

# TRANSPORTATION & REGIONAL GROWTH

a study of the relationship between transportation and regional growth

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of the Twin Cities

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## House Price Changes and Capital Shifts in Real Estate Values in Twin Cities-Area Housing Submarkets

Report #7 in the Series:  
Transportation and Regional Growth Study

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Report #7 in the Series

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for the  
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Center for Transportation Studies, University of Minnesota;  
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Opinions expressed in this report are those of the authors and do not represent official policy of the study's sponsors.  
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# Preface

The Transportation and Regional Growth Study is a research and educational effort designed to aid the Twin Cities region in understanding the relationship of transportation and land use. Many regions of the country are experiencing rapid commercial and residential development, often accompanied by population growth and growth in the total area of land developed. This has caused a range of concerns, including the direct costs of the infrastructure needed to support development and the social and environmental side effects of development patterns.

This study is an effort to better understand the linkages between land use, community development, and transportation in the Twin Cities metropolitan area. It is designed to investigate how transportation-related alternatives might be used in the Twin Cities region to accommodate growth and the demand for travel while holding down the costs of transportation and maximizing the benefits. The costs of transportation are construed broadly and include the costs of public sector infrastructure, environmental costs, and those costs paid directly by individuals and firms. Benefits are also broadly construed. They include the gains consumers accrue from travel, the contribution of transportation and development to the economic vitality of the state, and the amenities associated with stable neighborhoods and communities.

The University of Minnesota's Center for Transportation Studies is coordinating the Transportation and Regional Growth Study at the request of the Minnesota Department of Transportation and the Metropolitan Council. The project has two components. The first is a research component designed to identify transportation system management and investment alternatives consistent with the region's growth plans. It has six parts:

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

The first three research areas are designed to gather facts about the transportation system and its relationship to land use in the Twin Cities metropolitan area. The other three research areas will use these facts to investigate alternatives in financing, design, and decision making that could have an impact on this relationship. Results of this research is and will be available in a series of reports published for the Transportation and Regional Growth Study.



## **Acknowledgments**

We received assistance from staff at assessor's offices at Dakota, Hennepin (Judy Winans and Donald Hoberg), and Ramsey Counties. Personnel at all three offices helped us in setting up and operating microfiche and microfilm machines, identifying correct files of old data, and accommodating our presence for the many hours required to gather data on assessed values for sample houses located along the traverses through selected housing submarkets. Early drafts of this report were reviewed by a technical advisory panel that included Brian Vollum, Gene Knaff, and John Kari. They provided valuable comments and suggestions for improvement. Any errors of fact or interpretation remain the responsibility of the authors.



## Executive Summary

This report explores the movement of average prices and price changes for single-unit houses between 1970 and 1995 within three housing submarkets that radiate outward from downtown Minneapolis and downtown St. Paul. One submarket originates in downtown Minneapolis and extends due south through Richfield, Bloomington, Burnsville and beyond. A second originates on the northwest edge of downtown and extends northward, through North Minneapolis, Brooklyn Center and Brooklyn Park. The third begins on the northwest edge of downtown St. Paul and proceeds north through Roseville and Shoreview.

On a map of each submarket a traverse line was defined from the edge of downtown to the edge of the built-up area. A sample of houses along the traverse (approximately three per block) was identified and their market values at selected dates (1970, 1975, 1980, 1985, 1990, 1995) were obtained from assessors' records. Values were summarized by census tract, then compared with tract median values of owner-occupied housing as reported by the Bureau of the Census for 1970, 1980, and 1990. The two sets of value estimates corresponded closely.

On the basis of theoretical arguments regarding the capitalized value of tax expenditures and property tax differentials between city and suburb, the impacts of utility pricing schemes, and the nature of consumer demand for housing of different age, style, and condition, as well as empirical research in the Twin Cities area and elsewhere, we expected that average house price changes along the traverses through the various submarkets would range systematically, from small increases or decreases in real terms for the less desirable and cheaper older houses near downtown to high positive value increases for the more desirable, newer more valuable houses farther out.

Sample-derived data and census data are frequently consistent with expected findings, but significant deviations and anomalies indicate that forces other than outward directional bias in residential mobility and financial considerations are influencing localized price movements as well as overall trends along the traverses. Some deviations no doubt arise from localized, tract-level changes in housing demand and housing supply. On the demand side there have been major household movements into certain sectors by foreign and domestic migrants, as well as movements out by retirees and by persons leaving the Twin Cities. Over the 25-year period covered by this study, migration flows in and out of specific submarkets or portions thereof have waxed and waned in ways that have affected housing demand, sometimes raising average prices when the market is tight and sometimes lowering prices when the market softens.

On the supply side, new construction changes the number of units and median housing values within tracts. Cheap obsolete units are regularly removed from inner-city tracts, while new and more valuable units are built to replace them. Meanwhile thousands of new units are built each year in the expanding suburbs, and each of our traverses intersected tracts that grew rapidly after 1970.

Additional sources of flux in consumer demand that can affect the market value of housing, in general or in specific neighborhoods, include:

- extreme variations in rates of house price inflation as energy prices and consumer prices in general rose rapidly after 1970;
- general economic conditions, including major recessions in the early 1980s and again in the early 1990s;
- fallout from the North Side civil disturbances of the late 1960s, which encouraged outmigration and discouraged movements into that neighborhood in the 1970s;
- significant immigration from Southeast Asia, Latin America, and Africa into Minneapolis and St. Paul since 1970;
- perceptions—whether or not based on facts—about crime and public safety in the central cities (negative) vs. the suburbs (positive); and
- differences between the perceived quality of public education in the central city schools (negative) vs. the suburbs (positive).

The strong and steady growth of the greater Twin Cities economy since 1991 compared with other Midwestern metropolitan areas has attracted large numbers of newcomers, putting extra demand pressure on existing housing stocks, especially rental apartments. Enhanced prosperity encourages the number of households to expand faster than the population when single individuals form households of their own because they can afford their own housing rather than sharing expenses with roommates. Both of these sources of incremental demand for rental housing cut vacancy rates sharply, and divert housing demand to lower-priced segments of the owner-occupied housing market, thereby raising prices above what might normally be expected for older, smaller, cheaper units. This trend, increasingly conspicuous in the 1990s, has been exacerbated by a slowdown in apartment construction as a consequence of 1986 changes in the U.S. Internal Revenue Code that substantially reduced the profitability of building and investing in apartment housing.

In short, there is nothing in these data as presented that directly contradicts expectations about trends in housing prices from center to edge, but obviously there are additional events that have affected the operation of the housing submarkets in the three sample sectors during the period 1970 to 1995. On average, however, our study results illustrate selected details of a general shift

in aggregate real estate values outward over the study period. Examining trends in housing values over the 25-year period 1970 to 1995 illustrates how volatile the picture can be for specific places and short time periods. If the study period were extended to assess price movements for the period 1950 to 2000, long-term trends probably would be more conspicuous. It would also be informative to examine the eleven other historic submarkets in the Twin Cities area because the three selected for close scrutiny may not be representative of the metropolitan area. In any case, the methods used here can easily be replicated.



# Table of Contents

PREFACE .....	v
ACKNOWLEDGMENTS .....	vii
EXECUTIVE SUMMARY .....	ix
LIST OF FIGURES .....	xv
LIST OF TABLES .....	xvii
CHAPTER 1: INTRODUCTION: HOUSING PRICES IN FLUX .....	1
Real Estate Market Area Analysis .....	1
House Price Analysis at the City Scale .....	3
The Central Question Raised in this Report .....	6
Related Research .....	6
End Notes .....	8
CHAPTER 2: TWIN CITIES HOUSING MARKETS AND EXPECTATIONS	
REGARDING PRICE CHANGES .....	11
Housing Supply and Demand .....	11
Effects on Median Housing Values of Change in Housing Stocks .....	12
Effects on Housing Values of Changes in Effective Housing Demand .....	14
Geographical Expressions of Household Demand for Housing within	
Housing Submarkets .....	16
Theoretical and Empirical Research that Supports the Present Inquiry .....	18
Residential Vacancy Chains .....	19
Sectoral Structure of 14 Twin Cities Housing Submarkets .....	21
Hypotheses—and Their Bases .....	21
End Notes .....	23
CHAPTER 3: STUDY PROCEDURES AND DATA USED .....	29
Introduction .....	29
Study Procedures .....	30
Data Definitions: Assessed Valuation .....	30
Data Collection and Procedure .....	32
End Notes .....	34
CHAPTER 4: TRAVERSE B. SOUTH MINNEAPOLIS >> RICHFIELD >>	
BLOOMINGTON >> BURNSVILLE .....	35
A South Minneapolis Housing Submarket and a Sample Traverse Through It .....	35
Assessed Values of Sample Housing Units along the Traverse .....	36
Census Estimates of Housing Values in Tracts Containing the Traverse .....	47

House Price Inflation and Deflation along the Traverse through the Submarket .....	50
Estimating Inflation Trends from Census Medians .....	54
End Note .....	56
CHAPTER 5: TRAVERSE E: NORTH MINNEAPOLIS >> BROOKLYN CENTER >> BROOKLYN PARK .....	57
A North Minneapolis Housing Submarket and a Sample Traverse Through It .....	57
Assessed Values of Sample Housing Units along the Traverse .....	57
Census Estimates of Housing Values in Tracts Containing the Traverse .....	63
House Price Inflation and Deflation along the Traverse through the Submarket .....	66
Estimating Inflation Trends from Census Medians .....	70
Housing Market Dynamics within a Submarket: Demand, Supply and Prices .....	72
End Note .....	73
CHAPTER 6: TRAVERSE H: ST. PAUL >> ROSEVILLE >> SHOREVIEW .....	75
A St. Paul Housing Submarket and a Sample Traverse Through It .....	75
Assessed Values of Sample Housing Units along the Traverse .....	75
Census Estimates of Housing Values in Tracts Containing the Traverse .....	83
House Price Inflation and Deflation along the Traverse Through the Submarket .....	85
Housing Market Dynamics within a Submarket: Demand, Supply and Prices .....	90
End Note .....	91
CHAPTER 7: CONCLUSIONS, INTERPRETATIONS, AND IMPLICATIONS FROM THE EMPIRICAL INVESTIGATION .....	93
Review of the General Hypothesis .....	93
Summary of Findings .....	94
Relationship between This Investigation and Other Reports in the Transportation and Regional Growth Study .....	95
Ideas for Further Research Once Census 2000 Data Become Available in 2002 .....	95
APPENDIX A: SOUTH MINNEAPOLIS (TRAVERSE B) DATA TABLES	
APPENDIX B: NORTH MINNEAPOLIS (TRAVERSE E) DATA TABLES	
APPENDIX C: ST. PAUL (TRAVERSE H) DATA TABLES	
APPENDIX D: CONSUMER PRICE INDICES FOR HOUSING IN THE MINNEAPOLIS-ST. PAUL METROPOLITAN STATISTICAL AREA (MSA), 1970–1995	

## List of Figures

1.1	MCDs by Type of Change in Median Value of Housing Ratio, 1970-1990. ....	4
1.2	Twin Cities Regional Dynamics. ....	7
2.1	Figure 2.1. Twin Cities Housing Submarkets, 1920s to 1970s. ....	22
4.1	Traverse B: Minneapolis, Richfield, Bloomington and Burnsville. ....	37
4.2	Sample Houses along the Traverse through South Minneapolis and Suburbs: 21 <sup>st</sup> through 31 <sup>st</sup> Street .....	38
4.3	Sample Houses along the Traverse through South Minneapolis and Suburbs: 38 <sup>th</sup> through 59 <sup>th</sup> Street. ....	39
4.4	Sample Houses along the Traverse through South Minneapolis and Suburbs: 68 <sup>th</sup> through 72 <sup>nd</sup> Street. ....	40
4.5	Sample Houses along the Traverse through South Minneapolis and Suburbs: 74 <sup>th</sup> through 84 <sup>th</sup> Street. ....	41
4.6	Sample Houses along the Traverse through South Minneapolis and Suburbs: 91 <sup>st</sup> through 111 <sup>th</sup> Street. ....	42
4.7	Sample Houses along the Traverse through South Minneapolis and Suburbs: 128 <sup>th</sup> through 143 <sup>rd</sup> Street .....	43
4.8	South Minneapolis Traverse: Assessed Values, Selected Years, 1970-1995, in 1995 Dollars. ....	45
4.9	South Minneapolis: Sample Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract. ....	46
4.10	South Minneapolis: Census Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract. ....	48
4.11	South Minneapolis: Census vs. Sample Median Values of Housing, 1970, 1980, and 1990. ....	49
4.12	South Minneapolis: Sample Median Housing Values, and Trends in Rates of Change, Selected Years, 1970-1995, in 1995 Dollars. ....	51
4.13	South Minneapolis: Census Median Housing Values, Decennial Rates of Change, and Trends in Rates of Change, 1970-1990, in 1995 Dollars. ....	55
5.1	Traverse E: Minneapolis, Brooklyn Center and Brooklyn Park. ....	58
5.2	Sample Houses along the Traverse through North Minneapolis and Suburbs: 16 <sup>th</sup> through 34 <sup>th</sup> Avenue North. ....	59
5.3	Sample Houses along the Traverse through North Minneapolis and Suburbs: 38 <sup>th</sup> through 53 <sup>rd</sup> Avenue North. ....	60
5.4	Sample Houses along the Traverse through North Minneapolis and Suburbs: 59 <sup>th</sup> through 79 <sup>th</sup> Avenue North. ....	61
5.5	North Minneapolis Traverse: Assessed Values, Selected Years, 1970-1995, in 1995 Dollars. ....	62

5.6	North Minneapolis: Sample Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract. ....	64
5.7	North Minneapolis: Census Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract. ....	65
5.8	North Minneapolis: Census vs. Sample Median Values of Housing, 1970, 1980 and 1990. ....	67
5.9	North Minneapolis: Sample Median Housing Values, and Trends in Rates of Change, Selected Years, 1970-1995, in 1995 Dollars .....	68
5.10	North Minneapolis: Census Median Housing Values, Decennial Rates of Change, and Trends in Rates of Change, 1970-1990, in 1995 Dollars. ....	71
6.1	Traverse H: St. Paul, Roseville, and Shoreview. ....	76
6.2	Sample Houses along the Traverse through St. Paul and Suburbs: 400 through 1100. ....	77
6.3	Sample Houses along the Traverse through St. Paul and Suburbs: 1400 through 2800. ....	78
6.4	Sample Houses along the Traverse through St. Paul and Suburbs: 3400 outward. ....	79
6.5	St. Paul Traverse: Assessed Values, Selected Years, 1970-1995, in 1995 Dollars. ....	80
6.6	St. Paul: Sample Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract. ....	82
6.7	St. Paul: Census Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract. ....	84
6.8	St. Paul: Census vs. Sample Median Values of Housing, 1970/2, 1980 and 1990. ....	85
6.9	St. Paul: Sample Median Housing Values, and Trends in Rates of Change, Selected Years, 1970-1995, in 1995 Dollars. ....	87
6.10	St. Paul: Census Median Housing Values, Decennial Rates of Change, and Trends in Rates of Change, 1970-1990, in 1995 Dollars. ....	89

## List of Tables

2.1	Number of Housing Units and Units Built before 1940, by Census Year, Minneapolis, St. Paul, and Adjacent Areas, 1940-1990. ....	13
2.2	Home Ownership-Related Deductions in Excess of the Standard Deduction. ....	15



# **House Price Changes and Capital Shifts in Real Estate Values in Twin Cities-Area Housing Submarkets**

## **Chapter 1**

### **Introduction: Housing Prices in Flux**

#### **Real Estate Market Area Analysis**

A newspaper article on house price changes within Twin Cities area neighborhoods during the five-year period 1993-98 raised the question why rates of change differed so much by neighborhood location, and why places that had earlier seen long-term declines in house prices had recently experienced significant price gains [1]. The Regional Multiple Listing Service operated by the Twin Cities' four realtor associations had reported 1997 and 1998 median home sales prices for 91 sales areas in the seven-county area, excluding sales districts lying entirely outside the seven-county area and districts with fewer than 20 sales during the two-year period. It also calculated annual average percentage price changes between 1993 and 1998. The newspaper article summarized the results.

In Minneapolis, which is essentially fully built up, five-year annual average rates of change ranged from 19.0 percent in the Lake Calhoun-Lake of the Isles area to minus 0.8 percent in the Phillips neighborhood directly south of downtown Minneapolis. In St. Paul, the Town and Country-Merriam Park area had an annual average increase over the five-year period of 13.2 percent, while Phalen averaged 4.5 percent per year. Meanwhile, on the outer edges of the built-up area of the seven counties, new and used house sales raised annual average sale prices over the five-year period in places like Belle Plaine (12.4 percent) and Jordan (10.0 percent), while other outlying market areas saw more modest gains, such as Champlin (6.0 percent) and Burnsville (4.9 percent).

In some areas where average 1998 sales prices were among the highest, for example Edina (\$230,000) and Eden Prairie (\$210,000), annual average increases over the five year period were above average, but well below the peak (7.3 and 8.5 percent, respectively). In some established areas where average 1998 sales prices were more modest, average rates of increase over the 1993-8 period were equally high, such as the Southeast Minneapolis-University area where the

1998 average sales price was \$105,000 but the annual average increase was 9.4 percent, or in St. Paul's West Side-Riverview-Cherokee area where the average 1998 sale price was only \$78,000 but the annual average increase was 7.8 percent.

Housing must be consumed where it is located. This essential fact makes housing markets different from markets for other commodities. First, on the demand side, households differ by their composition (e.g., single person, adults without children, adults with young children, adults with teenagers, elderly couples, etc.), by purchasing power (defined by income, wealth and access to credit), by housing style preferences (e.g., single unit on large lots, townhouse, condo, apartment, etc.), and by knowledge of and preferences for living in specific locations within the metropolitan area. On the supply side, housing markets are partitioned into geographically defined submarkets, and each submarket contains different types of housing positioned at unique locations with respect to other metropolitan area components (e.g., jobs, shopping, schools, recreation, social milieus, etc.). When sales prices for existing houses in a submarket or in portions of it rise at above-average rates, it is the consequence of demand for houses at those locations substantially exceeding available supply at those locations. In parts of submarkets that experience below-average gains in price, the reverse is the case, namely the supply of available houses there exceeds effective demand.

Secondly, on the expanding suburban edges of the metropolitan area, new houses are added to the existing stock. It is frequently the case that the newly built and sold houses are more expensive than the existing houses at those locations, some of which may date from the pre-World War II era. When the new houses are sold, the average sales prices compared with earlier sales of existing older houses at those locations, as well as the calculated rates of change, can be quite high.

A third set of forces affecting the local housing market and therefore the statistics on Twin Cities house price changes during the past five years includes (1) the unusual persistence of low unemployment; (2) low rates of general price inflation; (3) low interest rates; (4) the vigorous performance of the stock market, leading to "wealth effects" on consumer behavior produced by unrealized capital gains; (5) general economic optimism; (6) rapid Twin Cities area population increase, and (7) a shortage of houses and apartments for rent, which in the face of expanding demand for rentals has yielded significant escalations in the cost of renting compared with the cost of home ownership for households of modest income. Each of these forces has its own explanation, but their aggregate effect brings about pressure on certain components of the housing market, which is to say certain submarkets and selected real estate sales areas.

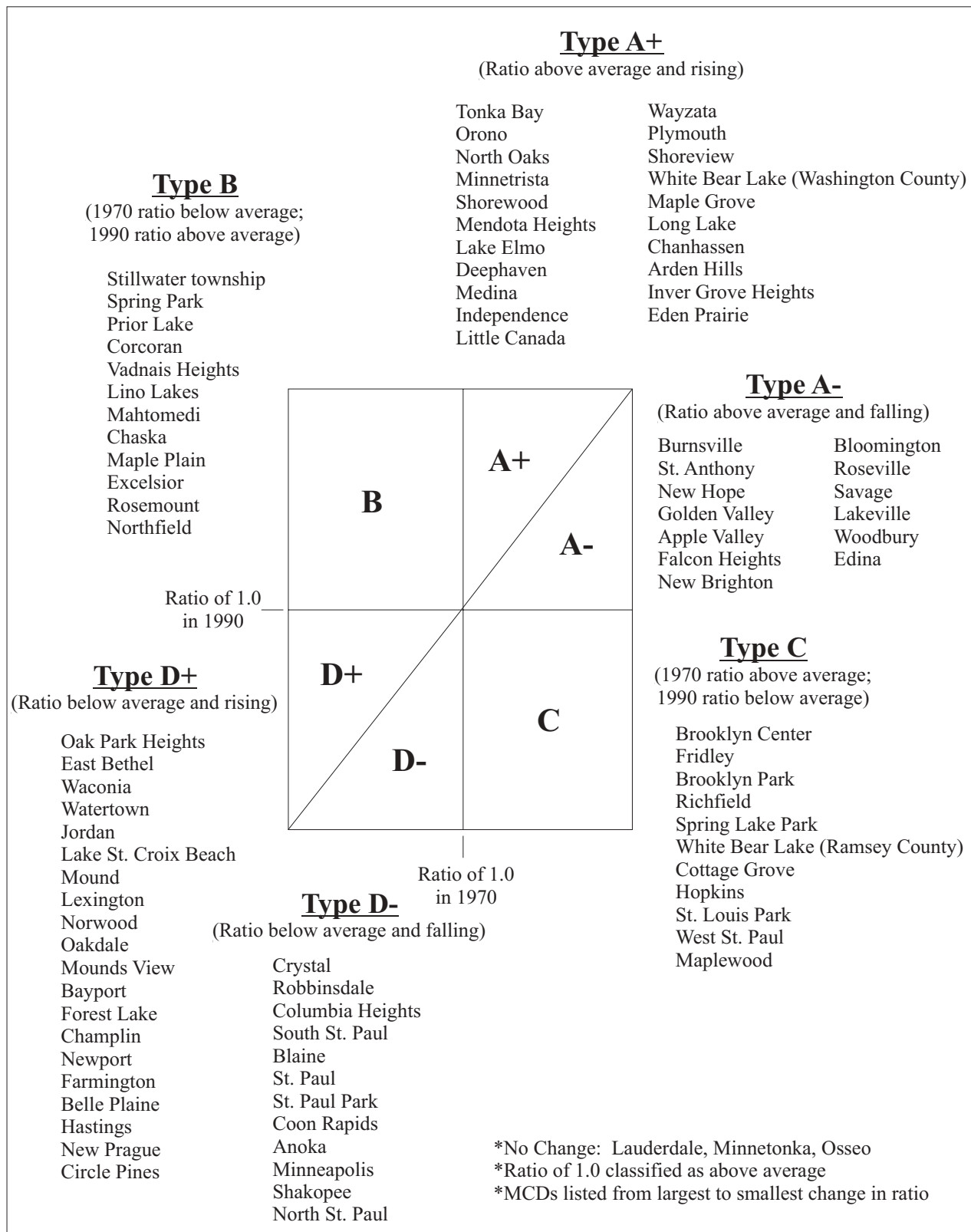
Especially under pressure have been sales areas that offer (1) distinctive existing upper-bracket homes (e.g., Macalester-Groveland, up 10.7 percent per year; Calhoun-Isles, up 19.0 percent per year); (2) new upper-bracket suburban homes (e.g., Eden Prairie, with an average 1998 median sales price of \$210,000; Plymouth (at \$195,000), and Mendota-Lilydale-Mendota Heights (at \$215,000)); and (3) modest-priced housing that in the recent economic environment appears to buyers to be a better deal financially than the crowded and expensive rental market. For example, the North Minneapolis sales area with a median 1998 sales price of \$55,000 was up 10.2 percent over the previous year; the Nokomis area in the southeastern corner of Minneapolis averaged \$102,000, up 9.7 for the year; and the Como neighborhood east of the Fairgrounds in St. Paul averaged \$107,000 in 1998, up 10.4 percent for the year.

