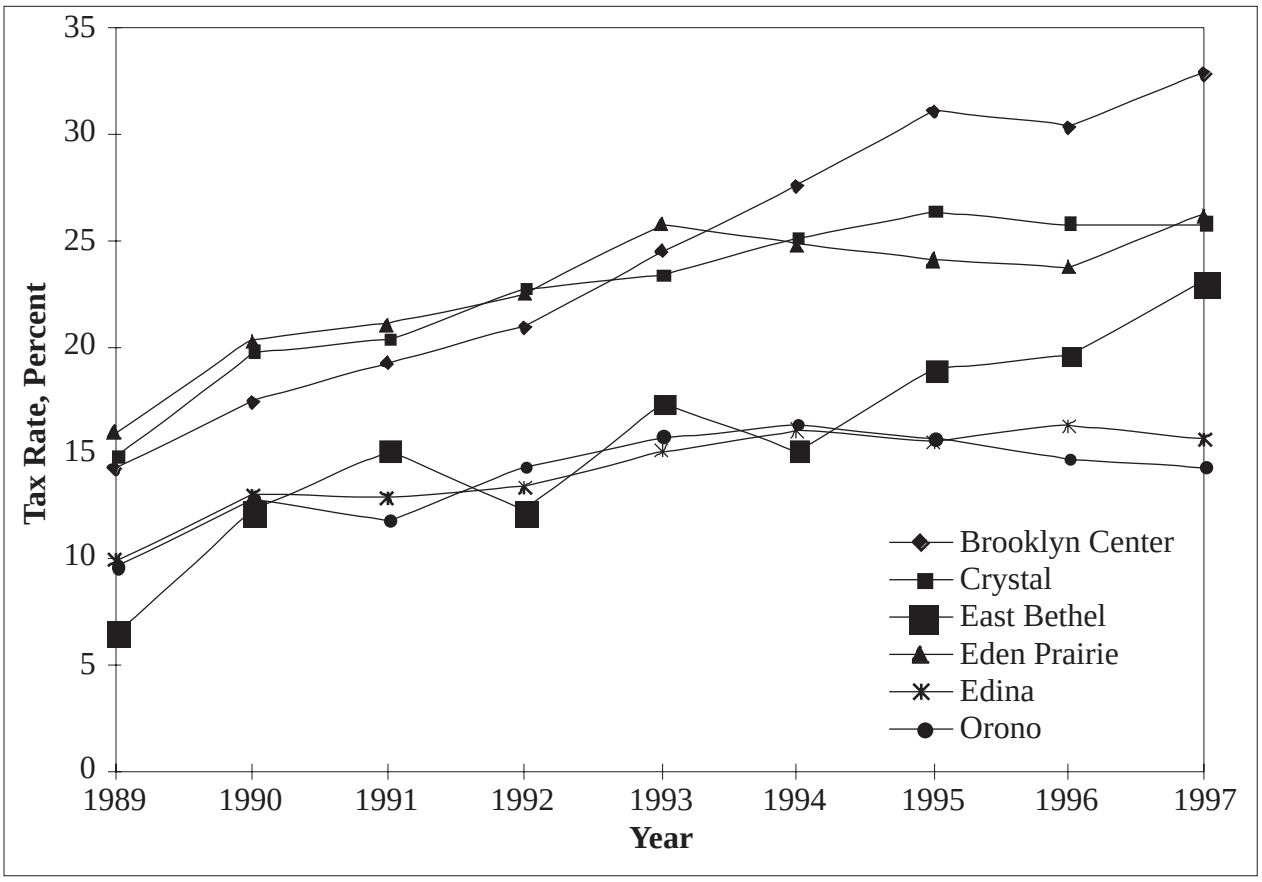

Figure 4.5. Comparison of City Tax Rates in Brooklyn Center, Crystal, East Bethel, Eden Prairie, Edina, and Orono, Minnesota, 1989-97

Data Source: City Finance Directors

expenditures have not declined to match the population decline but rather have risen in the study period. Rising expenditures and declining tax capacity have forced the city to raise tax rates significantly (Figure 4.5).

3. East Bethel

East Bethel is a rapidly growing moderate-income suburb on the northern fringe of the Twin Cities area in Anoka County. Housing values are below the median but rising in East Bethel. East Bethel is the second-fastest-growing of the communities profiled, increasing at 5 percent per year from 2,600 in 1970 to 9,000 in 1995 (Figure 4.7). While total net tax capacity has risen steadily, the tax capacity per capita has exhibited both sharp increases and decreases. East Bethel was the only city profiled that witnessed growth in percapita tax capacity from 1990 to 1995.