### **House Price Analysis at the City Scale**

A previous report in this series examined changes in the median price of housing at the scale of cities within the seven-county Twin Cities region, and compared city rankings based on the median value of owner-occupied housing through time over the period from 1970 to 1990 [2]. The median value of single-unit housing in 1970 was reported by the census for each city. The census also reported a median value for single-unit housing for the entire metropolitan area in 1970. We calculated the ratio of each city's 1970 median to the 1970 metro area median, then repeated the analysis for 1990 to see how different cities performed in terms of the maintenance or improvement of their ranks.

Some cities in 1970 had rankings well above the metro median, some were at or near the metro median, and some fell below the metro median. In the twenty-year period 1970 to 1990 the performance of cities fell into six main types (Fig. 1.1):

- cities that were above the metro median in 1970, stayed above the metro median, and improved their ranking (Type A+) (examples include Mendota Heights, Orono and North Oaks);
- cities that were above the metro median in 1970, remained above the metro median but dropped in rank (Type A-) (Examples include Burnsville, New Hope and Roseville);
- cities that in 1970 were below the metro median, but by 1990 were above the median (Type B) (Examples include Rosemount, Chaska and Mahtomedi);
- cities that in 1970 were above the metro median, but by 1990 had dropped below the metro median (Type C) (Examples include Brooklyn Park, Richfield and West St. Paul);
- cities that were below the metro median in 1970 and in 1990, but improved their ranking during the twenty-year period (Type D+) (Examples include Waconia, Circle Pines and Newport); and
- cities that were below the metro median in 1970 and remained below the metro median in 1990, then dropped in rank during the twenty-year period (Type D-) (Examples include Robbinsdale, Minneapolis and St. Paul).



**Figure 1.1. MCDs by Type of Change in Median Value of Housing Ratio, 1970-1990.**  
Data Source: 1970, 1990 Census of Housing. Data not available for 100 MCDs (of 191 total).

Our goal in this report is to describe patterns and trends in house price changes for the period 1970 to 1995, and to discuss some of the forces operating at the housing submarket level that might be used to explain observed outward shifts of residential capital values of the sort that emerged in the city-scale analysis. The fourteen submarkets contain or intersect various cities as they radiate outward from the downtowns. Central South Minneapolis is part of a submarket that extends through eastern and central Richfield and East Bloomington, while the submarket containing the Lake District of southwest Minneapolis extends outward into Edina and Eden Prairie. What follows is an experimental investigation that asks whether details of house price changes at the submarket scale shed informative light on average house-price changes at the smaller city or the still smaller census tract or neighborhood scales.

Submarket analysis is a summary way to discuss functional linkages among geographical components of the metropolitan housing market. Each city in the metropolitan area is linked with other local cities by social networks, residential mobility fields, and commuting habits. For example, empirical research in the Twin Cities area has demonstrated that when people from south Minneapolis move to newer and more expensive housing, they are more likely to move outward to Richfield, Bloomington or Burnsville than to the suburbs of St. Paul. People from North Minneapolis are more likely to move to the north and northwest suburbs, while people on St. Paul's East Side move outward to Maplewood, Woodbury and other suburbs east of St. Paul, and so forth.

Price trends for housing at each location are the result of shifts in effective demand as well as changes in available supply at that location. When demand exceeds supply within a city, a submarket, or a portion of a submarket, prices will rise and the aggregate market value of real estate at those locations will increase. When expensive new housing is added to a location, the median market value of housing in that area may rise depending on how the market responds. If households desert a location in numbers such that supply substantially exceeds demand at that place, prices will fall and capital values at that place will diminish. In other words, housing markets operate at various geographical scales—the metropolitan area, the submarket, the city, the census tract, the neighborhood, and the block. The market value of a house depends on the structure as well as on the lot on which the structure stands. The market value of the lot and effective demand for it, in turn, depend on many other aspects of location such as level of accessibility to other places in the metro area, the city in which it is located, the price and quality of city services available, the schools, nearby natural amenities, and the types of adjacent houses, as well as the kinds of neighbors who occupy them.

## **The Central Question Raised in this Report**

This report asks one main question:

- What has happened to market prices of a sample of existing single-unit houses at different locations within three geographically defined sector-based housing submarkets in the greater Twin Cities area, many of them having been sold and re-sold since 1970?

The data generated in response to this question are discussed and interpreted with respect to the following issues:

- What seem to be the underlying dynamics of supply and demand that could explain variations in housing prices along traverses that run from downtown into the suburbs within submarkets?
- How do the operations of housing submarkets help us understand the steady relocation outward from the central cities and increasingly from many of the inner suburbs of capital values in residential and commercial real estate, which is one of the significant topics in our investigation of Twin Cities regional dynamics?

## **Related Research**

Our investigation of Twin Cities regional dynamics began in 1997 with the identification of a set of metropolitan systems—highways, schools, local governments, housing, and various forms of business development—and selected linkages among them (Fig. 1.2). Our principal concern has been to describe the geographical patterns of metropolitan growth and land development since 1970 in a 24-county area of Minnesota and Wisconsin focused on the Twin Cities of Minneapolis and St. Paul, and to analyze how land development has been related to highway transportation improvements during the same period. Our initial work examined housing market dynamics in the 7-county Twin Cities area; laws and regulatory frameworks that shape metropolitan development; and metropolitan growth and local government finance. Findings from these three studies were published in 1998 [3].

A second phase of work analyzed residential, commercial, industrial and office construction in the 24-county area; changes in revenues and expenditures during the development process for a sample of 28 local governments, 1970-96; changes in enrollments, revenues, and expenditures in a sample of five school districts as development affected them during the period 1970-96; and how major highway infrastructure and highway improvements led and lagged the land development process in the 24-county area, 1970-1997. Findings from these three studies were published in 2000 [4].

# Twin Cities Regional Dynamics

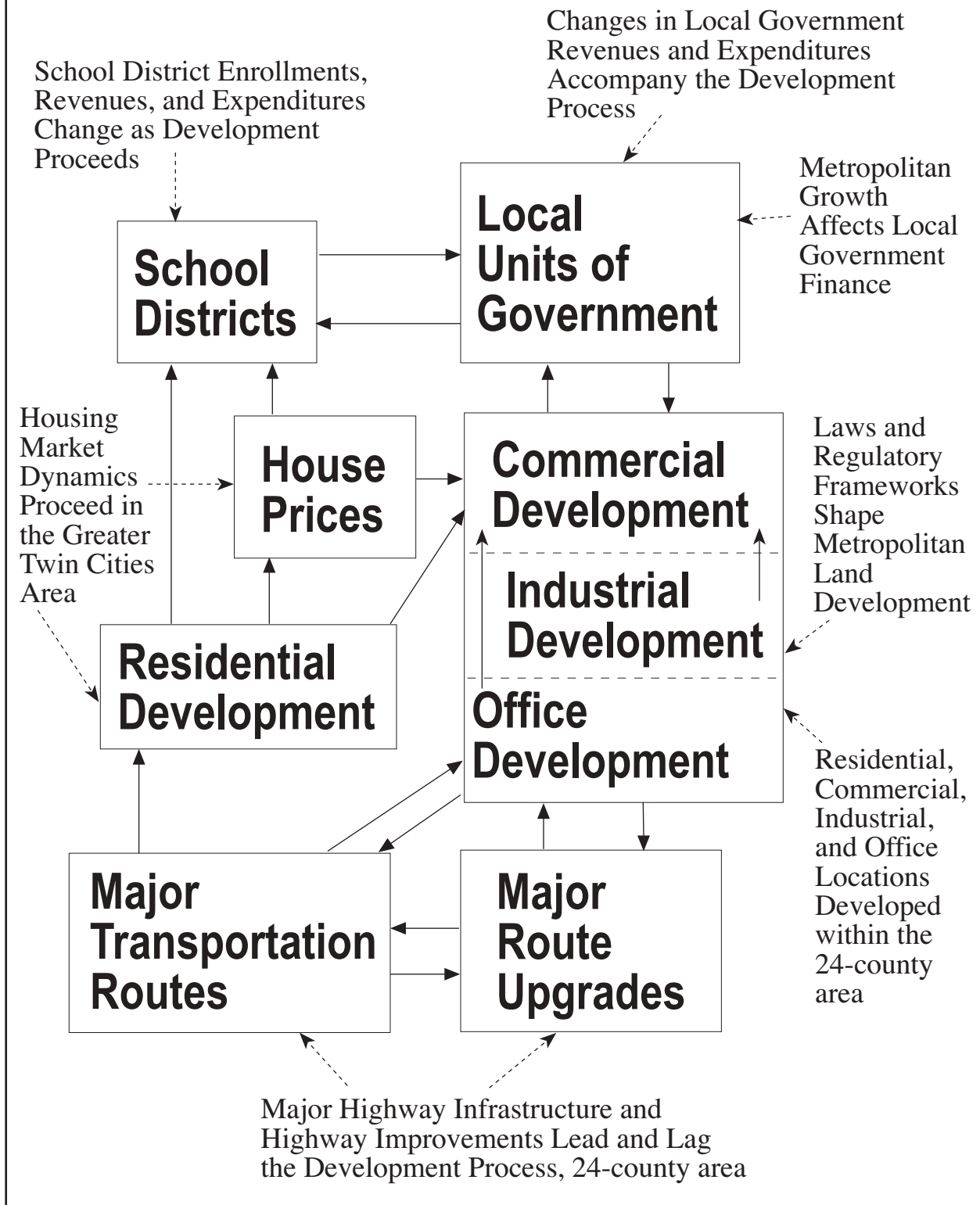


Figure 1.2. Transportation and Regional Growth Study: 1970-2000

Other work, of which this report forms a part, includes a study of development impact fees; a detailed statistical analysis of how major highway infrastructure and highway improvements both led and lagged the land development process in the 24-county study area, 1970-1997; and a series of case studies of a sample of cities and school districts around the region, how they developed during the post-World War II era, and how land development and highway infrastructure have interacted within these sample jurisdictions [5].

Each of our studies has been aimed at (1) providing fresh, detailed descriptions of the ways that the growing and expanding Minneapolis-St. Paul metropolitan area has spread out into the countryside since 1970 in ways that are related to highway infrastructure and highway use, and (2) identifying the principal forces that appear to govern that growth and expansion. Of special interest are the reciprocal relationships between residential development and the demand for additional trunk highway capacity. The Metropolitan Council was charged by the Minnesota Legislature with managing land development and coordinating the development and operation of major regional systems (e.g., sewers, parks, airports, transit, etc.) within the 7-county area surrounding the Twin Cities, but the functional metropolitan region covers at least 24 counties, including at least four in Wisconsin. A Metropolitan Urban Service Area (MUSA) was defined by the council as the area inside the seven counties within which development would be facilitated and supported by the extension of the metropolitan sewer system and other essential urban services. But since the late 1980s, pressure for residential expansion within the MUSA has encouraged many developers, builders and home-buyers to leapfrog outside the seven counties to greenfield sites in the collar of counties and townships just beyond the jurisdiction of the Metropolitan Council, a process that bypasses coherent long-range land use and transportation planning for the region as it promotes extra demand for highway capacity to link these outlying areas with places inside the MUSA line.

## End Notes

1. "Change in Sale Prices for Twin Cities-Area Residential Real Estate." Star Tribune (7 March 1999), pp. A15-6. For a map of Minneapolis home values on line go to <http://www.startribune.com/metro>.
2. Adams, J. S., Bjelland, M. D. , Hansen, L. J., Laaken, L. L., and VanDrasek, B. J. The Role of Housing Markets, Regulatory Frameworks, and Local Government Finance. Report No.

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## Chapter 2

# Twin Cities Housing Markets and Expectations Regarding Price Changes

### Housing Supply and Demand

There are several different ways to examine the structure and operation of housing markets in the Twin Cities. Some inquiries focus on the housing inventory itself (the supply side), and others look at the households that need, seek and occupy housing (the demand side). A third approach looks at the operation of the market itself, investigating and describing ways that supply and demand come together at specific locations, and analyzing prices that are paid for what households receive.

On the supply side, houses vary by quality, size and style. They also vary by density, that is, by the amount of land and open space that is provided per housing unit. The Twin Cities housing market features high-density expensive housing (Nicollet Mall), as well as high-density cheap housing (Mount Airy public housing). There is low-density expensive housing (Eden Prairie), and low-density cheap housing (Wyoming). We also have everything in between in our central cities and suburbs.

On the demand side, households vary in size, age of members, and composition. About a quarter of Twin Cities households are single-person households. Many households are composed of a single parent with dependent children. There are childless couples, and married couples with children. Some family households contain only two persons, and some have ten or more. Households vary according to their income and wealth positions. They vary in terms of their housing style preferences, and in terms of the priority they place on housing expenditures compared with the other goods and services they buy.

As the share of the population that is elderly rises, as young adults delay marriage and childbearing, and as the share of non-traditional households expands, it becomes harder to generalize about the structure and performance of a metropolitan housing market, just as it is becoming harder to generalize about travel behavior that is linked to place of residence and household type. What we can observe though is that at any single point in time, the housing inventory of the metropolitan area is relatively fixed even though the population using it may be changing rapidly

in size, composition, purchasing power and tastes. Housing lasts a long time, usually a century or more, so changes in effective demand may be greater over a short period of time than changes in supply. The result is that the available stock of housing units is allocated by the market, with prices reflecting current market conditions.

### **Effects on Median Housing Values of Change in Housing Stocks**

The most common measures of the market price of housing in a geographical area are the median value of owner-occupied housing, and the median contract rent. The Bureau of the Census reports these measures every ten years for the metropolitan area, for counties, cities, census tracts and blocks. The median is understood to be a more representative measure than the arithmetic mean, because the distribution of values and rents within most geographical areas is usually skewed toward the high-priced end of the distribution. At the scale of the census tract, which on average contains about a thousand households and an equal number of housing units, the movement in the average values and rent levels, whether reported by sample medians or by census medians, is sensitive to the nature of changes taking place in the tract housing inventories and in the effective demand on that inventory at those places.

For purposes of this report, it is unnecessary to recount precise details of tract-level changes in the number of housing units by year of construction at the time of each decennial census within our study areas, but a general overview of changes in the housing stock in Hennepin, Ramsey and Dakota counties is useful (Table 2.1). For example, the number of housing units in Minneapolis rose from 148,000 in 1940 to 173,000 twenty years later as vacant parcels at the edge of the city filled in following World War II. That total declined until 1980, after which it returned to the 1960 level. Meanwhile, more than one in three of the housing units counted in 1950 that had been built before the war disappeared from the inventory by 1990. Thus the 1990 inventory included a substantial number of units that replaced part of the pre-1940 stock. The removals and additions occurred within census tracts around the city, and depending on where they took place the calculated median value of housing, whether based on sample housing values or census values, has been affected.

**Table 2.1: Number of Housing Units and Units Built before 1940, by Census Year, Minneapolis, St. Paul and Adjacent Areas, 1940-1990**

Housing Units (in 1000s) Enumerated in:	Minneapolis	Adjacent Area*	Richfield	Bloomington	St. Paul	Adjacent Area*	Dakota County
<b>1940</b>	148	12	1		83	5	
<b>1950</b>	162	28	5		93	7	
<b>1960</b>	173	99	11	12	102	28	
<b>1970</b>	167	153	15	22	108	46	39
<b>1980</b>	169	211	15	30	111	66	67
<b>1990</b>	173	271	16	36	118	83	103
<b>Housing Units Built before 1940 Enumerated in:</b>							
<b>1950</b>	146				83		
<b>1960</b>	143				79		
<b>1970</b>	114				67		
<b>1980</b>	96				55		
<b>1990</b>	92				55		

Data source: U.S. Bureau of the Census, Census Tract Reports for 1940, 1950, 1960, 1970, 1980, 1990.

\* For 1940 and 1950, "Adjacent Area" includes tracted suburban areas immediately adjacent to Minneapolis and St. Paul. For subsequent census years, "Adjacent Area" includes the rest of Hennepin County (for Minneapolis) and the rest of Ramsey County (for St. Paul).

If housing units newly added to a tract were well above average in value compared with other units in the tract while those removed were relatively low in value, the median value of housing in the tract could have risen for that reason alone. It is difficult to discern from published census data, however, the extent to which changes in a tract's median value come about due solely to additions and deletions from the tract's housing stock. Construction and demolition may affect the total number of housing units, but remodeling and upgrading can affect prices as can changing tastes that revise market views of the desirability of certain kinds of housing types and certain kinds of locations.

The quality and attractiveness of the housing stock in a block, tract, neighborhood, or city—and the prices the housing will command—can be enhanced by the remodeling and upgrading of the existing units, as well as by actions by the city to improve the attractiveness of neighborhood

settings. Streets and gutters can be reconstructed, parks can be improved, school buildings and yards can be refurbished, trees along boulevards can be trimmed and nourished, streets can be cleaned, building and housing codes can be enforced, traffic can be calmed, and neighborhood organizations can be fostered and energized to take an interest in neighborhood improvement.

### **Effects on Housing Values of Changes in Effective Housing Demand**

There are only four ways that population in a place can change: births, deaths, moves in, and moves out. Some of these causes are linked, as when retired people move into an area and live there until they die. Or when young people move into an area, then bear their children there instead of at their places of origin. The Twin Cities area has been a region of net immigration since 1970, and increasingly so since 1990.

Once present in the metropolitan area, households frequently relocate as their tastes and requirements dictate, and as their means and awareness of housing opportunities allow. The matching up of demand and supply occurs at the local or neighborhood level, and prices paid for housing reflect the localized market conditions. For example, if a neighborhood suddenly becomes a fashionable place to live for certain types of households following years of slow neglect and decline, the enhanced demand alone with no short-term change in supply at that place will send prices upward, as happened in the Loring Park area of Minneapolis and the Ramsey Hill neighborhood in St. Paul after 1970. On the other hand, if fear of crime and concerns about school safety or school quality encourage families with children to leave a neighborhood while deterring others from entering, the opposite can occur and prices will drop.

As a general rule, households with above-average incomes and/or access to wealth of their own or from family sources enjoy easier access to a wide range of housing opportunities than do low-income households and/or those without savings, investments or family resources to draw on. Middle-class households with secure jobs and stable employment records enjoy better access to mortgage credit and favorable mortgage interest rates compared with households lacking those advantages.

The initial financial advantages that middle- and upper-income households enjoy when they enter the ranks of owner-occupants are enhanced in important ways by additional advantages provided by the U.S. Internal Revenue Code and supplemented by State of Minnesota tax laws. Philadelphia Federal Reserve Bank economist Richard Voith estimated the size of those financial advantages for households buying houses at different price levels (Table 2.2) [1].

Voith’s analysis illustrates that the more expensive the house that one buys, the greater the share of the cost of that house that can be passed on to the state and federal government in the form of reductions in income tax obligations. For households buying houses for \$75,000 or less, they receive no tax advantage at all. At the other extreme, households buying houses worth \$500,000

**Table 2.2. Home Ownership-Related Deductions  
in Excess of the Standard Deduction\***

House Prices (\$)	Interest + Property Taxes (\$)	Interest and Property Taxes – Standard Deduction (\$)	Assumed Marginal Rate	Value of Deductions for Assumed Tax Rate (\$)
20,000	1,660	(4,890)	.15	0
25,000	2,075	(4,475)	.15	0
35,000	2,905	(3,645)	.15	0
45,000	3,735	(2,815)	.15	0
55,000	4,565	(1,985)	.15	0
65,000	5,395	(1,155)	.15	0
75,000	6,225	(325)	.15	0
85,000	7,055	505	.28	141
95,000	7,885	1,335	.28	374
112,500	9,338	2,788	.28	781
137,500	11,413	4,863	.28	1,362
162,500	13,488	6,938	.28	1,943
187,500	15,563	9,013	.28	2,524
225,000	18,675	12,125	.31	3,759
275,000	22,825	16,275	.31	5,045
350,000	29,050	22,500	.36	8,100
450,000	37,350	30,800	.36	11,088
500,000	41,500	34,950	.36	12,582

\*There are five key assumptions underlying calculations: (1) loan to value ratio of 80 percent; (2) mortgage interest rate of 8.5 percent; (3) effective property tax rate of 1.5 percent; (4) standard deduction, which is foregone for those choosing to itemize their tax deductions, is equal to \$6,550, and (5) household income is consistent with house values using the rule of thumb that house values are 2.5 times annual household income. Calculations ignore the possibility that households have other deductions such as large medical bills or local income taxes that make itemization more attractive. In addition, calculations ignore complex phase-out provisions for very high-income households.

receive tax reductions equal to \$12,582 per year. These tax reductions reduce the out-of-pocket costs of buying expensive houses. Moreover, these tax advantages enhance the attractiveness of expensive houses and elevate their prices by some amount that is thought to be in addition to the capitalized value of the tax advantage [2]. Thus, it makes financial sense for middle- and upper-middle-income households to try to acquire a more expensive house rather than a less expensive house because the annual out-of-pocket expense increases less rapidly than does the price of the house, and the household's balance sheet improves fast when the value of the expensive house escalates faster than the rate of inflation, as it often does.

The geography of this process works to the advantage of the suburbs and to the disadvantage of the central cities. The high concentration of high-income households and large houses in suburban communities means that the tax savings associated with deductability disproportionately benefit residents of suburban communities. In fact, Voith estimated that roughly \$49.5 billion of the annual \$65 billion in federal tax breaks were claimed by residents of suburban communities across America, while the corresponding figure for city residents was one-third as high, only \$15.4 billion [3].

The suburban portion might be somewhat lower for the Twin Cities area because Minneapolis and St. Paul, unlike many U.S. cities, contain a substantial number of attractive neighborhoods with high-priced houses in the vicinity of lakes and along parkways near rivers and creeks. Nevertheless, the flow of tax expenditures to the suburbs contributes in a major way to the long-term capital shift in real estate value out of the central cities and into suburban portions of the metropolitan area, because it undoubtedly exceeds by a wide margin what flows to central city residents in the Twin Cities.

### **Geographical Expressions of Household Demand for Housing within Housing Submarkets**

Midwestern urban households can be stratified into five socioeconomic classes distinguished by their wealth, annual income, and the stability of their annual income. The proportions of a city's households in each class determine the volume of their effective demand for new housing. Where the different classes live determines the location of their demand for housing. These geographical expressions of demand for housing of different prices and styles were first described in detail in the 1930s in a classic work by real estate economist Homer Hoyt, who described the sectoral structure of urban residential real estate markets and showed how they were linked to the layout and operation of a city's central business district [4]. Hoyt's research in over

a hundred cities illustrated how Midwestern metropolitan housing markets became partitioned into fairly well-defined sectoral submarkets that originated near downtown and radiated outward [5].

From the 1890s until the end of World War II, the main mode of internal transportation within Minneapolis and St. Paul was by electric streetcars using lines that radiated outward from the two downtowns. The use of the streetcars for more than 60 years reinforced sector-based movement to and from the job and shopping opportunities that were highly concentrated in the downtowns until after 1960. These radially based activity orbits of residents reinforced what city residents knew about their home sectors, and generally prevented them from becoming well acquainted with neighborhoods outside their home sector.

Minneapolis and St. Paul have been typical examples of this pattern of residential expansion. This structural basis for sectoral differentiation of housing submarkets was laid by the growth of downtown and its internal differentiation into distinct activity areas such as retail, entertainment, wholesale, financial, legal and printing, heavy transportation, and so forth in the early decades of the 20<sup>th</sup> century. During the late 19<sup>th</sup> century and early 20<sup>th</sup> century, most foreign immigrants settled near sources of unskilled employment at various edges of the emerging central business districts. Workers walked to their downtown jobs.

Meanwhile, middle-class neighborhoods usually emerged on the sides of downtown upwind (or at least not downwind) from heavy transportation and manufacturing districts, or on higher or rougher terrain that was inconvenient for goods movement and processing, and on sites close to white-collar downtown jobs. In Minneapolis this meant sites on the south and southwest sides of downtown and in the Near North. In St. Paul it meant sites west of downtown in the direction of Summit Hill and Ramsey Hill.

Salaried workers have traditionally enjoyed stable incomes and access to mortgage credit. They were able to upgrade their housing faster than workers in other sectors, and they moved outward to better housing at a brisk rate. This outward movement encouraged the expansion of the white-collar employment areas of downtown toward the middle-class residential sectors, and promoted the eccentric expansion of the city toward its middle- and upper-middle class sectors. That is the main reason Minneapolis developed most vigorously on the south side, and why St. Paul developed most in neighborhoods west of downtown.

Meanwhile the upper class generally has little impact on the supply of vacancies because it is small (by definition) and typically does not relocate much. Moreover, upper-class housing is often physically isolated from other sectors, and its principal influence on housing markets is in setting styles and tastes.

### **Theoretical and Empirical Research that Supports the Present Inquiry**

On the demand side of the housing market, although our knowledge of why households move, when they move, and where they move is less than complete, certain patterns and regularities have been observed and measured for the housing markets in the Twin Cities and for other metropolitan areas around the United States. On the supply side, the story also is incomplete. The decennial censuses of population and housing provide periodic and detailed snapshots of the housing stock and the households that occupy it, but intercensal profiles documenting additions, demolitions and changes in conditions and prices are sporadic and incomplete, especially with respect to small-area data.

Urban housing market analysis that focuses on the demand side begins with the number of households of different sizes, with different tastes, and with different amounts of information about available housing opportunities within the portions of the metropolitan housing area with which they are familiar. Housing is but one expense for a household. Their wants and perceived needs are satisfied depending on their ability to pay, and on decisions they make regarding other goods and services they choose to buy. The number of households in a metropolitan area contracts during times of economic recession as households consolidate (e.g., adult children moving back to their parents' home) while others leave the area for job opportunities elsewhere. Conversely, the number of households expands during boom times for opposite reasons.

Housing market analysis for a metropolitan area that focuses on the supply side begins with the inventory of housing units in the aggregate, and within each neighborhood, price range, density, structure, and tenure type (owner occupied vs. rental). The housing market operates to match up available supply with effective demand. The total inventory of units changes only slowly, with maximum net increases in the total stock of only a few percentage points per year. Thus, variations in vacancy rates by type of unit, by price, by location, and by tenure come about mainly due to short-term changes in effective demand. Over a longer term such as a decade, the U.S. Census of Population and Housing reports close correspondence between changes in the number of households and changes in the number of housing units in a metropolitan area. Over a shorter

term of a year or so, the two aggregates (households, housing units) vary independently, and produce significant short-term variations in the vacancy rates within specific portions of the housing market.

Despite these data deficiencies, there have been enough housing market studies centered on parts or all of the Twin Cities to permit a few generalizations about the nature of local housing markets. One useful approach to the study of metropolitan housing markets is the empirical device known as the residential vacancy chain.

### **Residential Vacancy Chains**

Residential vacancy chains operate as follows. When a new housing unit is completed—typically at a location on or near the built-up edge of the urbanized area—it is vacant and becomes available for occupancy. When a household moves in and occupies the new unit, it normally vacates a previous housing unit at another location. In other words, the household moves in one direction—into the new house, while the vacancy moves in the other direction—to the household's former address. Now the vacancy is available for occupancy by another household, which moves in from another unit at another location. The household moves in one direction and the vacancy relocates in the other direction. And so it goes, link by link forming a vacancy chain [6].

A vacancy chain ends (1) when a housing unit stands permanently vacant; (2) when a vacant unit is demolished; (3) when a vacant unit is consolidated into an already-occupied unit, as when an efficiency apartment is added to an adjacent unit, or (4) when the vacancy leaves the local housing market as a household migrates into the local area from another city. On average, the more expensive the new house constructed on the edge of the built-up area, the longer will be the vacancy chain it sets in motion—sometimes 6 to 10 links in length. When low-priced housing is constructed and occupied, the chains are usually short—sometimes only a single link in length [7].

### **Vacancy Chains and Directional Bias in Residential Mobility**

Empirical analysis of vacancy chains set in motion in the Minneapolis area in the 1970s demonstrated the existence of such chains as well as their geographical expressions [8]. It is an easy matter to plot on a map the location of a hundred new houses, then chart the location of the chains and the chain ends. The household behavior underlying the chains is familiar. It seems intuitively obvious that when a household is in a position to improve their housing, the typical way that goal can be accomplished is to move outward into a newer and larger unit, staying generally within the parts of the urban area that already are somewhat familiar to the household.

American cities have been built from the center outward, and Minneapolis and St. Paul are no exception. The older, smaller, cheaper, less modern and generally less desirable houses are located in the central cities and close to the downtown. The newer, more attractive options are located farther from the center. Sometimes divorce, or financial reverse, or children leaving home, or retirement stimulate inward moves, but such moves over the years have been only a fraction of a general movement outward.

Because of the long-term tendencies of middle-class households to improve their housing situation as they improve their socio-economic standing, there has been a long-term directional bias outward in residential mobility patterns. Moreover, studies in the Twin Cities have demonstrated that radially oriented directional bias in intra-urban mobility was strongest in the early streetcar-oriented decades of the twentieth century, but has waned substantially in the last few freeway-oriented decades [9].

#### Vacancy Chains and Poverty Neighborhoods

Other research on how residential vacancy chains are generated by new suburban construction has demonstrated that suburban construction rates that substantially exceed net household formation rates eventually produce housing surpluses in inner, older, lower-priced segments of the housing submarkets in which the surplus new construction occurs [10]. The housing surpluses yield numerous vacancies in specific inner-city neighborhoods, along with low prices for rental and owner-occupied units, which then attract low-income households in substantial numbers to those neighborhoods [11]. Many of the low-income newcomers who have settled recently in these areas of inner South Minneapolis, inner North Minneapolis, and St. Paul between the St. Paul Cathedral and Lexington Avenue have been Asian, Latino and African immigrants, as well as domestic migrants from Upper Midwest Indian reservations, from other Midwestern cities and from elsewhere in the U.S. [12].

#### Vacancy Chains and Housing Prices

House-price inflation rates typically vary from low or negative in many inner-city areas to rates well above inflation near the edges of certain submarkets. Various public policies such as the deductibility of mortgage interest and real estate taxes from taxable household income, along with average-cost pricing of utilities extensions (rather than full marginal-cost pricing) have the effect of making new suburban housing an excellent deal financially for the new-home buying household, which gets more than it pays for—a consequence of public policies designed to encourage exactly this outcome. One effect of this “underpricing” of new homes is higher-than-

average inflation rates for new and newer housing. To the extent that prospects for unearned capital gains on owner-occupied housing stimulate excess production and consumption of upper-priced housing on the low-density margins of expanding submarkets, the demand for transportation facilities serving those areas is magnified beyond what it would otherwise be. This study discusses this phenomenon as one of the major elements shaping Twin Cities regional dynamics.

### **Sectoral Structure of 14 Twin Cities Housing Submarkets**

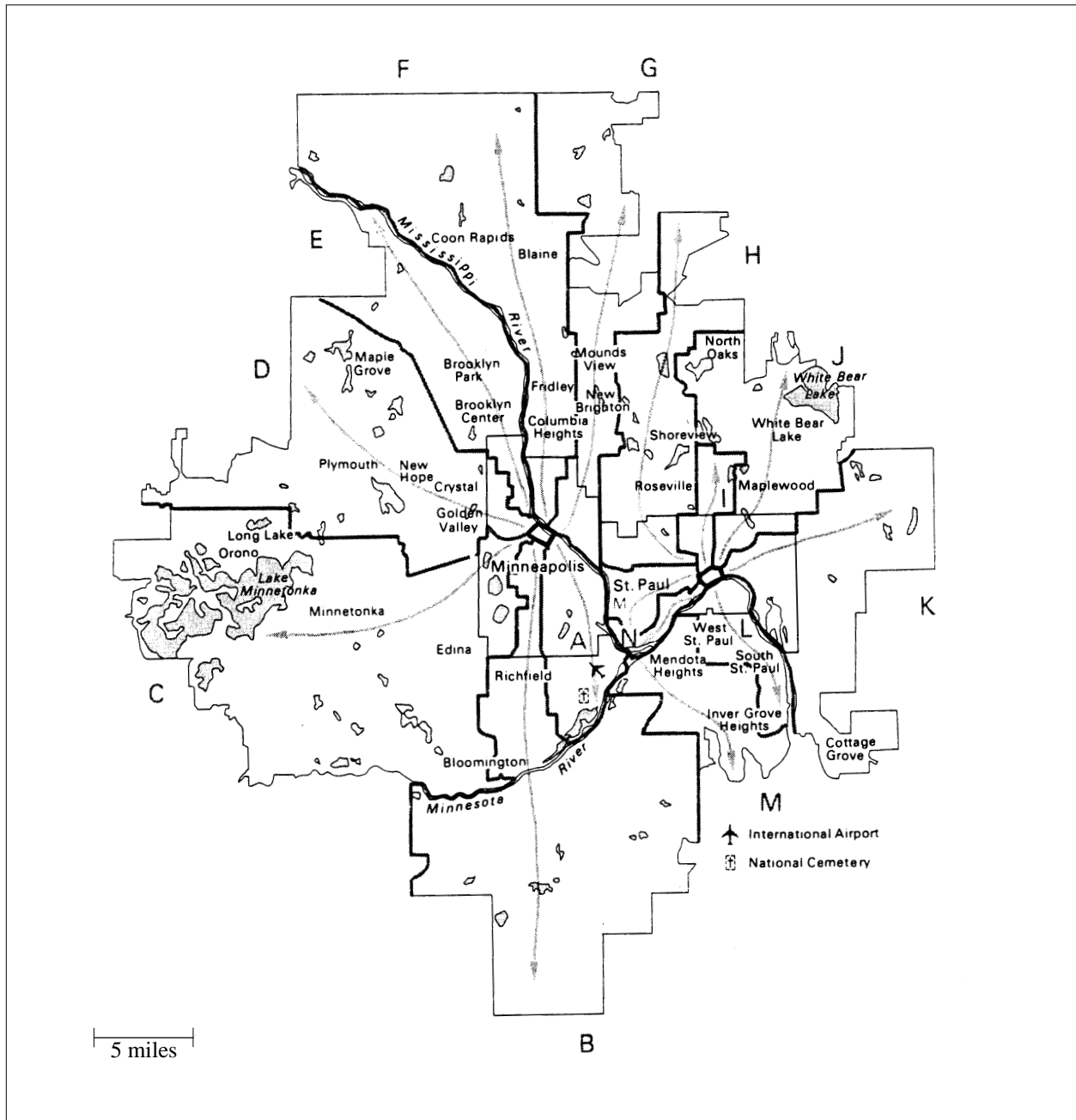
The Twin Cities area provides a good case study of housing submarket structure and operation. The area traditionally has had fourteen sectoral submarkets for housing (Fig. 2.1) [13]. Their existence is confirmed by studies of residential mobility, and by planners, developers, builders, financiers, and transportation and marketing specialists who know the region. Each sector has its own unique history, character, demography, housing market conditions, and retailing tastes.

Our goal in this report is to describe patterns and trends in house price changes for the period 1970 to 1995, and to discuss some of the forces operating at the housing submarket level that can be used to explain observed changes of the sort that emerged in the city-scale analysis. Our study approach is to examine housing prices in three of the fourteen sectors and to see how they vary from the downtown core to the suburban edge, and to see how price trends have persisted over time. The first is submarket B, which extends from the south side of the Minneapolis central business district (CBD), through central south Minneapolis and the south suburbs (Fig. 2.1). The second is submarket E which runs north of the Minneapolis CBD parallel to the Mississippi River and through Brooklyn Center and Brooklyn Park. The third is submarket H, which originates on the northwest edge of downtown St. Paul, and runs northwest and north into Roseville and Shoreview.

### **Hypotheses—and Their Bases**

A general hypothesis was presented at the beginning of this report that house prices advance at rates above inflation for newer and more desirable units toward the outer tracts of a residential sector or submarket, and that the inner tracts, other things held equal, will feature housing with prices that advance at rates below inflation. Two main lines of argument can be presented in support of that hypothesis:

(1) Households on average prefer newer, larger and lower-density housing over older, smaller high-density housing, and because of the way that American cities were built from center to edge, the former kinds of housing opportunities are expected to be common in newer parts of the central city and in the suburbs, while the latter types will be found close to downtown. As



**Figure 2.1. Twin Cities Housing Submarkets, 1920s to 1970s.**

Source: John S. Adams and Barbara J. VanDrasek. 1993. *Minneapolis-St. Paul: People, Place, and Public Life*. Minneapolis, MN: University of Minnesota Press, p. 105.

households press outward over the years, they place strong demand on the supply of houses that are newer than the ones they currently occupy, thereby holding up or raising their market prices. Meanwhile the older, cheaper houses from which households move as means permit, are often present in localized volumes that exceed demand at those places, so prices slide.

(2) Newer housing can be a better financial bargain than old housing because of the income tax treatment of mortgage interest, real estate taxes and capital gains on residential real estate, and because of ways in which utilities and infrastructure serving newly developing areas are usually priced at levels below the full marginal costs of providing them. Older housing closer to the downtown, in contrast, uses infrastructure that has been in and paid for for years and pays more than the marginal costs of the services it consumes [14]. The capitalized values of underpriced or overpriced infrastructure and utilities contribute to above-average capital gains for newer houses, and below average gains (and sometimes losses) for low-priced houses near city center.

Of course there are many additional sources of flux that stimulate, depress, or otherwise are reflected in market data on property values, and they include:

- tract housing inventories that vary over the study period, with older tracts losing obsolete units through demolition and replacing some of them with new construction, and tracts on the edge of the built-up area gaining units through normal suburban development;
- extreme variations in rates of inflation in the 1970s and early 1980s;
- general economic conditions, including major recessions in the early 1980s, and again in the early 1990s;
- perceptions about crime and public safety; and
- issues centering on the perceived quality of public education.

These considerations can be invoked to account for variations in house prices that cannot be easily explained by the two main hypotheses of this study.

## End Notes

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2. There is a large literature estimating the extent to which tax laws and infrastructure provision and pricing affect residential property values, and how tax expenditures and under-priced infrastructure may be capitalized into the value of residential property. Examples include: Haughwout, A.F. "Central City Infrastructure Investment and Suburban House Values." Regional Science and Urban Economics 27 (1997) 199-215; Goodman, A.C. "Capitalization of Property Tax Differentials within and among Municipalities." Land Economics 59:2 (1983) 211-9; and Do, A.Q. and Sirmans, C.F. "Residential Property Tax Capitalization: Discount Rate Evidence from California." National Tax Journal 47:2 (1994) 341-8.
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11. Adams and VanDrasek. Op. cit.
12. Adams and VanDrasek 1993, and Adams, J. S., VanDrasek, B. J., and Lambert, L. J. The Path of Urban Decline. Second in the series What the 1990 Census Says About Minnesota. CURA Pub. 95-2. Minneapolis: Center for Urban and Regional Affairs, University of Minnesota, 1995.
13. Adams, J. S. "Housing Submarkets in an American Metropolis," Op.cit.
14. See Adams, J.S., Cidell, J.L., Hansen,L.J., Jung, H-j., Ryu, Y-t, and VanDrasek, B.J. Development Impact Fees for Minnesota? A Review of Principles and National Practices. Report #3 in the Series: Transportation and Regional Growth Study. CTS 99-04. Minnesota Department of Transportation, Center for Transportation Studies, University of Minnesota, and the Metropolitan Council. October 1999. 130pp. New residential, commercial, office, and industrial development within a community brings with it the need for new infrastructure plus some of the means to pay for it. Traditionally, the responsibility for infrastructure installation and for payment has been shared among (1) developers, builders and their customers, (2) existing residents of the community, and (3) future residents. In recent years, for financial as well as political reasons, local governments have been trying to mandate that newcomers pay an increasing share of the cost of incremental infrastructure made necessary by growth. There are seven main sources of funds to pay for new infrastructure, including general obligation bonds, revenue bonds, taxes, user charges, special assessments, mandated on-site exactions, and off-site impact fees.

Shared infrastructure costs may be imposed by local units of government on new development only to the extent of the powers granted to it by state government, and such powers and their constitutional bases vary from state to state. The choices a community makes on how to finance new infrastructure will affect the pace and geographical patterns of development within a community. If a community requires existing residents to pay too large a share of development costs, then impact fees will be low, but local taxpayers probably will oppose new development. If the

community attempts to pass on most or all of the incremental costs of development to future residents, then they are likely to welcome development, but the higher price tag probably will slow down development or displace it to other locales.

If the marginal cost of newly required infrastructure is charged to developers and builders, questions arise:

- will these charges be shifted backward to original landowners in the form of higher prices received?
- will they be shifted to the developers and builders in the form of lower profits due to fewer units sold?
- will they be shifted to suppliers of materials and services needed for the new development in the form of lower prices received by them?
- will they be shifted to new home buyers and new businesses who pay higher prices for what they get?
- or will they be shifted away from existing residents and businesses who then pay lower taxes and therefore see the value of their properties rise or decline less rapidly than they would were they obligated to assume a significant share of providing infrastructure needed to accommodate new growth?

Some studies show that imposing impact fees raises the cost of both existing as well as new housing.

The Minnesota Supreme Court specified criteria for defining an impact fee. There is no explicit statutory authority for municipalities in Minnesota to impose impact fees, although they do have authority to impose certain types of development exactions. Wisconsin statutes authorize the imposition of impact fees via ordinance by a city, village, town or county, but only for the capital costs of specified facilities.

The advantages of impact fees include heightened user equity as each beneficiary pays something closer to a fair share of the infrastructure that they require; political advantage arising from the fact that existing residents outnumber developers; developer support when it is feared that without the fees important infrastructure cannot be supplied in a timely fashion; reduced borrowing by local government; a means to slow growth by raising its price to new households and businesses; and the promotion of local, economic, community, and land use planning.

Disadvantages accompanying the imposition of development impact fees include the raising of new-house prices, which can be especially significant for communities trying to expand their inventory of low- and moderate-priced units; and the equity argument that existing residents never had to pay impact fees, so new residents and businesses should not be obligated to do so.

The timing of fees is important because although they can slow down land development during an economic boom, they probably will depress business during a recession. If different levels of government each charge development impact fees, the total of such fees can become so high that real estate development can be slowed or stopped, whether or not this outcome is desired.

The calculation of impact fees requires the prior determination of appropriate facility standards, plus the adoption of a capital long-range improvement plan to accompany the general city land use and development plan. The next step involves estimation of the proportionate share of infrastructure capital costs that should be assigned to new development. Estimating this share involves at least seven determinations: the cost of existing facilities; how existing facilities were financed; how much new development already has paid; how much new development will pay in the future; how much credit should be allowed for facilities installed by the new development; extraordinary costs due to unusual site or situation; and time-price differentials that arise when fees are paid well in advance of the availability of the infrastructure.

The actual practice of implementing development impact fees varies significantly from state to state as well as among jurisdictions within states. At one extreme, California rules are general and liberal, while at the other, Florida's are strict. Other cases from Colorado, Texas, Montana and Wisconsin offer examples from which Minnesota may learn. Within the Minneapolis-St. Paul metropolitan area, the city of Hudson, Wisconsin, enacted an impact fee ordinance in 1996 pursuant to state enabling legislation of 1994.



## Chapter 3

### Study Procedures and Data Used

#### Introduction

A substantial body of research has demonstrated that housing markets within Midwestern industrial cities like Minneapolis and St. Paul, as well as in cities in other parts of the United States, traditionally have been composed of a set of geographically distinct areal submarkets that up through the 1960s and 1970s operated relatively independently from one another. That is, supply-demand relationships in one submarket played out essentially independently from the others [1].

A second important feature of Minneapolis-St. Paul housing submarkets in addition to their relative independence from one another has been their historic alignment with radial transportation routes focused on the downtown. The structure of transit routes and patterns of their use over the years fostered the alignment of daily trips and residential mobility within radially oriented sectors. These geographical patterns and spatial tendencies developed as early as the 1890s as streetcar lines were extended outward from the downtowns, followed over the next 60 years by bus line extensions and highways that linked the suburbs with downtowns in the early post-war decades. During the decades before the 1970s, when jobs and shopping opportunities were concentrated in the downtowns, most journeys to work and to shop were oriented radially. It has only been in the past three decades or so that these in-out movement patterns have been broken down and supplemented by a rapidly expanding volume of suburb-to-suburb movements of all kinds.

Our aim in this study is to examine single-family house prices within a sample of residential sectors and to observe how these prices have changed during the 1970-1995 period. To the extent that housing market demand and supply activity occur within separate submarkets, and to the extent that residential mobility maintains a general orientation or directional bias outward from inner locations to suburban locations, we would expect this spatial orientation to affect price movements and result in above-average inflation rates in constant dollar terms for newer housing at locations farther out, while older inner-city housing should display stable or declining value in constant dollar terms [2].

## **Study Procedures**

(1) First we identify a sample of existing single-unit houses at different central-city and suburban locations along traverses from downtown into the suburbs within three of the 14 traditional housing submarkets of the 7-county Twin Cities metropolitan area; (2) then we reconstruct their value or price histories in current dollars as revealed in assessment records; (3) next we estimate the real rates of inflation of housing prices at different locations within each of the sample submarkets; (4) finally we compare these sample rates of change with census tract data on the value of owner occupied single-unit housing for the tracts containing the sample units. The last step is carried out to assess the correspondence between (1) price-change data from samples based on assessments, and (2) price-change data from decennial censuses reporting median value of single-unit owner-occupied housing as reported by homeowners in census tracts intersected by the traverses.

The profiles of estimated changes in housing value along the three traverses are analyzed to make an assessment of shifts of residential capital values (1) among MCDs and (2) within residential sectors, from one set of metro locations to another during the later decades of the post-WWII period. The data used come from county assessors' offices in Hennepin, Ramsey, and Dakota counties, and from the reports of the decennial U.S. censuses of population and housing.