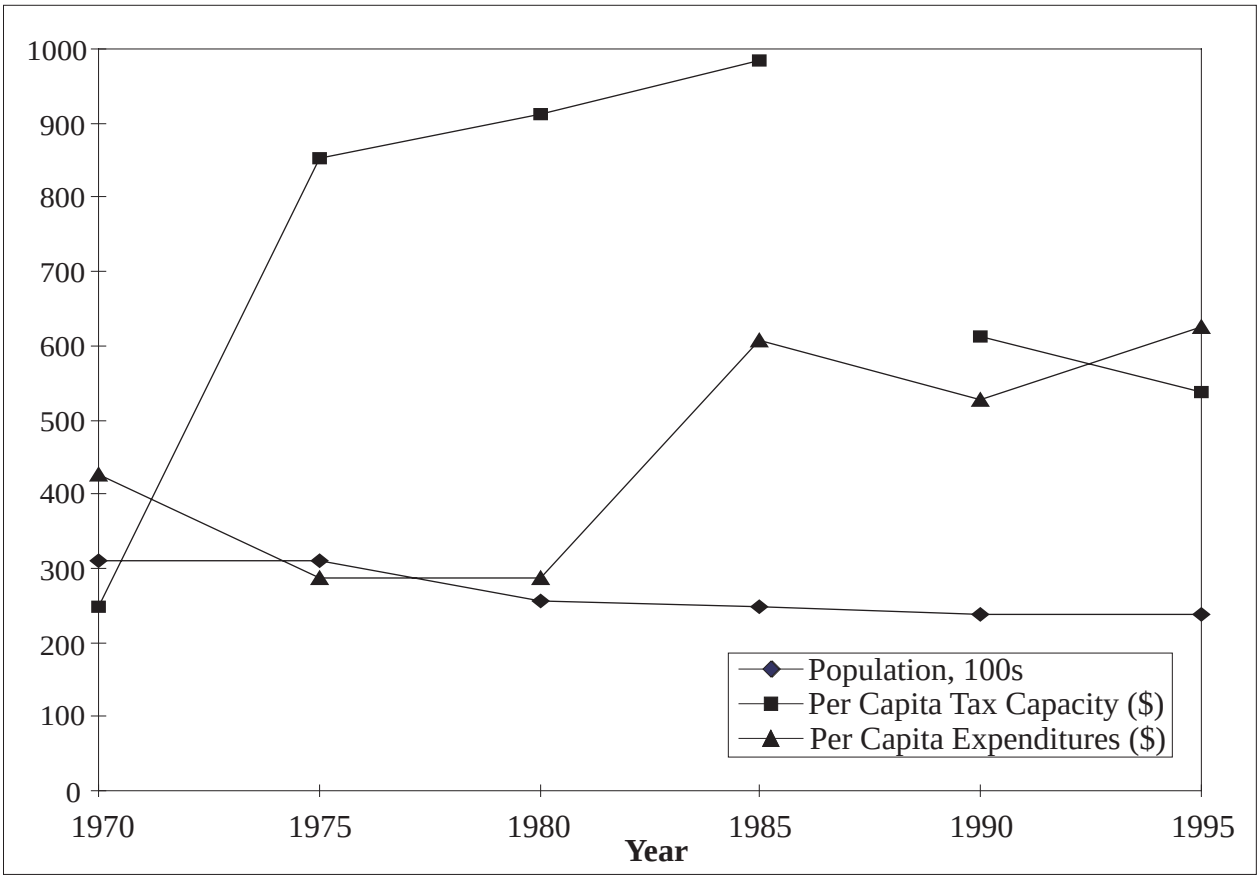

Figure 4.6. Population, Tax Capacity and Expenditures, Crystal, Minnesota, 1970-1995

Data Source: Office of the Minnesota State Auditor

Per-capita expenditures rose steadily and then jumped upwards dramatically in 1990. The sharp expenditure increase in 1990 is attributable to a developer's default on special assessment payments for roads and sewers serving a new mobile home park. The per-capita tax capacity and expenditures in East Bethel are much lower than in Eden Prairie, the other fast-growing suburb studied. In 1989 East Bethel had the lowest tax rates of the six study cities but by 1997 had moved closer to the average for the six cities (Figure 4.5).

4. Eden Prairie

Eden Prairie is a developing suburb in the southwest quadrant of the Twin Cities with higher-than-average housing values and a strong commercial-industrial tax base. Eden Prairie has experienced steady and rapid population growth, going from under 7,000 in 1970 to over 46,000 in 1995 (Figure 4.8). Measured in constant dollars the city's tax capacity rose steadily from 1970 to 1990.

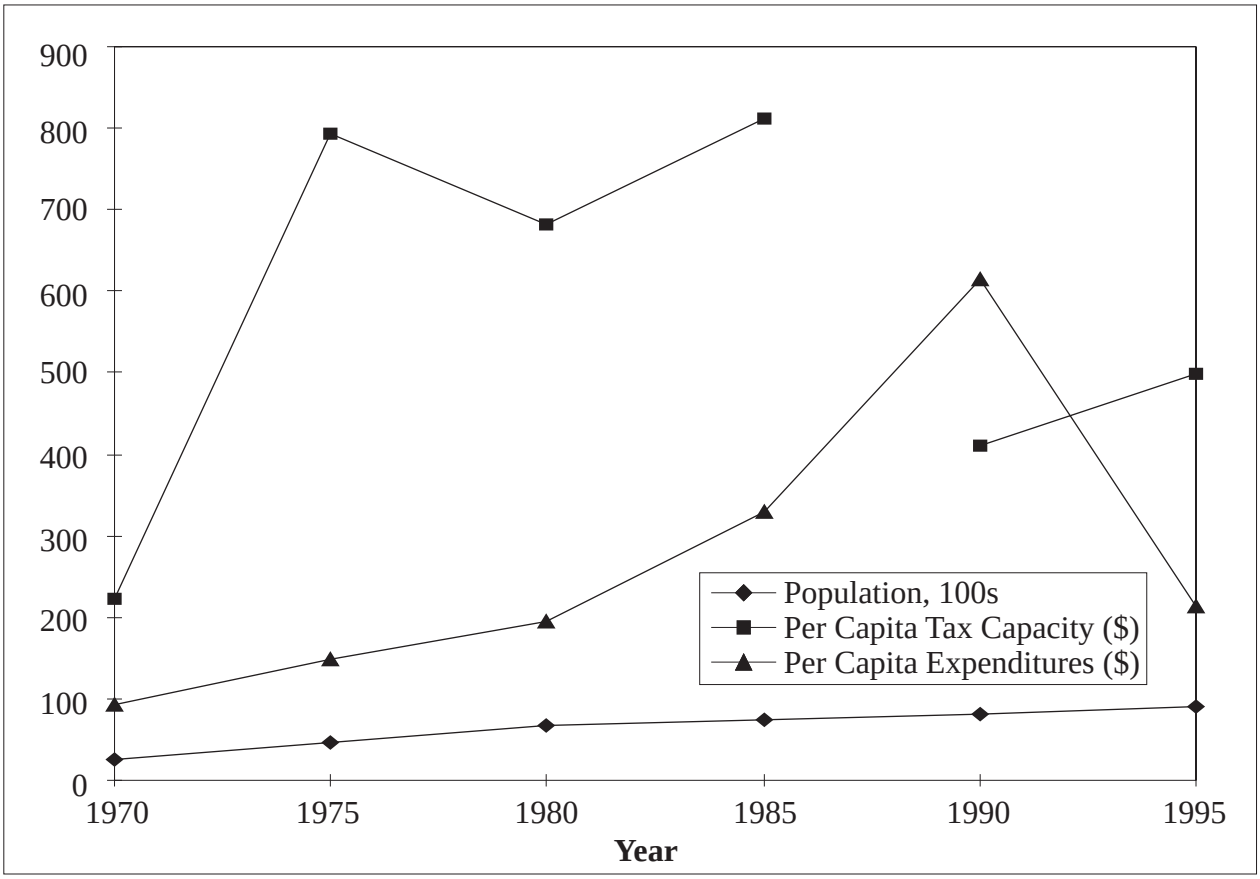

Figure 4.7. Population, Tax Capacity and Expenditures, East Bethel, Minnesota, 1970-1995

Data Source: Office of the Minnesota State Auditor

However, when viewed on a per-capita basis the picture is not as positive. Growth in tax capacity barely kept pace with population growth in the period 1975 to 1990, so that per-capita tax capacity remained constant or declined slightly. In the early 1990s total tax capacity declined in constant dollars while population continued to increase, resulting in a dramatic decline in per-capita tax capacity. The decline in the early 1990s was due to the devaluation of commercial-industrial properties with the recession of 1991-1992.

Annual expenditures rose by 1980 to over $1,600 per capita but then failed to keep pace with inflation and population. These relatively high expenditures, well above those of the other five cities since 1980, allowed Eden Prairie to provide high levels of local services to meet the desires of residents and businesses. However, between 1990 and 1995 total government expenditures were cut in response to public perceptions of excessive spending and/or excessive property tax increases. The levy limits enacted by the 1997 Legislature are expected to significantly affect