## **Data Definitions: Assessed Valuation**

When studying the price of housing, there are three basic types of data available for convenient analysis: (1) assessed value, (2) actual sales prices, and (3) repeat sales values. Other data sources include (4) the Certificate of Real Estate Value that is filed with the Minnesota Department of Revenue when a property is sold and a state transfer tax is paid, and (5) information on completed house sales that is assembled by metropolitan area boards of realtors for their use in working with clients. The certificates are difficult to use because the information they contain (property address, sales price, date of sale) is not summarized for analysis. The realtor data are proprietary and not available for analysis.

The problem with actual sales prices and with repeat sales values is that they cover only a selected subset of the houses within a city or region rather than all houses. Repeat sales in particular often include more "starter homes," which usually are smaller and cheaper than average and therefore unrepresentative of the total inventory. One study found that for a given time period, houses that sold twice had a sales price approximately 15 percent lower than those that sold only

once [3]. Using assessed values of all units as the population from which sample units are drawn for study ensures that all houses within a particular geographic area are included, not just those that have changed hands during the study period.

All properties in the state of Minnesota are reassessed at least once every four years, with annual adjustments made even if the property is not actually visited by an assessor. Assessment generally is carried out by the county with county personnel, though Minneapolis, Duluth, and St. Cloud use city assessors. Assessed values in Minnesota are intended to reflect the actual market value of a property, defined as “the price that could be obtained at a private sale or an auction sale, if the assessor determines that the price from an auction sale represents an arms-length transaction. The price obtained at a forced sale shall not be considered” [4]. In actual practice assessed values usually are slightly lower than actual sales prices, partly because in such a subjective process the assessor prefers to underestimate values, and because properties are only physically examined every four years [5]. Because assessed values of real property determine property taxes, which in turn determine levels of state aid to local school districts, Minnesota has a particular interest in making sure that assessments are done accurately. By law, assessed values must be within 90 to 105 percent of actual sales values, a guideline that the Minnesota Department of Revenue checks yearly. However, studies have found estimated market values that range from 50 to 140 percent of actual market values [6].

Because assessed values form the basis for property taxes, the values have been calculated in different ways with the effect of shifting tax burdens to or from residential property owners. In 1970, the first year of our study, all property was to be assessed at full market value. In 1973, due to serious levels of inflation at that time, the law was adjusted so that estimated residential property values for assessment purposes could increase by no more than 5 percent per year. In 1979, a shift was made back to “estimated market value, “ also called “full market value.”

Another reversal occurred in 1993, when it was decreed that “limited market value” (sometimes referred to as “taxable market value”) would become the basis of assessment from 1993-1998. Under terms of this definition, a property’s assessed value for tax purposes could increase by no more than either 10 percent of the previous year’s value, or 25 percent of the difference between the previous and present years, whichever was higher. Therefore, the assessed values for 1975 and for 1995 that we used in our study, because they were calculated with limitations placed on increases in assessed values, may be lower than true market values if those market values were increasing rapidly enough during those inflationary periods. It is also possible that old and decrepit properties that were losing value appeared on the assessment rolls at values higher than their true market values, but we have no way to assess this type of error.

## **Data Collection and Procedure**

We examined a total of 700 properties along three different traverses of the metropolitan region. Using the map of housing submarkets in the Minneapolis-St. Paul metropolitan area (Fig. 2.1), we selected three: South Minneapolis (Sector B), North Minneapolis (Sector E), and northwestern St. Paul (Sector H) for defining our sample traverses. We selected three as a manageable number. Two were in Minneapolis because the western side of the metropolitan area traditionally has accounted for well over half of the housing and housing construction activity during the post-war era. We chose Sectors B and H because these have been especially vigorous middle-class sectors compared with the working-class sectors in East Minneapolis and the upper-bracket sector west and southwest of Minneapolis. In St. Paul, the Sector H is a middle-class counterpart to Sector B in Minneapolis; that is, a strong, post-war middle-class market that expanded rapidly after World War II. The fact that the housing stocks in Roseville and Richfield share so many similarities is a consequence of their parallel development histories within similar submarkets. We selected Sector E through North Minneapolis—a lower-middle-class housing sector—to permit comparisons between it and the other two. If time and resources had permitted, we probably would have selected a fourth sector in St. Paul, perhaps one covering the North End north of the Capitol.

We marked out each traverse on a map as a line as straight as possible, from the point at which single-family housing began appearing in substantial numbers in the central city to the edge of contiguous urban development. The sample of houses selected from the South Minneapolis traverse consists of 265 properties in 23 different census tracts. The sample of houses along the North Minneapolis traverse consists of 215 properties in 12 different census tracts; and the sample of houses along the St. Paul traverse consists of 220 properties in 12 census tracts [7].

Rather than randomly choosing addresses along each traverse, which would present the risk of selecting houses not typical of their surroundings, we followed the traverses in the field and visually selected a non-random sample, choosing houses of average size and condition for the block on which they are located. For each block of each traverse, we chose three typical single-family residential structures, if possible. We were not always able to stay on a straight traverse due to uneven development patterns and obstacles presented by non-residential uses such as parks, lakes and commercial districts, but we stayed within the chosen sectors and cities, as illustrated and discussed in Chapters 4, 5 and 6.

We recorded street addresses of sample houses, then obtained the assessed values of the sample properties from the Dakota, Hennepin, and Ramsey County assessor's offices for the years 1970, 1975, 1980, 1985, 1990, and 1995 [8]. We collected estimated (or full) market values when possible; however, only limited market values were available for all Dakota County properties, and for Hennepin County properties for the years 1985, 1990 and 1995. Thus, the St. Paul traverse is the only traverse to consistently use estimated market value for all years of the study period; the South Minneapolis and North Minneapolis traverses switch from the use of estimated market value to the use of limited market value beginning in 1985.

We identified the census tracts in which our sample properties are located, and recorded the median value of owner-occupied housing (based on owners' estimation of their property's value) for each of these tracts for the decennial census years 1970, 1980, and 1990. Some census tract boundary changes occurred over the study period, so we used 1990 tract definitions and consistently assigned sample housing units and associated assessment data to tracts according to 1990 tract boundaries.

Finally, after assigning each sample property to its corresponding census tract, we calculated a median assessed value for the array of sample properties in each tract. The number of sample properties per census tract ranged from 3 to 48, thus some of the calculated median values for the census tracts with smaller sample sizes may not be representative of the median value of the entire tract. In most cases, the census median value (based on owner-estimated values) for a tract is larger than our sample median value (based on assessed market value). There are several possible reasons for this relatively consistent pattern of discrepancies: overvaluation by home owners, undervaluation by assessors, gaps in time between the official assessment and that of the census, an unrepresentative sample, or small sample size (although the tracts with three and four properties sampled did not experience noticeably larger discrepancies than tracts with larger numbers of properties sampled).

## End Notes

1. Adams, J. S. Housing America in the 1980s. New York: The Russell Sage Foundation, 1988. This work analyzes the geographical organization of housing markets in 28 metropolitan areas in the United States, based primarily on data from the 1980 census of population and housing, and presents a substantial bibliography of works focusing on the geography of housing in American cities. See also Bourne, L. S. The Geography of Housing. New York: John Wiley & Sons, 1981.
2. For an elaboration of this argument see: Adams, J. S., "A Geographical Basis for Urban Public Policy," Professional Geographer 31:2 (1979) 135-45.
3. Clapp, J. M., Giacotto, C., and Tirtiroglu, D. "Housing Price Indices Based on All Transactions Compared to Repeat Subsamples." American Real Estate and Urban Economics Association Journal 19:3 (1991) 270-85.
4. Minnesota Statute 272.03. See also: Office of the Legislative Auditor. 1996. "Property Assessments: Structure and Appeals." Report 96-07. Office of the Legislative Auditor, State of Minnesota, St. Paul: 1996.
5. Meagher, P. D. and Scully, M. F. Consequences of Changing the Minnesota Property Tax Assessment to Estimated Market Value. St. Paul: Tax Study Commission, State of Minnesota, 1987.
6. Ibid.
7. A few census tract boundaries changed over the study period; these changes are described in the data tables in Appendices A, B and C.
8. Values of Dakota County properties were available only for years after 1990. Because the county is not legally obligated to maintain records for more than six years, earlier records were discarded. Values of Ramsey County properties were not available for 1970, so we obtained values for 1972 instead. Also, because our sample properties in Ramsey County had not been reassessed by the year 1975, we obtained values for 1976 instead.

## Chapter 4

### **Traverse B: South Minneapolis >> Richfield >> Bloomington >> Burnsville**

#### **A South Minneapolis Housing Submarket and a Sample Traverse Through It**

If it happens that forces of housing supply and housing demand within metropolitan housing markets work themselves out largely within geographically distinct housing submarkets, which traditionally have radiated outward from the central business district, then we should be able to observe (1) evidence of market activity such as an emphasis on new construction on the suburban edges, (2) associated residential mobility outward to occupy new units, (3) a softening of neighborhood markets in the inner precincts of active housing sectors where local supply exceeds demand, and (4) differential housing price inflation from low levels in inner-city neighborhoods to high levels in outer portions of the submarket. Empirical studies cited in previous chapters document a general directional bias outward on the part of households changing their housing. Developers and builders traditionally have focused their operations on the edges of the strongest submarkets, which in the Minneapolis-St. Paul area both before and after World War II have been those containing a preponderance of middle- and upper-middle class households, specifically:

- South Central Minneapolis (Sector B, Fig. 2.1, pg. 19), extending directly south from downtown through central Richfield, Bloomington, and Burnsville, into Lakeville;
- Near Northside Minneapolis (Sector D), extending northwestward from the edge of downtown through Golden Valley, Robbinsdale, Crystal, New Hope and Plymouth;
- Northwestern St. Paul (Sector H), from Frogtown west of the Capitol, through the Como Park neighborhood, into Roseville, Shoreview, and beyond; and
- Southwestern St. Paul (Sector M), from Selby-Dale west of the St. Paul Cathedral, through Macalester-Groveland, to Highland Park, Mendota Heights, and Inver Grove Heights.

In the decades before and after World War II, these four sectors contained the largest concentrations of middle- and upper-middle class households that were both able and willing to translate their socioeconomic mobility into geographical mobility, using their numbers, income, wealth,

and access to mortgage credit to support an unrelenting effective demand for newer and better housing—and developers and builders responded. Among these four sectors, the premier example has been Sector B, extending directly southward from the south edge of downtown Minneapolis.

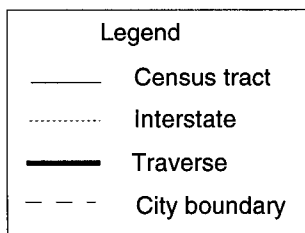
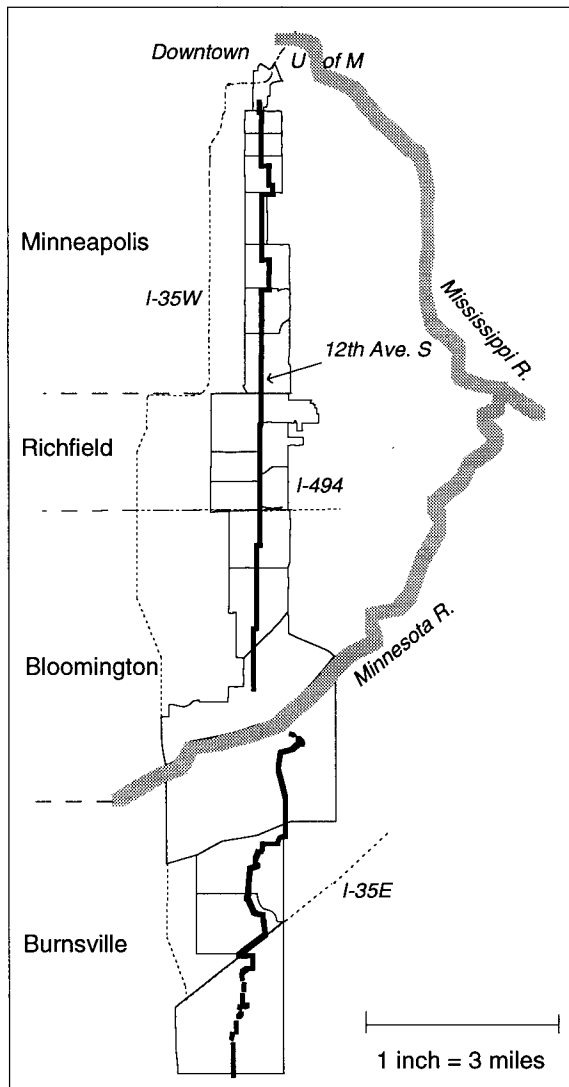
This middle-class sector expanded along the Nicollet Avenue streetcar line past the Washburn estate at 50th Street, and enjoyed unimpeded access to the downtown. It extended southward through a glacial outwash plain to the Mississippi River and beyond, a terrain easily developed to meet the pent-up demand for housing on the south side of the city after World War II. South Minneapolis has claimed the majority of the city's housing and forms the part of the city lying closest to the most populated region of rural and small-town Minnesota. For more than a century the Upper Midwest region sent migrants to the Twin Cities, and south Minneapolis absorbed the lion's share of the newcomers, who fed this active sector of upwardly mobile households.

The strong market for new suburban housing in the sector attracted developers by the score. The vacancy chains that were set in motion by sustained southside development meant the eventual softening of housing markets just south of downtown in and around today's Phillips Neighborhood, making it possible for a succession of newcomer groups to enter and to make their way in the city: first the white Anglo-Saxon Protestant business leaders, professionals and clerks; then Irish, Germans and Scandinavians of the second wave; then Romanian Jews and blacks after 1900; and finally American Indians, Southeast Asians, and African immigrants in our own time [1].

Within this submarket, we defined a traverse lying approximately at the center of the submarket—along 12th Avenue South—which throughout most of its extent is solidly residential, without commercial, institutional or industrial activity, or thoroughfare traffic (Fig. 4.1). The traverse begins just south of Franklin Avenue (20th Street) as multiple-unit housing gives way to predominantly single-unit housing. The traverse makes an occasional adjustment east or west wherever 12th Avenue encounters parks, cemeteries or other obstacles.

### **Assessed Values of Sample Housing Units along the Traverse**

Three single-unit houses were selected from each block, and their street addresses were recorded. We selected sample units located away from corner lots and from both sides of the street, with an effort to select sample units that seemed to be representative of houses typical of the style, age and general condition of average houses on the block (Figs. 4.2-4.7). There is substantial internal variation in year of construction of housing in each tract, so there is no guarantee that the



Census Tract Number	1990 Median Year of Housing Construction	Percentage of Households Living in Same House 1985-90 (%)	1990 Median Household Income (\$)
60	1968	34.5	15,013
72	1933	33.6	14,779
79	1932	36.3	16,142
85	1934	39.8	19,541
96	1934	50.9	29,643
110	1933	53.2	36,200
117.01	1933	62.7	44,926
117.02	1946	60.7	43,281
247	1953	71.5	37,615
249.01	1952	54.3	36,541
249.02	1954	64.7	36,444
248.01	1954	65.6	34,053
249.03	1955	51.7	33,553
248.02	1958	51.5	27,746
252.01E	1968	45.9	33,879
252.01W	1968	45.9	33,879
252.03N	1955	64.9	34,931
252.03S	1955	64.9	34,931
253.01	1966	57.8	42,941
607.02	1969	53.5	43,223
607.12	1976	42.3	40,705
607.13	1973	60.4	56,077
607.08	1982	31.0	50,487

**Figure 4.1. Traverse B: Minneapolis, Richfield, Bloomington and Burnsville.**

Data Source: Population and Housing Characteristics for Census Tracts and BNAs, U.S. Bureau of the Census 1990.



(a)

**Tract 60**  
21xx 11th Av. S.  
Year Built: 1898

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	Assessed Value	
	Current \$	Constant \$
1970	15,500	61,582
1980	24,700	44,287
1990	57,000	63,829
1995	49,000	49,000



(b)

**Tract 72**  
26xx 12th Av. S.  
Year Built: 1937

---

	Assessed Value	
	Current \$	Constant \$
1970	12,000	47,676
1980	23,400	41,956
1990	39,500	44,232
1995	35,000	35,000



(c)

**Tract 79**  
28xx 12th Av. S.  
Year Built: 1900

---

	Assessed Value	
	Current \$	Constant \$
1970	11,000	43,703
1980	23,800	42,673
1990	42,000	47,032
1995	36,000	36,000



(d)

**Tract 85**  
31xx 14th Av. S.  
Year Built: 1911

---

	Assessed Value	
	Current \$	Constant \$
1970	(tax exempt)	
1980	(tax exempt)	
1990	51,400	57,558
1995	54,000	54,000

**Figure 4.2. Sample Houses along the Traverse through South Minneapolis and Suburbs: 21st through 31st Street.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



(a)

Tract 96  
38xx 12th Av. S.  
Year Built: 1917

	Assessed Value	
	Current \$	Constant \$
1970	13,000	51,649
1980	36,800	65,982
1990	58,000	64,948
1995	60,500	60,500



(b)

Tract 110  
42xx 12th Av. S.  
Year Built: 1923

	Assessed Value	
	Current \$	Constant \$
1970	13,500	53,636
1980	36,100	64,727
1990	67,500	75,587
1995	72,000	72,000



(c)

Tract 117.01  
51xx 12th Av. S.  
Year Built: 1932

	Assessed Value	
	Current \$	Constant \$
1970	20,500	81,447
1980	55,600	99,691
1990	84,000	94,063
1995	102,000	102,000



(d)

Tract 117.02  
59xx 12th Av. S.  
Year Built: 1946

	Assessed Value	
	Current \$	Constant \$
1970	22,500	89,393
1980	50,100	89,829
1990	83,000	92,943
1995	93,000	93,000

**Figure 4.3. Sample Houses along the Traverse through South Minneapolis and Suburbs: 38th through 59th Street.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



(a)

Tract 247  
68xx 12th Av. S.  
Year Built: 1954

	Assessed Value	
	Current \$	Constant \$
1970	18,000	71,514
1980	56,800	101,842
1990	80,700	90,368
1995	89,000	89,000



(b)

Tract 249.01  
64xx 12th Av. S.  
Year Built: 1957

	Assessed Value	
	Current \$	Constant \$
1970	23,400	92,968
1980	59,700	107,042
1990	78,700	88,128
1995	88,500	88,500



(c)

Tract 249.02  
72xx 12th Av. S.  
Year Built: 1955

	Assessed Value	
	Current \$	Constant \$
1970	20,100	79,857
1980	54,200	97,181
1990	77,100	86,337
1995	82,000	82,000



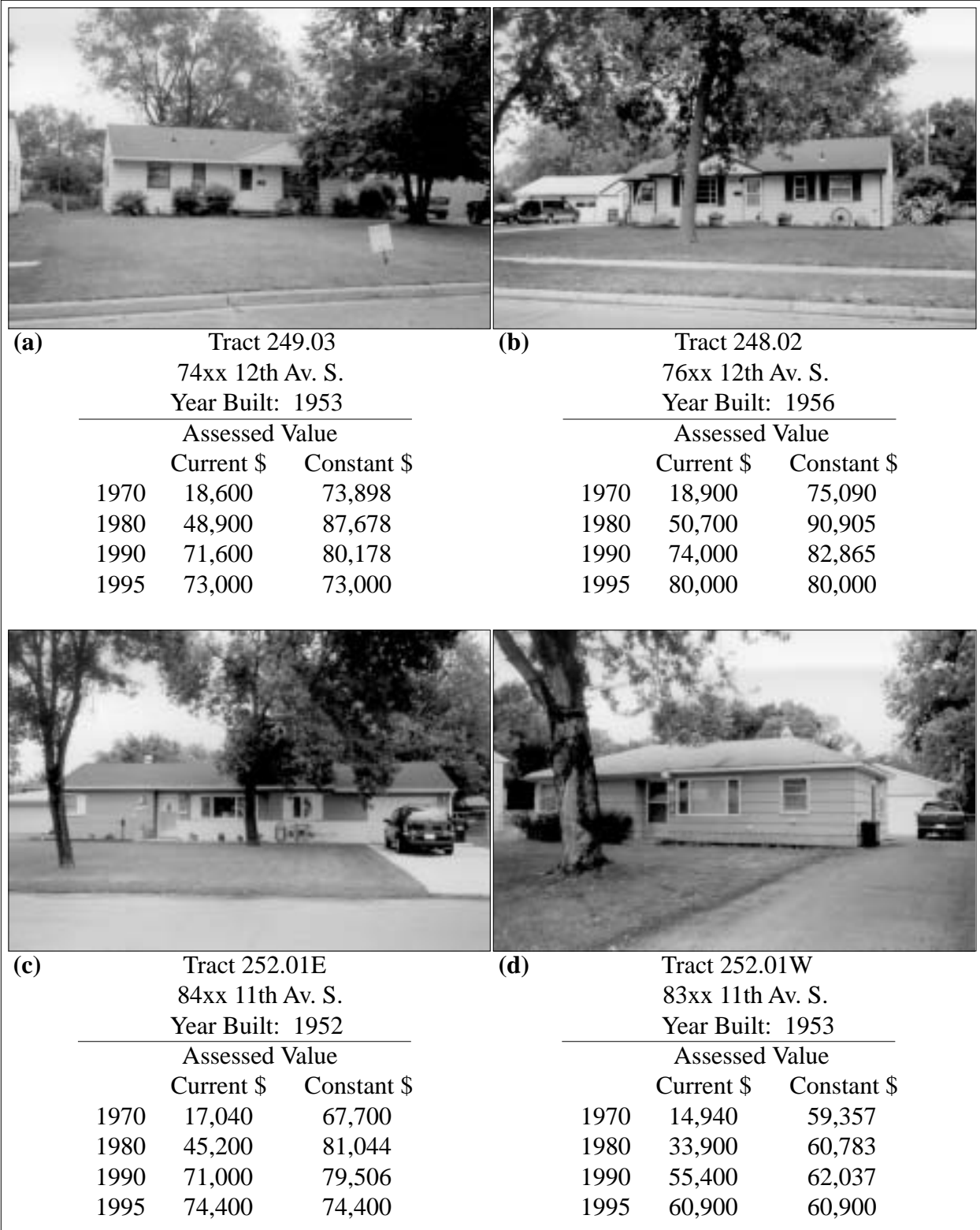
(d)

Tract 248.01  
72xx 12th Av. S.  
Year Built: 1955

	Assessed Value	
	Current \$	Constant \$
1970	21,900	87,009
1980	57,100	102,380
1990	76,300	85,441
1995	83,000	83,000

**Figure 4.4. Sample Houses along the Traverse through South Minneapolis and Suburbs: 68th through 72nd Street.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



**Figure 4.5. Sample Houses along the Traverse through South Minneapolis and Suburbs: 74th through 84th Street.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



**(a)** Tract 252.03N  
91xx 11th Av. S.  
Year Built: 1954

---

	Assessed Value	
	Current \$	Constant \$
1970	19,440	77,235
1980	55,200	98,974
1990	75,600	84,657
1995	81,800	81,800

**(b)** Tract 252.03S  
96xx 10th Av. S.  
Year Built: 1959

---

	Assessed Value	
	Current \$	Constant \$
1970	23,100	91,776
1970	53,600	96,105
1970	84,400	94,511
1970	94,300	94,300



**(c)** Tract 253.01  
101xx 10th Av. S.  
Year Built: 1957

---

	Assessed Value	
	Current \$	Constant \$
1970	31,020	123,242
1980	55,000	98,615
1990	84,300	94,399
1995	102,600	102,600

**(d)** Tract 607.02  
111xx Radisson Dr.  
Year Built: 1963

---

	Assessed Value	
	Current \$	Constant \$
1970	NA	NA
1980	NA	NA
1990	95,100	106,493
1995	105,800	105,800

**Figure 4.6. Sample Houses along the Traverse through South Minneapolis and Suburbs: 91st through 111th Street.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



(a)

Tract 607.12  
128xx Welcome Ln.  
Year Built: 1969

	Assessed Value	
	Current \$	Constant \$
1970	NA	NA
1980	NA	NA
1990	135,400	151,621
1995	139,800	139,800



(b)

Tract 607.13  
Lakeview Dr.  
Year Built: 1967

	Assessed Value	
	Current \$	Constant \$
1970	NA	NA
1970	NA	NA
1970	82,900	92,831
1970	101,900	101,900



(c)

Tract 607.08  
9xx 143rd St.  
Year Built: 1900

	Assessed Value	
	Current \$	Constant \$
1970		
1980	NA	NA
1990	88,800	99,438
1995	104,700	104,700

**Figure 4.7. Sample Houses along the Traverse through South Minneapolis and Suburbs: 91st through 111th Street.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.