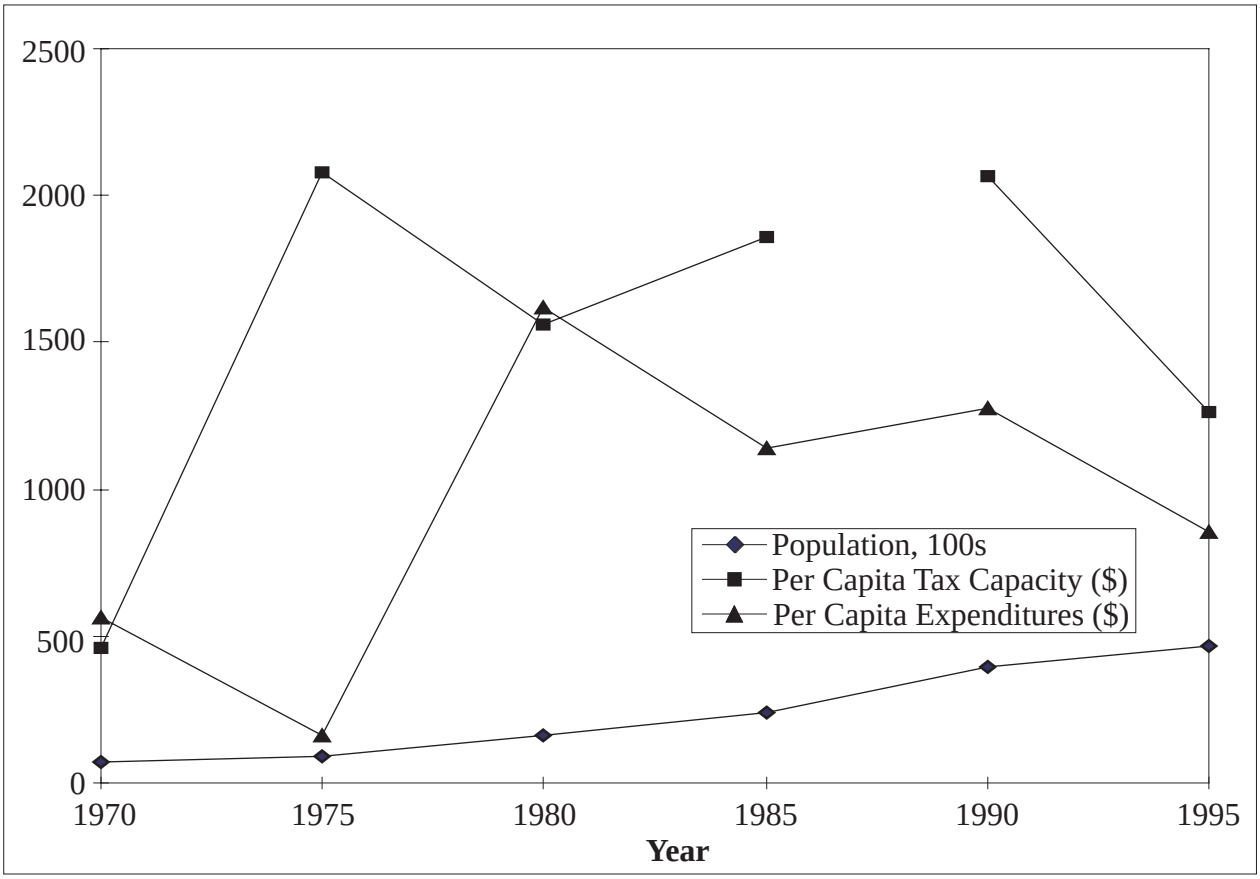

Figure 4.8. Population, Tax Capacity and Expenditures, Eden Prairie, Minnesota, 1970-1995

Data Source: Office of the Minnesota State Auditor

finances in Eden Prairie which historically has had annual budget increases well over those allowed by the new levy limits.

5. Edina

Edina is the most prosperous first-ring suburb, with housing values significantly higher than the regional average and a strong commercial-industrial component in its tax base. Remarkable for an older suburb, Edina has maintained its population, rising from 44,000 in 1970 to 47,000 in 1995. Edina's tax base rose rapidly in the early 1970s, remained relatively constant through 1990 at about $2,300 per person, then declined with the recession of the early 1990s (Figure 4.9). Government expenditure levels in Edina grew modestly during the period 1970 to 1995. Despite having a higher per-capita tax capacity than Eden Prairie, Edina spent substantially less than its fast growing neighbor and maintained relatively low tax rates (Figure 4.5).