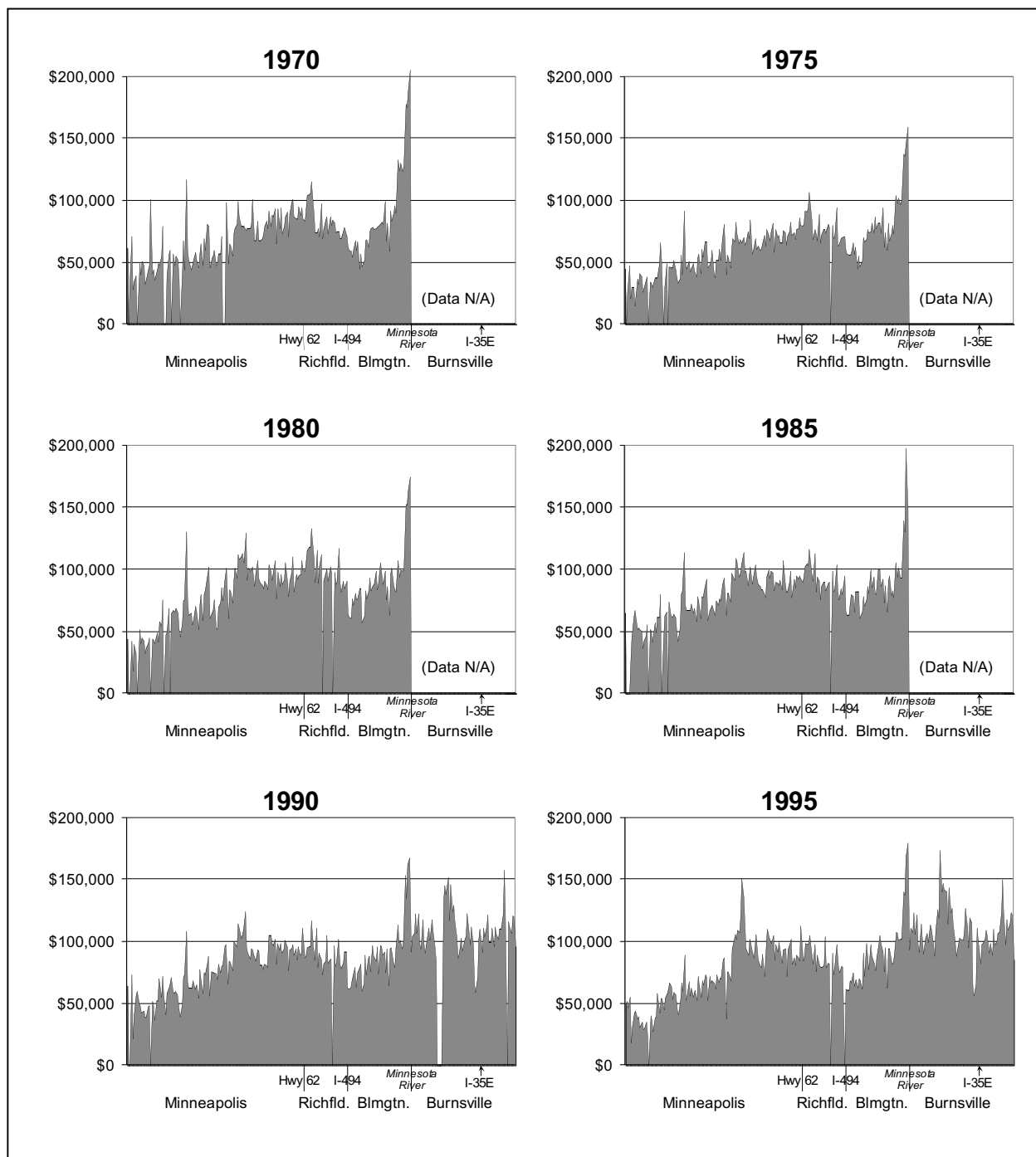
year of construction of the sample houses shown in the photographs match precisely the median year of construction for the entire tract. Assessed values for the sample housing units were obtained at five year intervals, 1970 to 1995, from Hennepin and Dakota County Assessors' Offices, then the values were converted to constant dollars and plotted according to their locations along the traverse.

Although there are some higher-priced houses close to downtown that depart from the average of generally low values, and there are many small and modestly priced houses that were constructed just south of I-494 in East Bloomington just after World War II that are cheaper than those around them, there is a clear upward trend in assessed values from downtown outward (Fig. 4.8).

Another way to portray variations and trends in house prices along the traverse from inner-city neighborhoods outward is to summarize for census years 1970, 1980, and 1990 the sample housing values (in constant 1995 dollars) grouped by the census tracts within which they fall (Fig. 4.9). For example, the 1970 Census of Housing reported 1,240 owner-occupied and rental housing units in Tract 60, which was intersected by Traverse A south of downtown Minneapolis. The median value of the sample units in Tract 60 in 1970 was \$46,683; dropped slightly to \$42,494 in 1980 at the same time that the count of units dropped to 1,119; then rose abruptly to \$63,829 in 1990 as the number of housing units rose to 1,419.

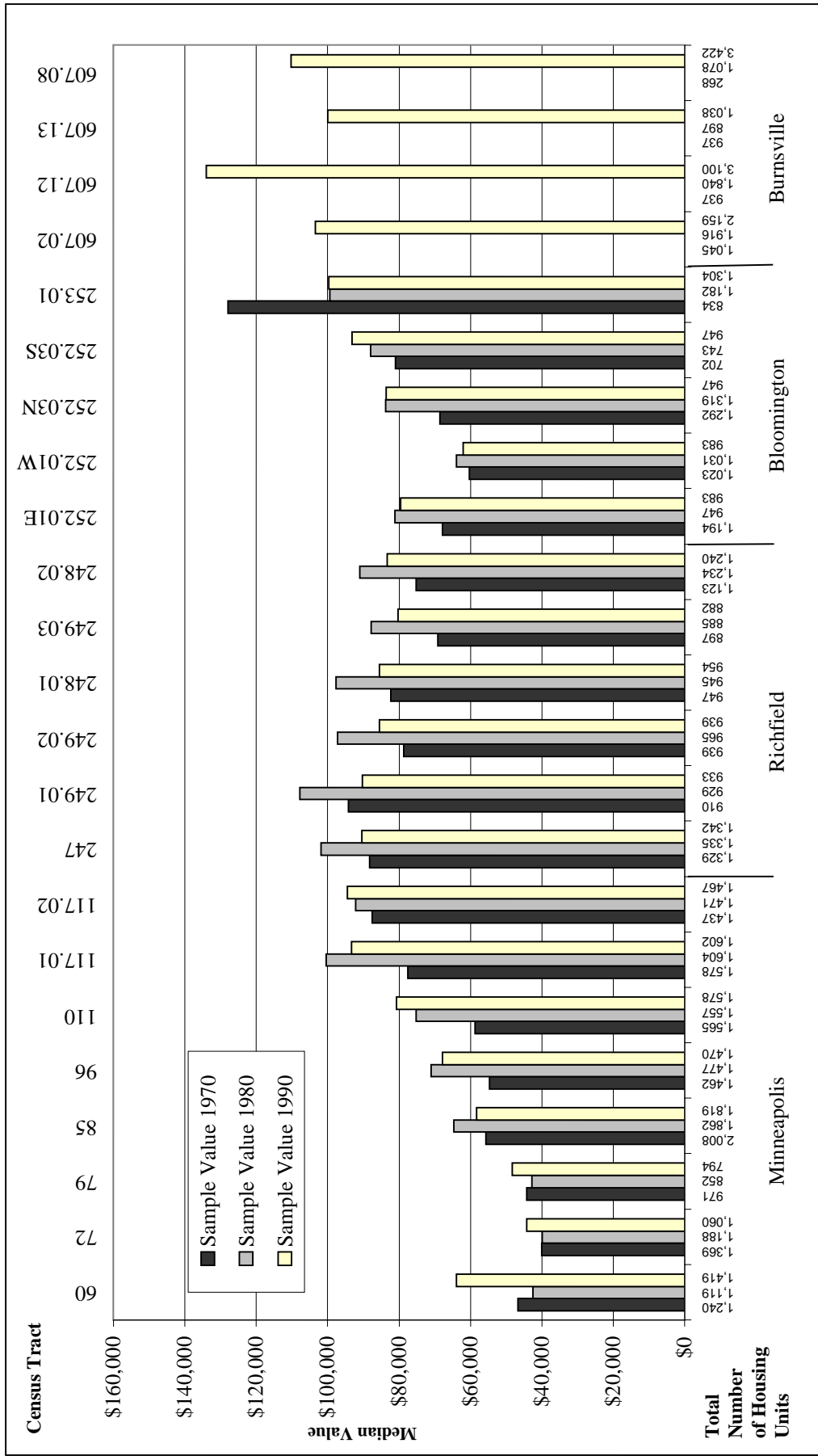
Housing unit totals for Minneapolis and Richfield changed little between 1970 and 1990 (Table 2.1), and most of the Minneapolis and Richfield tracts along the traverse had only minor fluctuations in their counts, but there were some exceptions (Fig. 4.10). The next three tracts farther out along the traverse had steady declines in number of housing units, yet census medians reported in 1980 were notably higher than in either 1970 or 1990. The remainder of the Minneapolis tracts and those in Richfield had relatively constant counts of housing units, but 1980 census medians were consistently estimated as higher than 1970 or 1990.

Bloomington's housing inventory expanded fast after 1960 (Table 2.1). The Bloomington tracts intersected by the traverse reflect this flux, with some losing units in the 1970s only to increase in the 1980s, and some with the opposite experience. The two Bloomington tracts closest to Burnsville as well as the Burnsville tracts themselves added new housing at a swift pace between 1970 and 1990. With the prominent exception of Tract 253.01 on the south edge of Bloomington, the median sample values of housing between 1970 and 1990 varied little within each tract (Fig. 4.9). When adjusted for inflation, many of the 1980 values in South Minneapolis and in Richfield as discussed earlier may be overstated compared with those of 1970 and 1990. Census data for the same tracts reveal the same general trend as illustrated by the assessed values



**Figure 4.8. South Minneapolis Traverse: Assessed Values, Selected Years, 1970-1995, in 1995 Dollars.**

Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.  
 Calculations by authors.



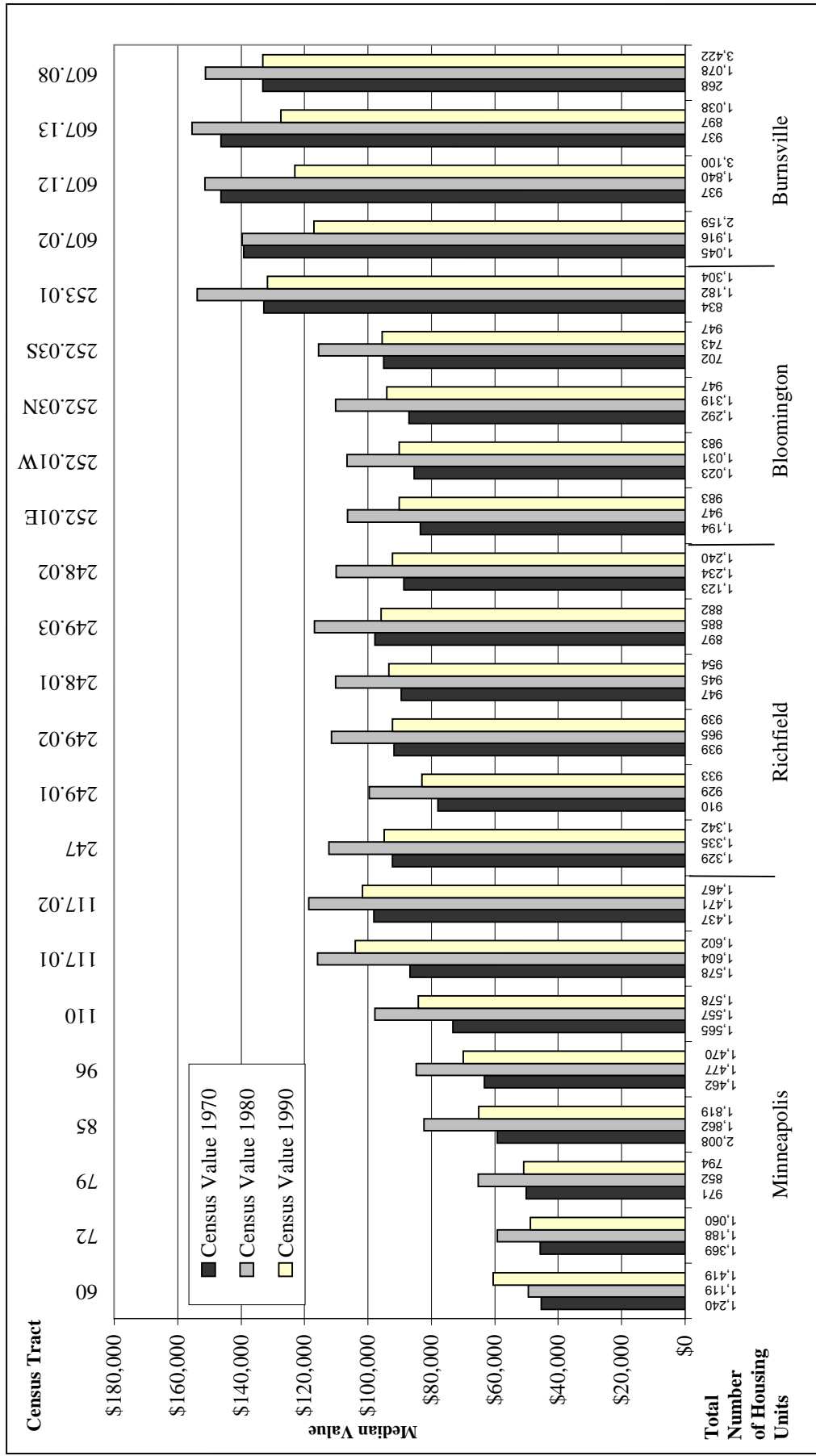
**Figure 4.9. South Minneapolis: Sample Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract.**  
 Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Offices. U.S. Bureau of the Census, 1970, 1980, 1990.  
 Calculations by authors.

of sample units (Fig. 4.10), with the same apparent overstatement of housing values in 1980 compared with 1970 and 1990. The trend in average housing values for tracts intersected by the traverse rises steadily from the neighborhood south of downtown, levels off in Richfield and central Bloomington, then rises in the newer tracts in Burnsville. On the other hand, all four Burnsville tracts had rapid increases in their housing stocks between 1970 and 1990, but in each of the tracts the census median declined (in constant 1995 dollars) over the 20-year period, presumably because a disproportionate share of the units added after 1970 were of lower value compared with those that were present in 1970.

### **Census Estimates of Housing Values in Tracts Containing the Traverse**

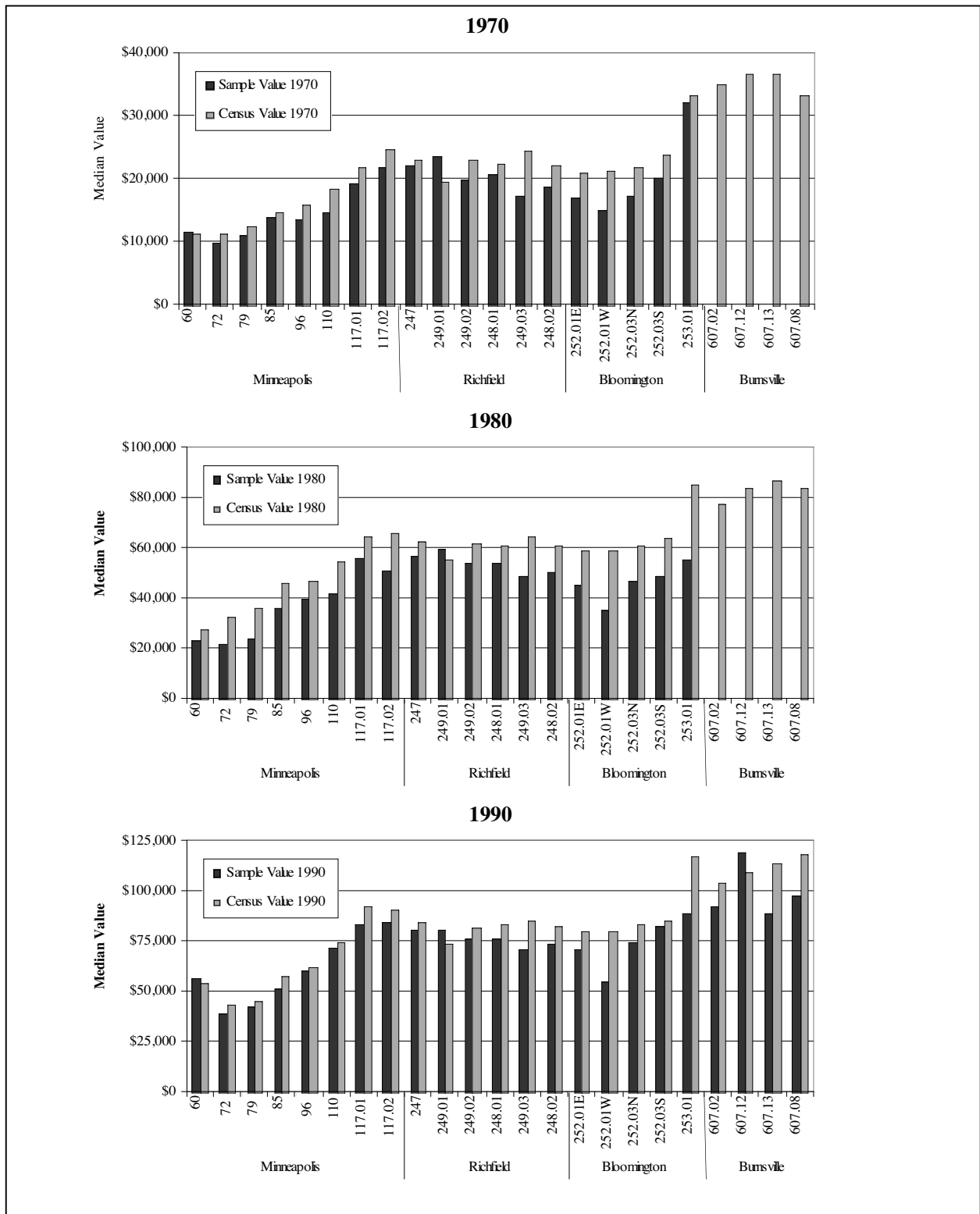
The decennial census of population and housing asks sample households to report either the monthly contract they pay (for rental units) or their estimate of the market value of their house (for owner-occupied units). Estimates by households are used by the Census Bureau to estimate the number and value of owner-occupied housing units and the number and rental values of renter-occupied housing units in each tract. Median contract rents and the median value of owner-occupied units are then estimated and reported. For example, the median values of owner-occupied units in tract 60 were reported in current dollars as \$11,400 in 1970, \$27,500 in 1980, and \$53,900 in 1990. When these values are adjusted to constant 1995 dollars, the values become \$45,292, \$49,308 and \$60,357, respectively. For almost all of the tracts along the traverse, there is an obvious correspondence between the median assessed value per tract in 1970, 1980 and 1990 based on our samples, and the median value reported by the census in these census years (Fig. 4.11). In 1970, only two tracts had *sample* median values higher than *census* medians. The frequency with which census medians exceed sample medians based on assessment records may perhaps be explained by a tendency of homeowners to overvalue their houses, and the tendency of assessors to undervalue houses, especially in an inflationary market, or some combination of the two. Where the sample median exceeds the census median (e.g., tract 60 at the south edge of the CBD; tract 249.01 in the older part of Richfield in 1970) the explanation could be a consequence of our selection of non-representative samples.

The 1980 comparison of sample medians and census medians discloses sharper than average divergence of the two tract measures, and in every case for which data are available the census estimates are higher than the sample medians. The 1970s were a period of exceptional inflation in the U.S. In those years prior to the Depository Institutions Deregulation and Monetary Control Acts of 1980 and 1982, mortgage interest rates stood at levels generally lower than the inflation rates on houses. In other words, it was possible for households to borrow money for home purchases at negative interest rates. The result of this unusual situation was a rapid escala-



**Figure 4.10. South Minneapolis: Census Median Values of Housing in 1975 Dollars and Total Number of Housing Units by Tract.**

Data Source: U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.



**Figure 4.11. South Minneapolis: Census vs. Sample Median Values of Housing, 1970, 1980, and 1990.**

Data Source: Hennepin County, Dakota County Assessor's Offices. U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.

tion of house prices and an inflated view by homeowners of the values of their houses. These views were reported during the census in the spring of 1980, and show up in the median values reported by the census for 1980.

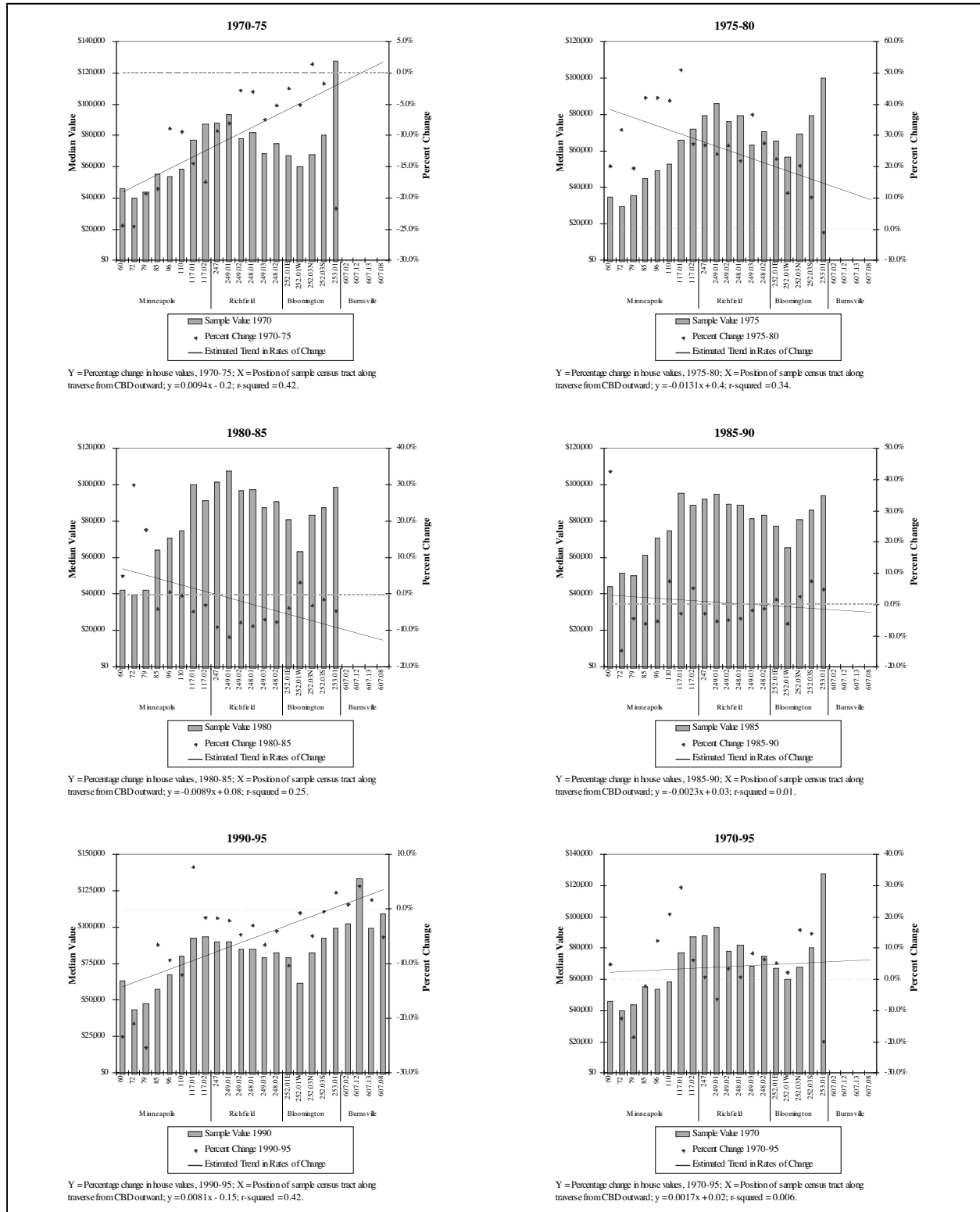
By 1990, stability and rationality had returned to the housing market. Assessment practice caught up with market forces. Realistic market values were reported by homeowners on their 1990 census questionnaires, and differences between sample medians and census medians were sometimes negative and sometimes positive. The correspondence between the two values is greatest in Minneapolis. Several tracts close to the CBD experienced significant housing removal in the 1970s followed by new construction in the 1980s, so flux in the medians is to be expected.

### **House Price Inflation and Deflation along the Traverse through the Submarket**

The goal of this analysis is to estimate house price inflation rates at various times and locations from downtown center to suburban edge with the expectation that amounts and rates of inflation are generally low or negative for older, smaller, less valuable units in inner-city tracts, higher for housing in newer areas at the edge of the central city and in the older suburbs, and highest in the outer suburbs. Previous sections illustrated the correspondence of census medians and sample medians. These two measures are based on independent sources of information about the value of housing along the traverse. Each is based on market transactions. Homeowners know what they paid for their houses and generally are aware of what houses similar to theirs sell for in their neighborhoods. Professional assessors use sales data as an input into their models when they estimate property values for tax purposes. Unusual events such as rapid rates of construction or demolition in a tract, or a bout of severe inflation, or the use of a non-representative sample will lead to a specific tract departing from trends over time and space, but we expect that annual assessment data for hundreds of houses along a traverse through 23 census tracts for the period 1970 to 1995 provide a valid profile of how house prices changed on average from tract to tract in constant 1995 dollar terms. The fact that our sample median data for 1970, 1980, and 1990 closely matched census median data for the same years seemed to us to be sufficient justification for using our sample data to estimate inflation trends during each of five five-year periods 1970 to 1995, as well as for the entire 25-year period (Fig. 4.12).

#### 1970-1975

Our analysis produced some truly surprising results. In the 1970-75 period, the median value of single-unit housing generally rose from levels under \$60,000 (in constant 1995 dollars) in the six tracts closest to the CBD, to levels above \$80,000 at the edge of Minneapolis and northern



**Figure 4.12. South Minneapolis: Sample Median Housing Values, and Trends in Rates of Change, Selected Years, 1970-1995, in 1995 Dollars.** Data Source: Hennepin County, Dakota County Assessor's Offices. Calculations by authors.

Richfield. Values then dropped somewhat in southern Richfield and northern Bloomington, then rose again to over \$120,000 at the south edge of Bloomington which was adding housing rapidly at that time. Burnsville had yet to begin its major growth spurt, but in any case Dakota County assessment data for the 1970-75 period has long since been discarded.

The change in housing values 1970-75 in constant 1995 dollars was negative for 22 of the 23 tracts. The lone exception (252.03N) in central Bloomington experienced a gain in its sample median of only about 2 percent. A best-fitting trend line estimated using ordinary least squares regression analysis slopes upward sharply from core tracts to the outer suburbs, with an  $r^2$  value of 0.42, a value that would be substantially higher were the outermost Bloomington tract (253.01) excluded from the calculation.

It might be argued that excluding the percentage change in sample medians for tract 253.01 from the estimate for the trend line could be justified because we drew our sample of houses in 1999, whereas in 1970 the census reported only 834 housing units in the tract, a number that rose to 1,182 in 1980 and to 1,304 in 1990. We calculated our 1970 and 1975 sample medians using only the assessed values of sample units that existed in 1970 and 1975, which means that they are among the oldest housing units in the tract. Some of the 1975 houses were not in existence in 1970. So depending on the relative value of the 1970 sample units compared with those in the 1999 sample that were added between 1970 and 1975, the percentage change recorded in Fig. 4.12 could have been an understatement of the average trend within that tract. In general, the more stable a tract's housing inventory over the 1970-75 period, the more reliable is the estimate of percentage change in sample median housing values.

#### 1975-1980

The housing market chaos and the exceptional inflation of the late 1970s shows up in the trends in housing prices calculated for the period 1975-80. Inflation rates in real terms were higher for cheaper older houses than for expensive newer houses. But this may be a reasonable result from a period when both rental and owner markets were being crowded by expanding demand, as persons born during the baby boom years of the late 1940s and 1950s were forming households in steadily increasing numbers and pushing into local housing markets in the 1970s.

Starter homes would have felt the brunt of the first wave of "boomers," and the low-priced houses located disproportionately in older tracts in Minneapolis (and St. Paul) would have felt the effect of heavy demand against a constrained supply, with the result of real price increases of 20 percent or more during the five-year period. Recall that the mortgage interest rates remained below inflation in this period, adding fuel to the inflationary spiral.

Inspection of the scatter of 19 estimates of percentage change (data on Burnsville's four tracts not available) discloses that the downward-sloping trend is a result of high values for the inner tracts as well as a generally low value for the outer tracts. It appears that in this unusual five-year period the newer houses advanced in value in real terms at rates substantially below the rates for more moderately-priced houses closer in.

#### 1980-1985

The same trend continued in the early 1980s as the mortgage market was brought under control and real mortgage interest rates turned positive. Cheap houses in the three innermost tracts continued to post hefty gains as persons from the peak years of the baby boom (1959-61) reached adulthood and crowded into the already crowded low-priced housing stock, both rental and owner-occupied. Although housing prices continued advancing in current dollars, when the effects of inflation in the early 1980s are removed, 14 of the 23 tracts saw median house prices decline in real terms between 1980 and 1985.

#### 1985-1990

The last half of the 1980s, ending in the recession year of 1990, reveals a slow return from the negative trends of 1975 to 1985. Most Minneapolis and Richfield tracts show negative rates of change, and most of the Bloomington tracts show positive rates of change. Almost all of the tracts regardless of location changed between +10 percent and -10 percent and the trend, although negative, is associated with an  $r^2$  of approximately zero.

#### 1990-1995

After 1990, the trend from central tracts to the suburban edge is upward once again; yet despite likely perceptions of real price advances, all but 5 of the 23 tracts posted negative rates of change when inflationary effects are removed from sample median values. The 3 lowest values are in the three innermost tracts; 4 of the 5 highest are in the outermost tracts, and the  $r^2$  is a respectable 0.42.

#### 1970-1995

We can summarize the 25-year trend from 1970 to 1995 and have done so. As expected, the trend is upward and to the right. The 5-year detail is lost, and substantial change in the housing stock occurred in both old and new areas. Burnsville is excluded because the Dakota County

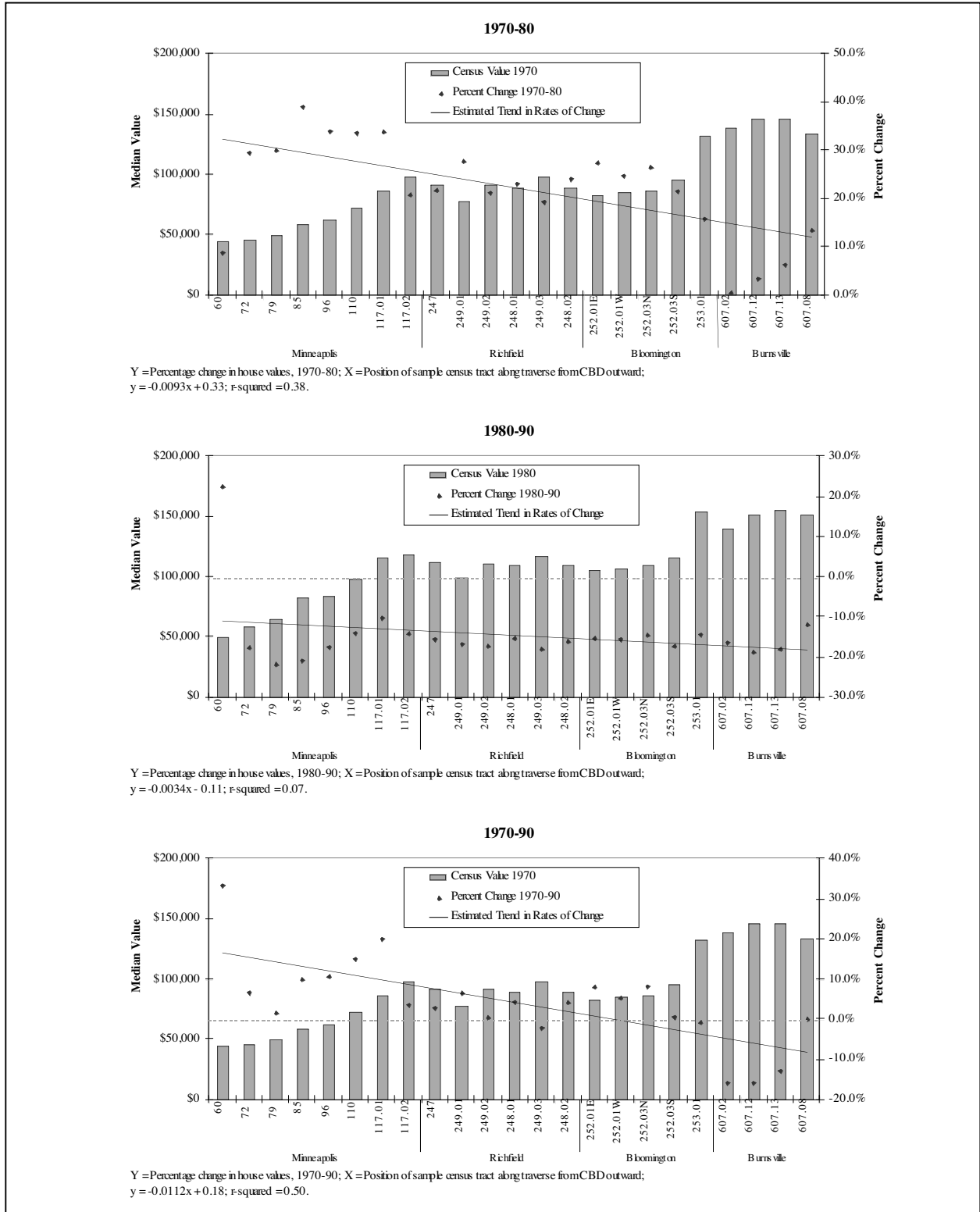
assessor discarded data for early years. Our suspicion is that if data for Burnsville tracts were added to the 25-year profile, the trend might be much more sharply upward, and the  $r^2$  value would confirm the validity of the trend.

### **Estimating Inflation Trends from Census Medians**

The estimated trend in rates of change in single-unit housing prices during the 1970s based on census medians is sharply downward from inner-city to suburban edge (Fig. 4.13). This result is reasonably consistent with the upward 1970-75 and downward 1975-80 trends estimated from the sample medians. In the 1970-75 period, a positive trend in rates of change extended from about minus 20 percent at the core to about zero percent at the outer edge of Bloomington. In the 1975-80 period, the trend displayed a negative slope, from about +40 percent at the core to +15 percent in outer Bloomington. When the two trends are combined for the decade of the 1970s, the result is similar to the calculated trend estimated from decennial census tract medians.

In the 1980s, the tract-by-tract changes in median housing values in constant dollar terms generally ranged from -10 percent to -20 percent, or a decline in real terms of between 1 and 2 percent per year. Although the trend line is moderately negative, the  $r^2$  is almost zero so the estimated trend is not statistically significant. On the other hand, the newer houses in the outer tracts are more valuable, so even if the rates of inflation were similar in tracts along the traverse, and even if price changes were negative in real terms, (1) they are still large in current dollars, (2) the inflationary gains were tax free, and (3) the gains in current dollars in Burnsville, for example, would apply to houses worth an average of \$150,000 in 1980, while those in the five tracts closest to the Minneapolis CBD would apply to houses priced well below \$90,000.

Comparing census tract medians in 1970 with those in 1990 and plotting the changes in median housing values along the traverse discloses a downward trend from the inner city to the suburban edge. There appear to be three groups of tracts in terms of the patterns of their price changes: (1) the innermost seven, containing many of the least expensive houses but experiencing substantial price inflation in real terms; (2) most of the Richfield and Bloomington tracts, with housing prices tracking inflation on average; and (3) three of four Burnsville tracts, with average price changes in the 1990s between -10 percent and -20 percent. But the Burnsville data are difficult to interpret. The outer tracts added many units between 1970 and 1990 (e.g., tract 607.02 added 1,114; 607.12 added 2,163; 607.13 added 101) so the calculated price changes depend as much or more on the changing values of new houses added during the 20-year period as on the value of houses already in place in 1970. On the other hand, the fact that Dakota County discarded the



**Figure 4.13. South Minneapolis: Census Median Housing Values, Decennial Rates of Change, and Trends in Rates of Change, 1970-1990, in 1995 Dollars.**  
 Data Source: U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.

assessment records means that we are unable to track sample 1970 units through time and to monitor their prices. All we can do is present and discuss census tract median values and how they changed, after removing the effects of inflation.

One thing we can say in summary is that although the houses along the Minneapolis traverse did not appear to display a consistent inflationary trend from the older cheaper inner-city tracts to the newer developments in the second-, third- and fourth-ring suburbs, the fact that housing values generally increased from center to edge has meant that rates of property value increase yield much larger capital gains for the more expensive houses in the outer tracts and smaller dollar-value increases closer in.

## **End Note**

1. Adams, J. S. and VanDrasek, B. J. Minneapolis-St. Paul: People, Place and Public Life. Minneapolis: University of Minnesota Press, 1993. pp. 104-5.

## Chapter 5

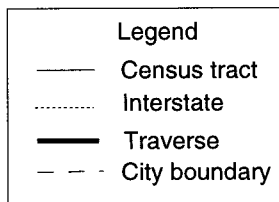
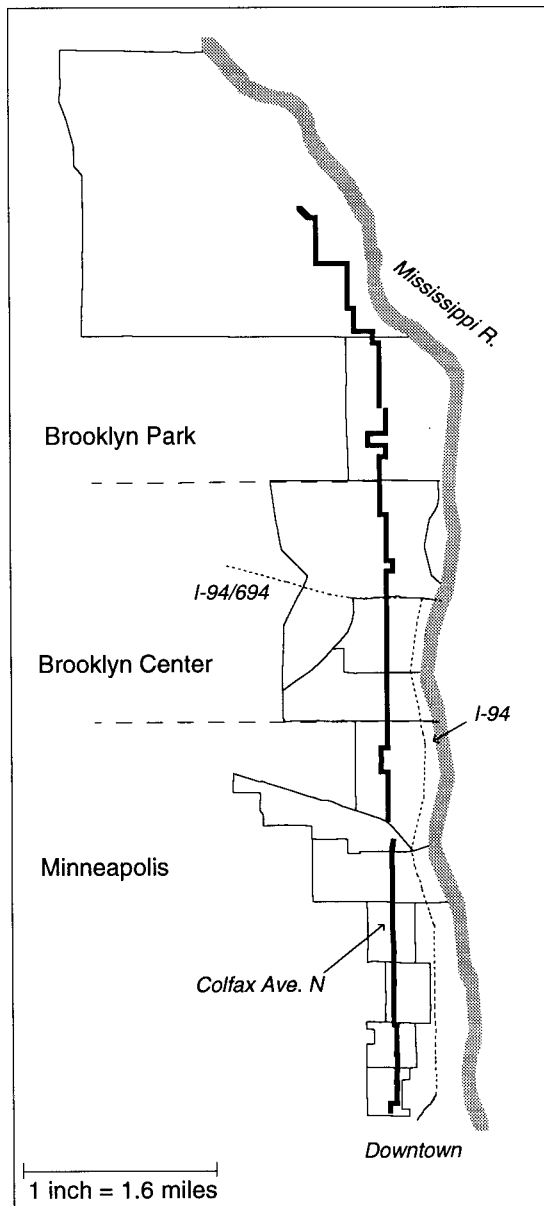
### **Traverse E: North Minneapolis >> Brooklyn Center >> Brooklyn Park**

#### **A North Minneapolis Housing Submarket and a Sample Traverse Through It**

The North Minneapolis traverse begins in Tract 29 on the north side of the Minneapolis CBD and proceeds northward on or near Colfax Avenue North, parallel with the Mississippi River into Brooklyn Center and Brooklyn Park, intersecting twelve census tracts along the way (Fig. 5.1). The traverse passes through much of what was defined earlier as housing Sector E (Fig. 2.1, pg. 19). This submarket originates between West Broadway and the Mississippi River. Its origins were rooted in the railroads and industrial activity that pushed upriver from the Falls of St. Anthony as grain and lumber milling boomed at the falls after 1870. In this sector at the edge of Minneapolis a small African-American neighborhood developed before World War I and was populated mainly by families of Pullman porters and railroad dining car stewards who worked on the transcontinental railroads that passed through this area on their way westward. A mixture of working-class and lower-middle-class tastes persists into the suburbs today, although Brooklyn Park achieved something of a reputation for aggressive development management and intelligent land use planning in the 1970s and 1980s. Some of the riverfront bounding this sector features parks, open space, and high-quality residences, but much of it is squandered on run-down businesses, relict industry and low-budget commercial activity that reflect neighborhood tastes and attitudes [1].