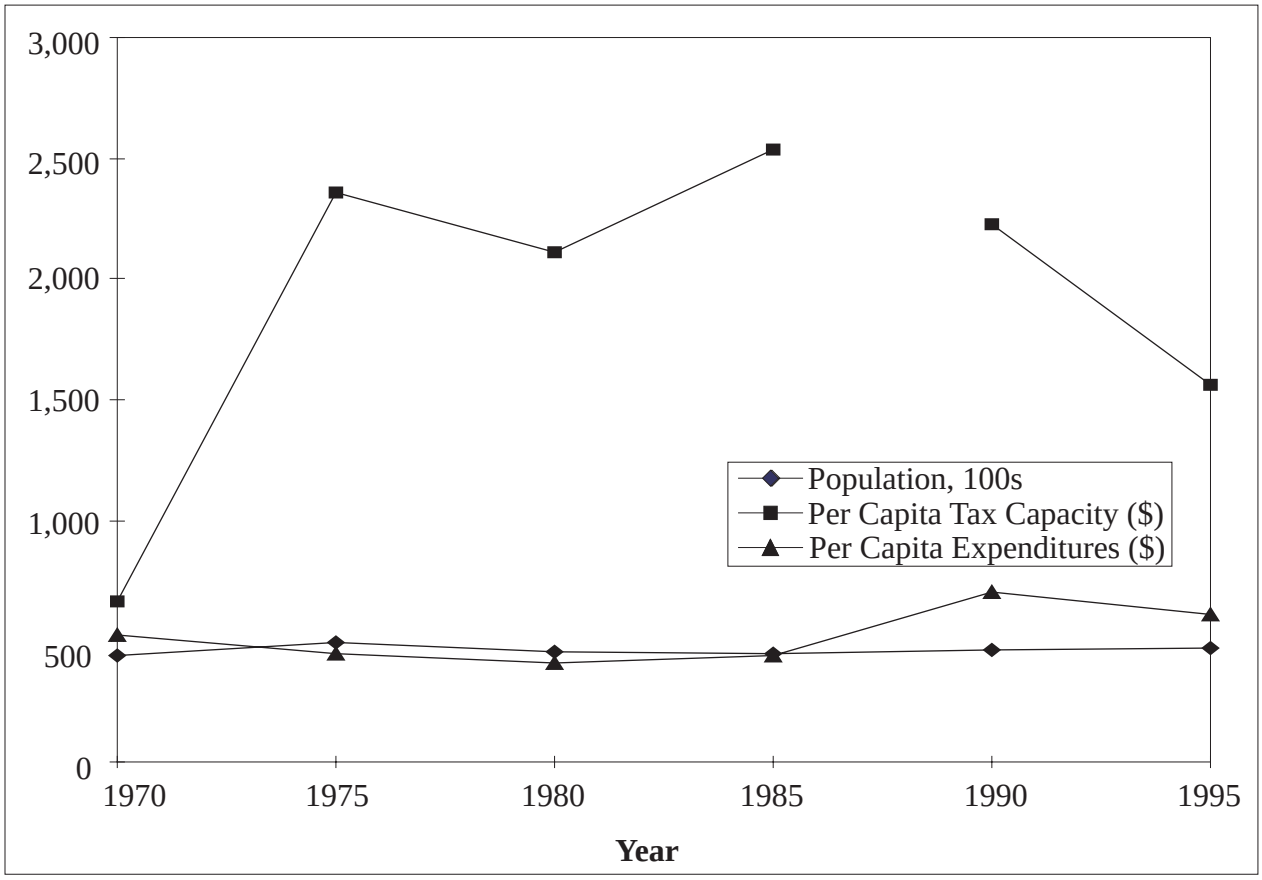

Figure 4.9. Population, Tax Capacity and Expenditures, Edina, Minnesota, 1970-1995

Data Source: Office of the Minnesota State Auditor

6. Orono

Orono is a relatively small and prosperous community in the western suburbs near Long Lake and Lake Minnetonka. Orono has above-average and rising housing values. There is little commercial or industrial development in Orono, so residential properties comprised 97 percent of the tax base in 1996. There are some areas with older houses on small lots in the southern portion of Orono, but most of the city is zoned for two- to five-acre minimum lot sizes. Orono has developed rather slowly, adding only 700 residents between 1970 and 1995 (Figure 4.10). Like Edina, Orono has high property values and a high per-capita tax capacity. Orono is the only city where per-capita expenditures declined during the study period. Tax rates in Orono were the lowest of the six cities studied and remained relatively constant (Figure 4.5).

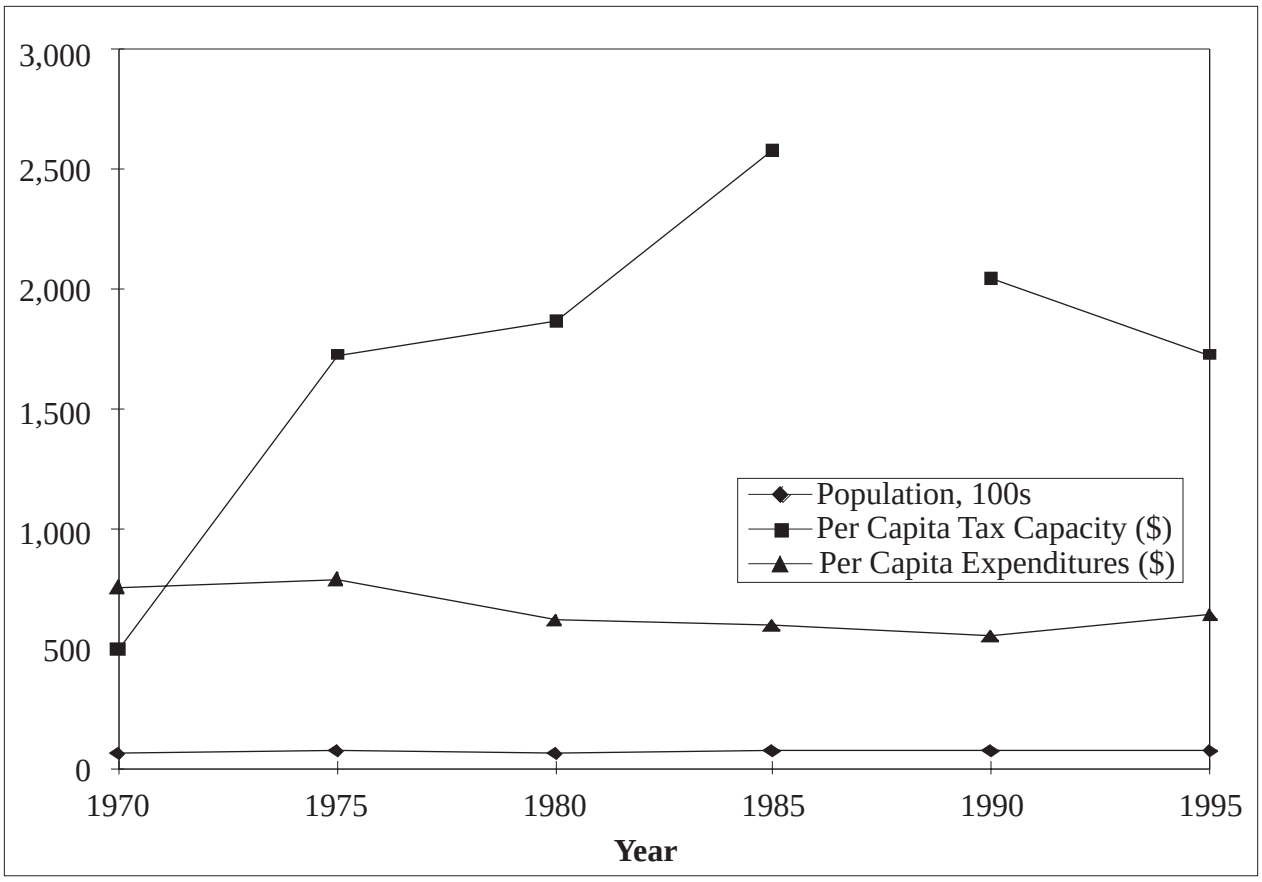

Figure 4.10. Population, Tax Capacity and Expenditures, Orono, Minnesota, 1970-1995

Data Source: Office of the Minnesota State Auditor

Three different school districts serve Orono and the property tax rates vary substantially among them because of differences in the number of students, per-pupil spending, and tax capacity. Of the three, Wayzata schools have the lowest tax rate at 60.11 percent while Minnetonka schools have the highest at 76.34 percent. Since about half the property tax bill goes to the school district, residents living in the portion of Orono served by Minnetonka schools pay about 13 percent more in property taxes than those served by Wayzata schools.

7. Conclusions

The six cities examined present a wide range of fiscal capacities and expenditures. In 1995 the per-capita tax capacity in Orono was 3.5 times higher than in East Bethel. These differences are mitigated somewhat by revenue sharing under the Fiscal Disparities Law (see Ch. 3, p. 91). Despite budget cutbacks in 1995, Eden Prairie still spent four times as much per capita as East Bethel.

Population increased in outlying suburbs and was stable or declining in inner-ring suburbs. Tax capacity values fluctuated much more than population, reflecting frequent changes to Minnesota tax laws and the 1991-92 recession's negative effect on commercial property values. The 1997 property tax reforms can be expected to produce a sizable drop in tax capacity for cities with a large component of commercial-industrial or apartment properties.

As cities pass through the stages of growth there often is an initial period of rapid population and tax capacity increases followed by a period of stability which may or may not be followed by gradual decline. Unfortunately, local government expenditures which primarily go to streets and highways, public safety, and general government typically do not decline with declining populations. Thus, older suburbs such as Crystal and Brooklyn Center must increase tax rates to offset stagnant or declining tax capacities.

Of the older suburbs, only Edina seemed successful in maintaining a stable population and stable per-capita expenditures. Of the six cities examined, the lowest property tax rates were found in Orono and Edina, the cities with the highest housing values and most stable populations. Rapid growth appears to yield the greatest fiscal benefits in the early periods, but is quickly followed by stagnating fiscal capacity accompanied by rising service demands. Rapid growth, even with a strong and diverse tax base, is no insurance against property tax rate increases, as shown by Eden Prairie with its 64 percent city tax rate increase from 1989 to 1997.

V. REGIONAL GROWTH AND EDUCATION FINANCE

The literature on the costs of growth emphasizes the significant costs of educating school children who will live in new suburban residential developments. School district levies comprise the single largest portion of property tax bills in Minnesota. Minnesota prides itself on high-quality public schools and tends to spend more per capita on education than other states. Between 1971 to 1987 Minnesota's per-capita expenditures on education ranged from 7 to 77 percent higher than the national average [44]. In Minnesota, the cost of K-12 public education is shared nearly equally between state and local sources [45]. Education is labor-intensive and about 80 percent of educational expenditures go to pay the salaries and fringe benefits of staff [44]. While building construction costs are a relatively small item compared with staff salaries, they can significantly affect property tax bills in rapidly growing areas because 98.9 percent of school buildings and related infrastructure costs are borne locally [46]. The traditional division of responsibility that makes construction funding a local responsibility may change in the future as legislative proposals consider state support for construction spending for charter schools.

In addition to society-wide demographic trends in family size, regional growth patterns strongly influence school district enrollments in metropolitan areas. Rapidly growing suburban areas that offer a relatively uniform housing stock attractive to families with school-age children can expect sharp fluctuations in student populations. For example, Eden Prairie's public school enrollments increased from 2,000 in 1968-69 to 8,600 in 1995-96, an increase of 330 percent, prompting the construction of four new schools (Figure 4.11). Both of the school districts serving rapidly growing East Bethel, St. Francis, and Forest Lake have seen increased enrollment and have constructed new schools. On the other hand, as suburbs mature they experience declining enrollments, such as the decline from 27,400 to 14,000 students in Robbinsdale public schools during the same period (Figure 4.12). Nearby school districts such as Osseo and Robbinsdale may be at different phases in the growth process. The fully-developed area may be closing schools well before the building's useful life expires, while the developed area is constructing new schools.