#### **Assessed Values of Sample Housing Units along the Traverse**

In 1970 the older, cheaper sample housing units are concentrated along the Minneapolis portion of the traverse while the higher-priced housing units have begun to appear in the suburbs (Figs. 5.2–5.4). The gaps in the 1970 Brooklyn Center and Brooklyn Park profiles occurred because our sample was drawn in 1999 but some of our sample housing units had not yet been built in 1970 (Fig. 5.5). With the passage of time, the assessed values of houses along the traverse, expressed in constant 1995 dollars, reveal a steady upward trend from the edge of downtown to the outer reaches of Brooklyn Park. Houses from the edge of downtown to the city limits typi-

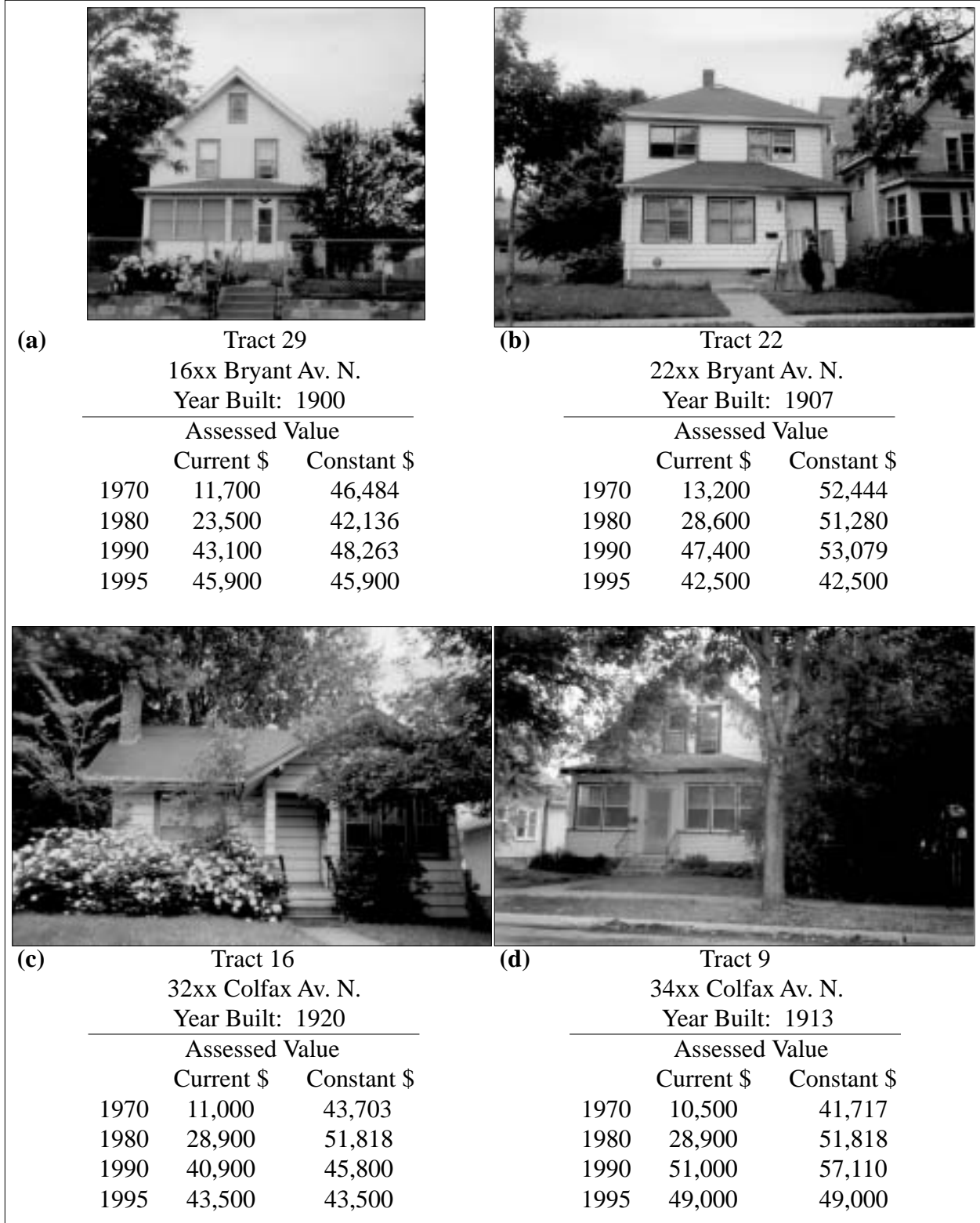


Census Tract Number	1990 Median Year of Housing Construction	Percentage of Households Living in Same House 1985-90 (%)	1990 Median Household Income (\$)
268.98	1982	27.3	54,740
268.15	1978	56.5	45,269
202	1967	49.1	31,520
206	1955	69.7	31,023
205	1953	65.7	32,855
1.02	1946	54.0	27,335
2	1942	60.2	23,425
4	1936	56.4	27,108
9	1936	47.9	26,885
16	1939	45.1	15,651
22	1935	38.0	19,453
29	1942	44.9	17,396

**Figure 5.1. Traverse E: Minneapolis, Brooklyn Center and Brooklyn Park.**

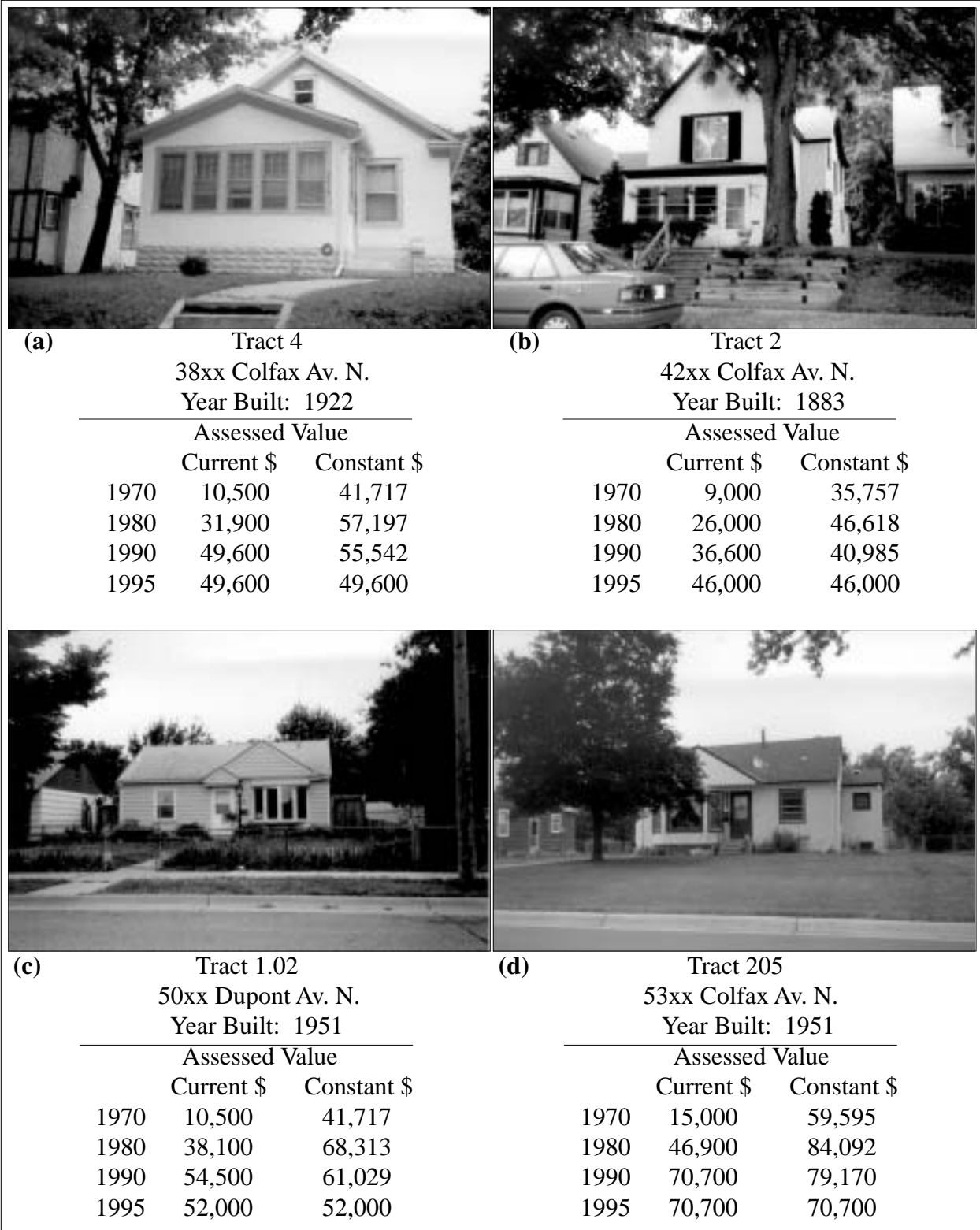
Data Source: Population and Housing Characteristics for Census Tracts and BNAs.

U.S. Bureau of the Census, 1990.



**Figure 5.2. Sample Houses along the Traverse through North Minneapolis: 16th through 34th Avenue North.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



**Figure 5.3. Sample Houses along the Traverse through North Minneapolis and Suburbs: 38th through 53rd Avenue North.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



(a)

Tract 206  
59xx Colfax Av. N.  
Year Built: 1954

	Assessed Value	
	Current \$	Constant \$
1970	16,200	64,363
1980	41,800	74,947
1990	67,600	75,698
1995	68,400	68,400



(b)

Tract 202  
72xx Dupont Av. N.  
Year Built: 1964

	Assessed Value	
	Current \$	Constant \$
1970	22,200	88,201
1980	49,700	89,112
1990	73,600	82,417
1995	72,800	72,800



(c)

Tract 268.15  
73xx Dupont Av. N.  
Year Built: 1979

	Assessed Value	
	Current \$	Constant \$
1970		
1980	NA	NA
1990	84,300	94,399
1995	85,700	85,700



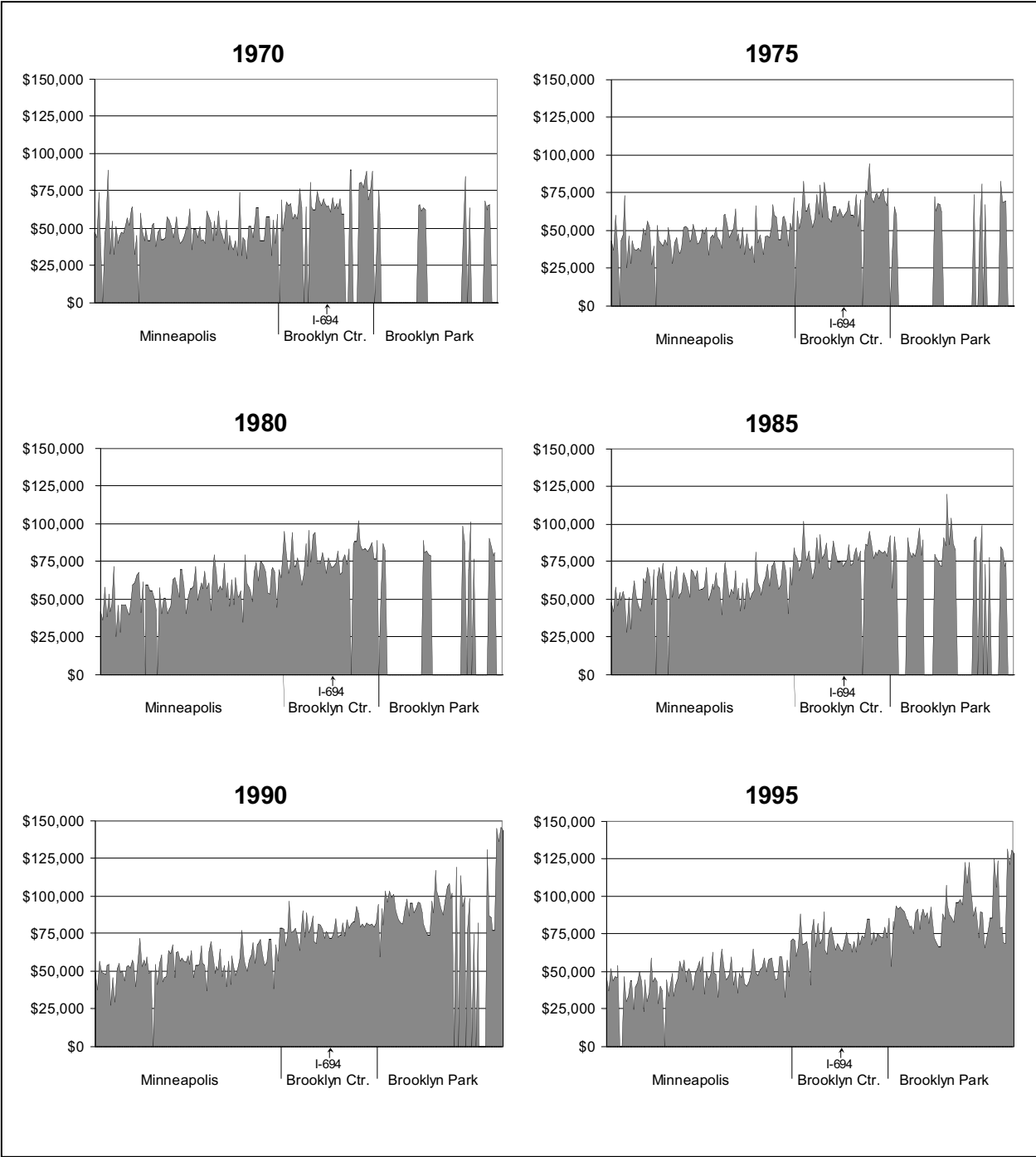
(d)

Tract 268.98  
79xx Bryant Ct.  
Year Built: 1987

	Assessed Value	
	Current \$	Constant \$
1970		
1980		
1990	82,400	92,272
1995	89,300	89,300

**Figure 5.4. Sample Houses along the Traverse through North Minneapolis and Suburbs: 59th through 79th Avenue North.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



**Figure 5.5. North Minneapolis Traverse: Assessed Values, Selected Years, 1970-1995, in 1995 Dollars.**

Data Source: Hennepin County Assessor’s Office. Calculations by authors.

cally have assessed values around \$50,000 during the 1970s, then creep upward after 1980. Houses in the suburban tracts average well over \$50,000 in the 1970s, with many of them exceeding \$75,000 and a few over \$100,000 in constant dollars after 1990.

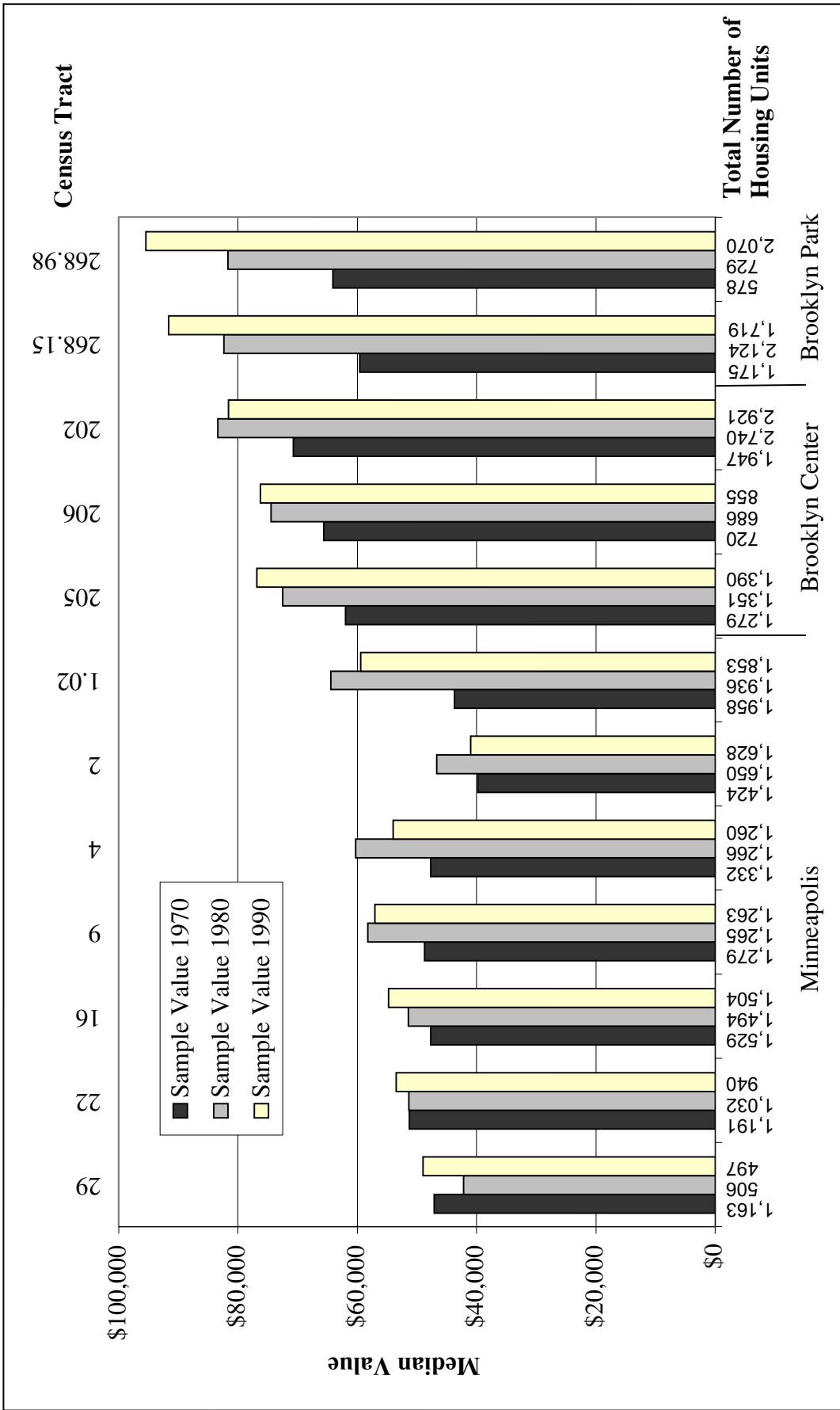
The overall upward shift in real values, accompanied by the upward trend in average assessed values from downtown to the outer suburbs, undoubtedly comes about as demand for lower-priced housing, whether rental or owner-occupied, began exceeding supply following 1985, aggravated by the 1986 federal tax reform act which removed many of the financial incentives for investors in rental housing.

When the sample units are aggregated by census tract and median values of the sample units are calculated for each tract for each census year, average housing values of sample units can be seen to rise from downtown core to suburban margin (Fig. 5.6). The two tracts closest to the CBD (i.e., 29 and 22) lost substantial numbers of housing units during the period 1970 to 1990, but the disappearance of those units does not affect our sample medians because our sample was drawn in 1999. On the other hand, if a tract experiences housing abandonment and demolition, it may scare away buyers and depress house prices. Each of the five suburban tracts gained housing units between 1970 and 1990. As new houses are built and a tract fills in, the value of existing houses may rise at above average rates, especially if the new houses are larger, more attractive and higher priced than the existing houses in their midst.

### **Census Estimates of Housing Values in Tracts Containing the Traverse**

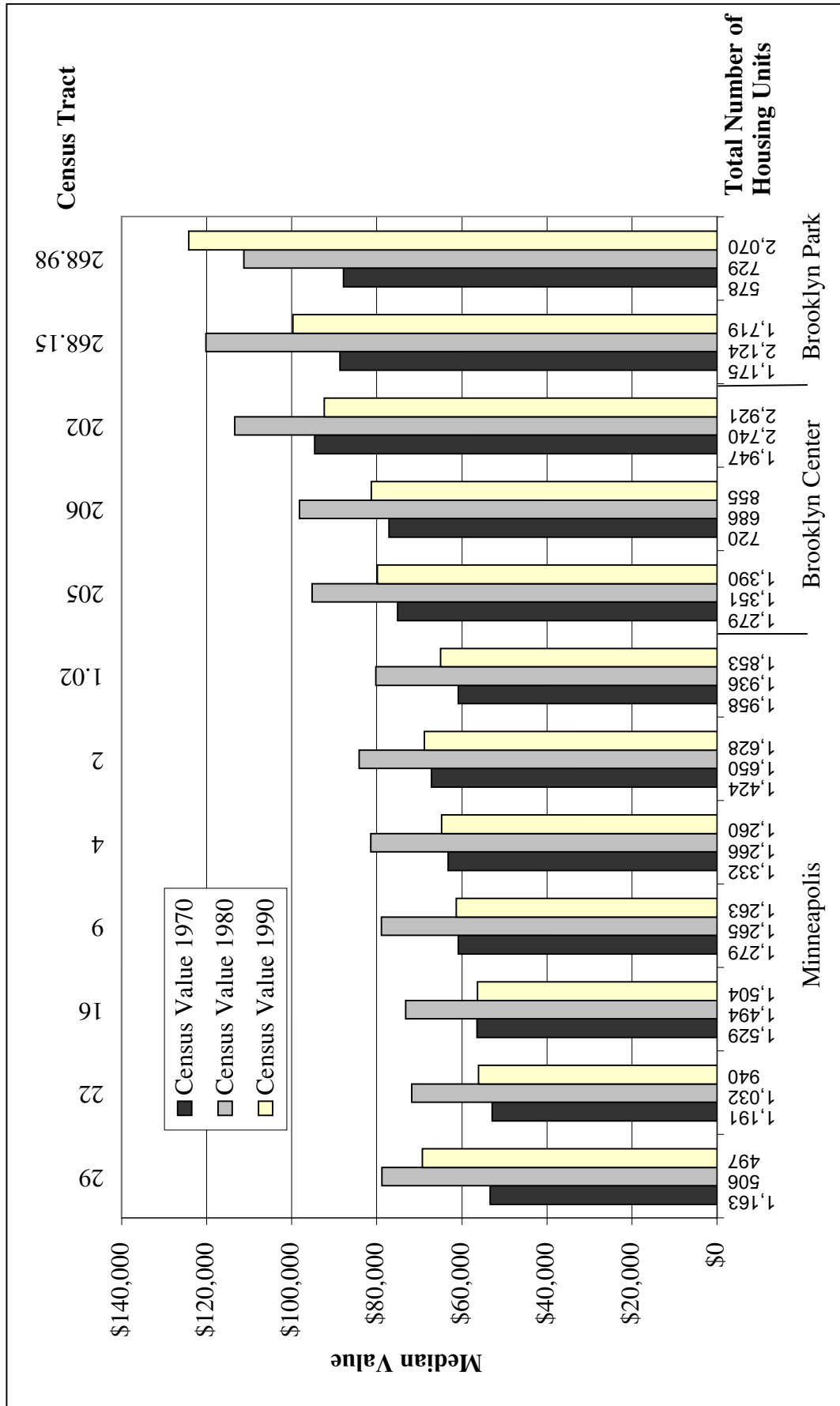
The median values of owner-occupied housing in tracts along the traverse rise steadily from the old core-area tracts to the suburbs in each of the three census years (Fig. 5.7). In all tracts except the last one in Brooklyn Park (Tract 268.98), the 1980 median values (in constant 1995 dollars) exceed the 1970 and 1990 values. As explained in the earlier discussion of census medians along the South Minneapolis traverse, the 1980 estimated housing values reported by sample homeowners probably were exaggerated due to the rampant inflation of the late 1970s, which continued through 1980. By 1990, homeowners were reporting more realistic estimates, but the upward trend in real housing values is unmistakable.

The last tract in Brooklyn Park had a 1990 median that was substantially higher than the 1980 median, which in turn was higher than that of 1970. This exception to the profile displayed by the other tracts along the traverse probably is explained by the rapid increase in number of



**Figure 5.6. North Minneapolis: Sample Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract.**

Data Source: Hennepin County Assessor's Office. U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.



**Figure 5.7. North Minneapolis: Census Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract.**

Data Source: U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.

housing units in the tract between 1970 and 1990, and the likelihood that the houses added to the tract's housing inventory during the 1970s and 1980s were larger and more expensive than those that were present in 1970 and upon which the 1970 median was based.

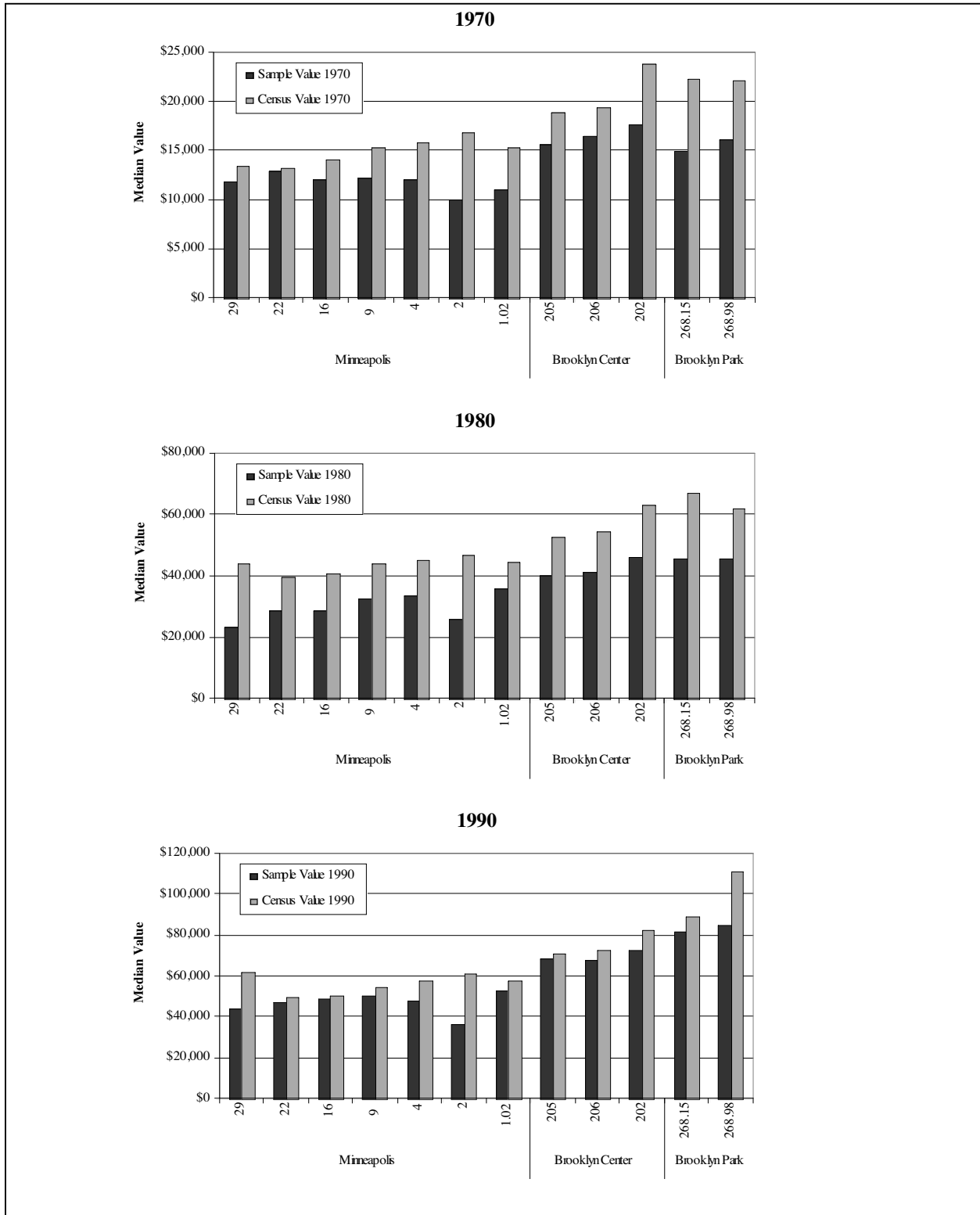
A comparison of the median values of housing (in constant dollars) calculated from our samples with those reported from the census discloses a high degree of correspondence for each of the three census years, 1970, 1980 and 1990 (Fig. 5.8). In every tract in each of the three census years the census median exceeds the median based on assessed values, but this discrepancy is explained as it was in the case of the South Minneapolis traverse. The census data on housing values are estimates of value reported by owner-occupants who may tend to overvalue their houses, while the assessed values typically are slightly lower than market value as explained in the Chapter 3. The point of the comparison between census-based estimates of housing values and sample-based estimates is to verify that our samples are reliable and can be used with some confidence when analyzing house price movements between censuses.