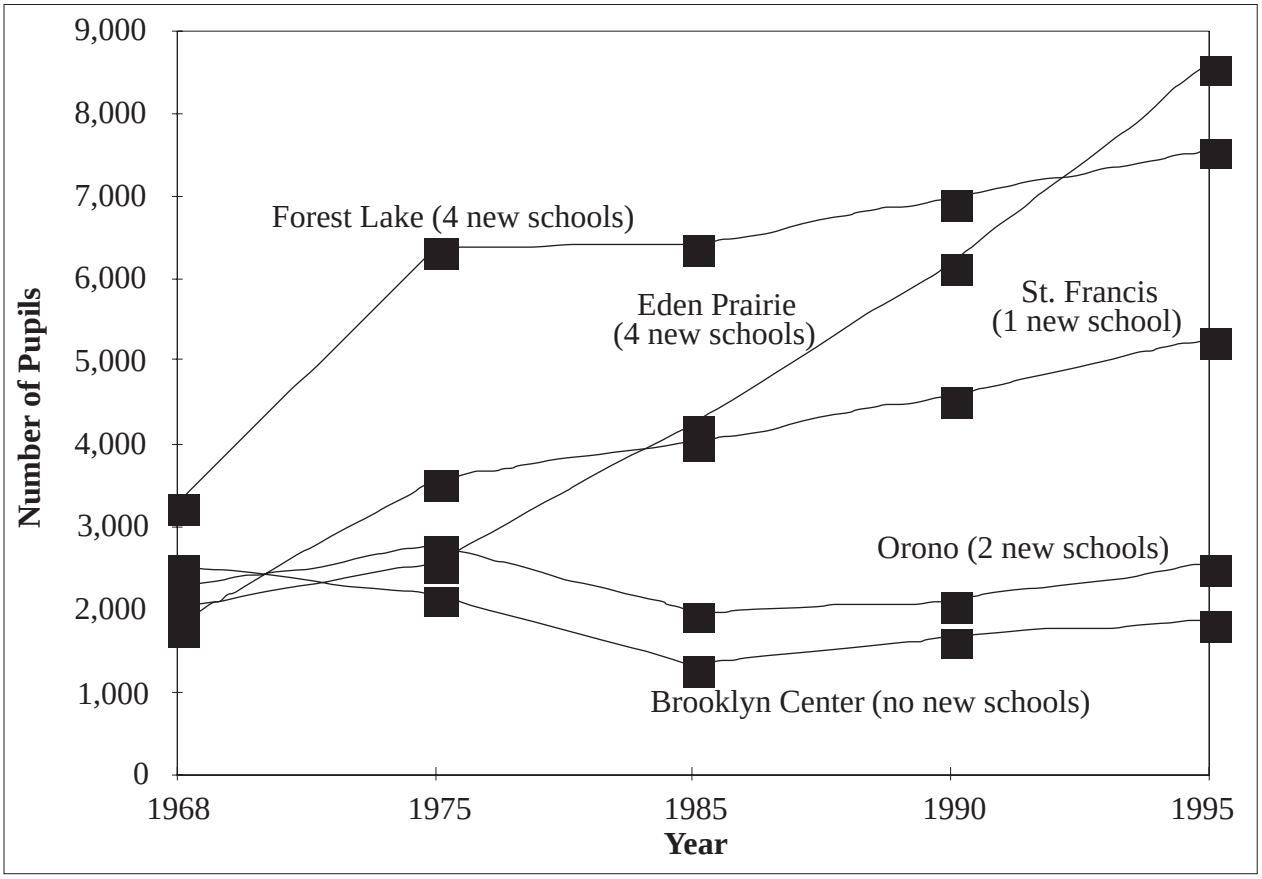

Figure 4.11. K-12 Public School Enrollment for Eden Prairie, Forest Lake, St. Francis, Orono, and Brooklyn Center School Districts, 1968-95

Data Source: Minnesota Department of Education, Annual Education Directories

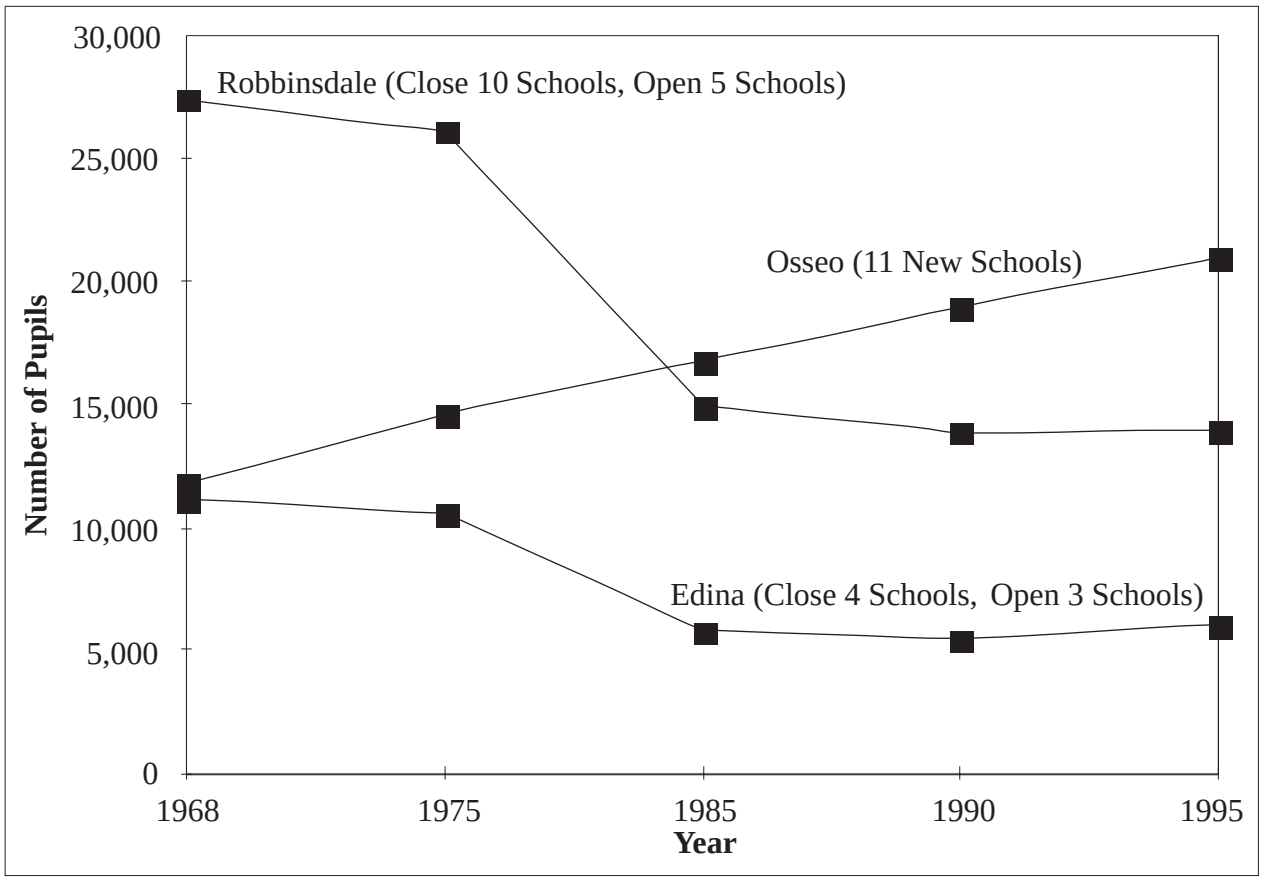

Figure 4.12. K-12 Public School Enrollment for Osseo, Robbinsdale, and Edina School Districts, 1968-95

Data Source: Minnesota Department of Education, Annual Education Directories

In 1995-1996 school districts in Minnesota spent a total of $605 million on building construction bonds, a total that has grown significantly in each of the past seven years. With declining enrollments, the Robbinsdale school district spent no money on building construction bonds during the past seven years. On the other end of the spectrum, rapidly growing areas are adding students and asking voters to fund new school construction. Between 1989-90 and 1995-96 Eden Prairie enrolled 2,800 additional pupils and spent $69.1 million from its building construction bond fund. In addition in 1997 Eden Prairie voters approved a school bond referendum authorizing $24.35 million for improvements to the high school including an activity center and sports bubble [47]. Recently, the Forest Lake school district made headlines when building inspectors shut down portable classrooms, forcing 250 students to move into temporary classrooms in band rooms, libraries, and other extra space. A school principal blamed the problem on voters who rejected three consecutive school bond-issue requests [48].

There is no recent systematic, comprehensive historical or geographical research that has compiled data on school openings and closings around the metropolitan area. Data on school openings and closings for selected districts can be obtained by comparing the listings in the annual Minnesota Education Directories or by contacting the districts directly. As opening new schools is expensive and the current regional growth patterns appear to contribute to the inefficient use of capital facilities, the effect of regional growth on education finance deserves further attention, including the important influence of local political climates.

VI. CONCLUSIONS

The current pattern of rapid growth at the fringe of metropolitan areas is shaped in part by the belief that attracting new housing subdivisions, shopping centers, and business parks will lead to a strong tax base and ensure a city's prosperity. A review of recent studies on the costs and benefits of growth reveals that many new developments do not pay their own way as once thought. Even in the case of office-industrial development, which generally more than pays its way for the host community, there may be unpaid costs imposed on adjacent communities and the entire region.

Growth requires significant infrastructure investments, and questions of who benefits and who should pay these costs have serious implications for equity and efficiency. In the Twin Cities, builders of new houses pay for only a small portion of the infrastructure they require and remaining costs are passed along to other taxpayers and utility customers. This type of infrastructure-financing policy gives new construction a distinct advantage over the existing housing stock, and represents a transfer of wealth out of developed areas into newly developing areas.

Recent growth patterns affect the fortunes of different parts of the Twin Cities metropolitan area in diverse ways. Most growth in tax capacity has centered in the ring of outer suburbs, while central cities and inner-ring suburbs have experienced relative decline. Gradual decline in older suburbs can pose fiscal difficulties, as expenditures do not decline at the same time it becomes more difficult to raise funds from local sources. Rapid growth is no panacea either, as expenditures and tax rates also may increase proportionately to cover the costs of new infrastructure and services needed to meet the demands of new residents and businesses.

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