### **House Price Inflation and Deflation along the Traverse through the Submarket**

The goal of this analysis is to estimate house price inflation rates at various times and locations within Sector E, from the north edge of downtown Minneapolis to the edge of suburban Brooklyn Park, with the expectation that amounts and rates of inflation would be generally low or negative for older, smaller, less valuable units in inner-city tracts, higher for housing in newer areas at the edge of the central city and in older Brooklyn Center, and highest in the outer suburb of Brooklyn Park. The fact that our sample median data for 1970, 1980, and 1990 closely matched census medians for the same years seemed to be sufficient justification for using our sample data to estimate inflation trends during each of five five-year periods 1970 to 1995, as well as for the entire 25-year period (Fig. 5.9).

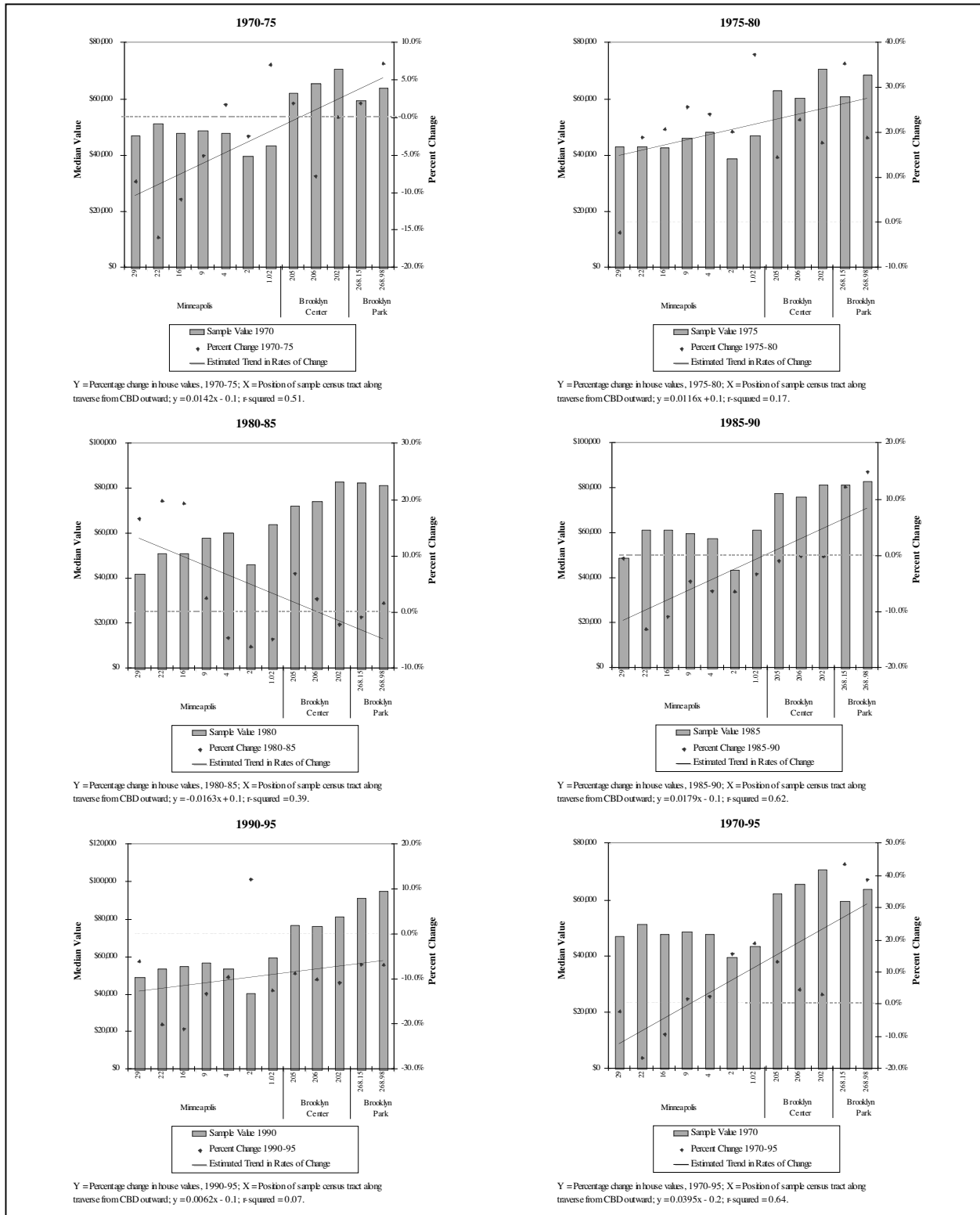
#### 1970-1975

Sample data for the first five years, 1970-75, display precisely the patterns expected. The percentage change in sample medians, adjusted to constant-dollar terms, was calculated for each tract and plotted on a scatter diagram, and a best-fitting line was estimated according to an ordinary least squares regression technique (Fig. 5.9). The trend line originates with low-value housing that on average was losing substantial value in real terms, then slopes sharply upward, crossing the (horizontal dashed) zero-percentage change line for housing averaging in the low \$50,000 range at approximately the Minneapolis-Brooklyn Center boundary, then continuing



**Figure 5.8. North Minneapolis: Census vs. Sample Median Values of Housing, 1970, 1980, and 1990.**

Data Source: Hennepin County Assessor's Office. U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.



**Figure 5.9. North Minneapolis: Sample Median Housing Values, and Trends in Rates of Change, Selected Years, 1970-1995, in 1995 Dollars.**  
 Data Source: Hennepin County Assessor's Office. Calculations by authors.

upward to positive rates of real value increase on average in the suburban tracts. Although there are notable deviations of certain observations from the trend, for example tracts 1.02 (well above the line) and 206 (well below it), the  $r^2$  value of 0.51 is impressively high.

#### 1975-1980

The entire pattern shifts upward as a result of the inflated values for housing at the end of the 1970s (Fig. 5.9). The trend still is upward, although the  $r^2$  value has shrunk to .17 due to the extreme deviations from the trend by tracts 29 (far below the line) and 1.02 (well above the line). The consistency with which tract 1.02 appears above the trend may be due to an unrepresentative sample for that tract. All tract sample medians, with the exception of tract 29, display rates of change well above 10 percent for the five-year period.

#### 1980-1985

Prices that rose too fast in the late 1970s evidently came down just as fast in the early 1980s. The overvaluing of houses in the late 1970s can account for some of the reversal that appears in the early 1980s, but perhaps more was happening. The cheap older houses in Minneapolis tracts 29, 22, and 16 saw the biggest increases, while two of the five suburban tracts had decreases in their sample medians in constant dollars (Fig. 5.9). It is possible that the tax reform acts of 1980 and 1982, the recession of 1980-82, and the return of positive rates of mortgage interest put a damper on the market for more expensive newer houses and enhanced the attractiveness of lower-priced houses on the inner, older segments of the housing sector. In addition, the steady flow of immigrants and domestic migrants into the Twin Cities in the 1970s and 1980s probably added effective demand to the lower-priced segment of the North Minneapolis housing market.

#### 1985-1990

The strong economy of the late 1980s and continued flow of newcomers into the Minneapolis housing market contributed to a return to the expected trend in housing price changes along the traverse (Fig. 5.9). The Minneapolis sample-tract medians lost value in constant-dollar terms, Brooklyn Center tracts neither gained nor lost, and Brooklyn Park tracts posted healthy gains. The  $r^2$  value of 0.62 is impressively high.

#### 1990-1995

In the early 1990s, the trend line has the expected slope upward and to the right. All estimated sample medians showed negative rates of change in real terms, with the single exception of Minneapolis tract 2, which jumped more than 10 percent. It happens that there were only three

sample units in tract 2 and one of them (the one featuring the middle value) apparently sold during the 1990-95 period and was reassessed for an additional \$10,000, thereby raising the sample tract median sufficiently high to create a significant deviation from the trend, and to reduce the  $r^2$  value to an unimpressive 0.07.

### 1970-1995

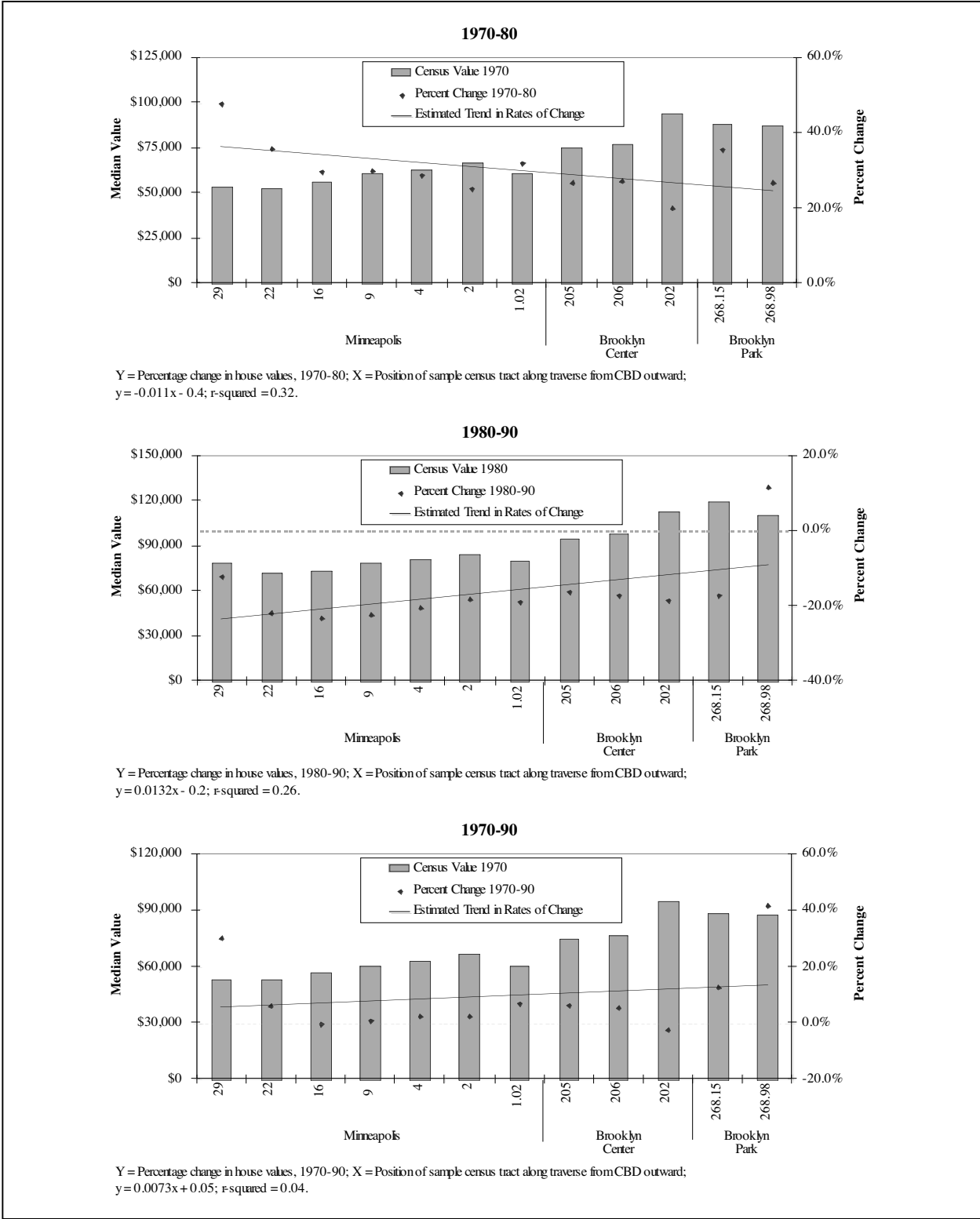
When all five time periods are taken together, the 25-year picture emerges sharply and conforms closely with the hypothesized positive slope and consistency of trend in sample median tract values based on constant dollar values of housing. Sample medians for the three Minneapolis tracts closest to the downtown all declined in value in constant dollar terms over the 25-year period, one by almost 20 percent. The next seven tracts all had sample medians with positive rates of change. The two Brooklyn Park median values saw rates of change in the 40 percent range over the 25-year period. The  $r^2$  value for the 25-year summary trend is a robust 0.64.

### **Estimating Inflation Trends from Census Medians**

The trend in rates of change in single-unit housing prices in tracts along the North Minneapolis traverse, based on census medians, was sharply downward from inner-city to suburban edge during the 1970s as it was in the South Minneapolis case (Fig. 5.10). This result differs from what we expected based on our analysis of sample medians from the early 1970s and the late 1970s. In both those cases, the trend lines sloped upward and to the right (see Fig. 5.9), but the trend for the 1970s based on census medians from 1970 and 1980 slopes downward, with an  $r^2$  of 0.32.

The trend reversed for the 1980s and conforms to expectations, with an upward slope and all but one of the tracts displaying negative rates of change (in constant dollar terms) in median value of their owner-occupied housing. To the extent that 1980 medians from tracts along the traverse were hyper-inflated while 1990 medians were realistic, these negative rates of change during the 1980s can be explained, but the same argument seems not to apply for the patterns of the 1970s for reasons that are unknown.

When the 20-year trend is examined and the 1980 inflation anomaly is removed from consideration, then the calculated trend line has the expected upward slope, but tracts 29 and 268.98 deviate to levels well above the trend and thereby dilute the  $r^2$  to a relatively meaningless 0.04. As noted before, rapid rates of construction of relatively expensive new houses in tract 268.98,



**Figure 5.10. North Minneapolis: Census Median Housing Values, Decennial Rates of Change, and Trends in Rates of Change, 1970-1990, in 1995 Dollars.**  
 Data Source: U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.

which saw its housing stock increase from 578 units in 1970, to 2,070 in 1990, plus market pressure to occupy them as well as existing houses in a fast-developing area, can easily explain a 20-year rate of real increase in tract median value in excess of 40 percent.

A slightly different argument can be advanced to account for the 20-year rate of increase of over 30 percent in the median value of owner-occupied housing in tract 29 next to the CBD. Recall that this tract experienced a steady reduction in its owner-occupied housing stock from 1,163 units in 1970, to 506 in 1980, and to 497 in 1990. Some units that were owned in 1970 became rental units by 1990, but many others were demolished. Assuming that the units that were removed over the 20-year period were on average among the oldest, most dilapidated and cheapest units in the tract, these removals would raise the median value by a significant amount even without any changes in effective demand that would adjust prices upward or downward, or any new construction of replacement housing that would enhance the attractiveness of the tract.

### **Housing Market Dynamics within a Submarket: Demand, Supply and Prices**

To summarize, a general hypothesis was presented at the beginning of this report, that house prices advance at rates above inflation for newer and more desirable units toward the outer tracts of a residential sector or submarket, and that the inner tracts, other things held equal, will feature housing with prices that advance at rates below inflation. There are two main lines of argument that support this hypothesis. First, households on average prefer newer, larger and lower-density housing over older, smaller high-density housing. Because of the way that American cities were built from center to edge, the former kinds of housing opportunities are common in the newer parts of the central city and in the suburbs, while the latter types are concentrated in neighborhoods close to the downtown. Thus, households tend to press outward over the years, placing strong demand on the supply of houses newer than the ones they occupy, thereby holding up or raising their market prices. Meanwhile the older cheaper houses, from which households move as means permit, often are present in localized volumes that exceed demand at those places so prices slide.

The second argument is related to the first and holds that newer housing often can be a better financial bargain than old housing for two reasons: first, because of the income tax treatment of mortgage interest, real estate taxes and capital gains on residential real estate, and second, because of the ways in which utilities and infrastructure serving newly developing areas usually are priced at levels below the full marginal costs of providing them. Meanwhile, older housing closer to the downtown and using infrastructure that has been in and paid for for years pays more than the marginal costs of the services it consumes. The capitalized value of underpriced or

overpriced infrastructure and utilities, the argument goes, contributes to above-average capital gains for newer houses, and below-average gains and sometimes losses for the low-priced houses near the city center.

The sample and census data from census tracts intersected by the North Minneapolis traverse generally are consistent with the hypothesis, but perturbations from time to time and from tract to tract indicate that there are a variety of forces other than directional bias in intra-urban mobility, and financial considerations, that influence the generalized trends. The deviations could be due to movements into the sector by foreign and domestic migrants and movements out by retirees and by persons leaving the Twin Cities. Over the 25-year period covered by this study, migration flows in and out have waxed and waned in ways that have affected the data.

Additional sources of flux that stimulated or are reflected in market data on property values include:

- extreme variations in rates of inflation after 1970;
- general economic conditions, including major recessions in the early 1980s and again in the early 1990s;
- fallout from the North Side civil disturbances of the late 1960s;
- perceptions about crime and public safety; and
- issues centering on the perceived quality of public education.

Meanwhile, housing supplies varied from tract to tract over the study period, with older tracts losing significant numbers of units while suburban tracts gained. In short, there is nothing in these data as presented that appears to contradict the hypothesis raised at the outset, but there are obviously many additional features and events that probably have affected the operation of the housing submarket in Sector E during the period 1970 to 1995, and have brought about general shifts in real estate values outward over the study period.

## End Note

1. Adams, J. S. and VanDrasek, B. J. Minneapolis-St. Paul: People, Place and Public Life. Minneapolis: University of Minnesota Press, 1993. pp. 106.



## Chapter 6

### Traverse H: St. Paul >> Roseville >> Shoreview

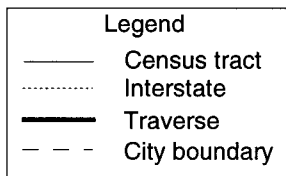
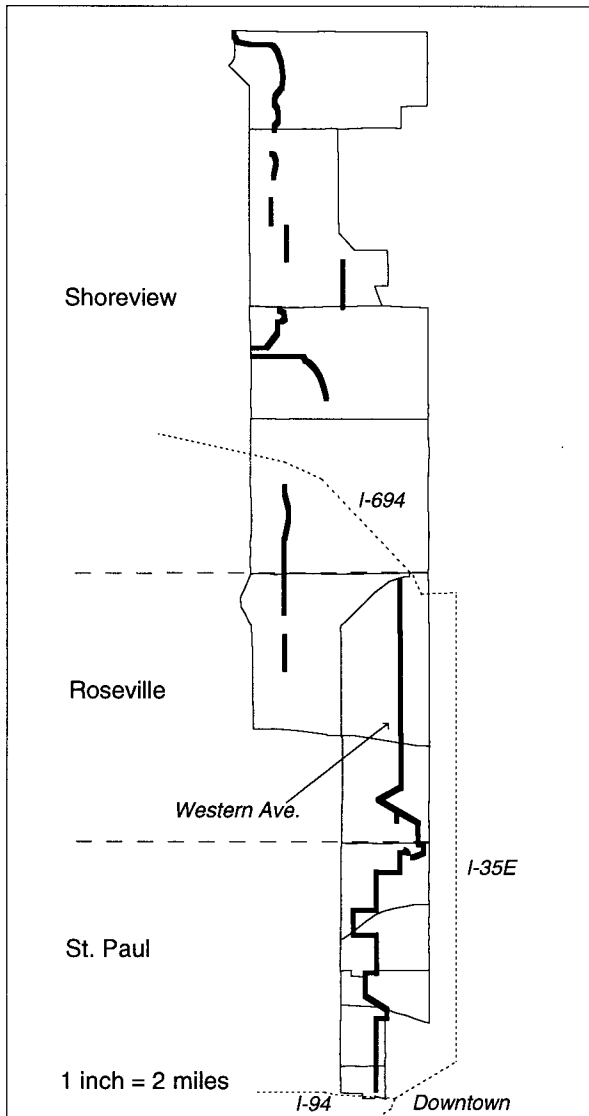
#### A St. Paul Housing Submarket and a Sample Traverse Through It

Our St. Paul traverse begins west of the CBD and proceeds north of Interstate 94, initially following Arundel Street north into St. Paul's Central neighborhood (5 tracts), then through Roseville on Western Avenue (3 tracts), and ending in Shoreview (4 tracts), with interruptions caused by lakes and parklands (Fig. 6.1). This traverse runs mainly through a sector labeled Submarket H (Fig. 2.1). The submarket has its origins west of downtown, just north of Summit Avenue. St. Paul's elite established their homes in Ramsey Hill and along Summit Avenue after 1890, while their admiring middle-class imitators flanked them in sectors that extended outward to the northwest and southwest of downtown. Although working-class houses filled in near industrial areas along rail corridors through the Midway District, the dominant atmosphere during much of the twentieth century has been middle class and upwardly mobile. As Roseville developed, it was settled essentially by St. Paul households moving up and out, and carrying outward from St. Paul the flavor of the tasteful and well-tended neighborhoods left behind [1]. Average age of housing generally decreases from tracts close to downtown to Tract 407.06 in northern Shoreview. Urban renewal and Interstate highway construction in the 1960s replaced enough old houses in tract 336 to bring the median year of construction up to 1966. Incomes generally increase from core to margin as housing becomes newer and generally more expensive (Fig. 6.1).

#### Assessed Values of Sample Housing Units along the Traverse

Assessed valuations for Ramsey County properties were unavailable for the year 1970, so we obtained values for the year 1972 instead. Moreover, because our sample properties in Ramsey County had not been reassessed by 1975, we obtained values for 1976 instead, then converted them and those for the other sample years to constant 1995 dollars.

In 1972, the older and cheaper sample housing units along the traverse are concentrated along the St. Paul portion of the traverse while higher-priced housing units have begun to appear in the suburbs (Figs. 6.2-6.4). The gaps in the 1972 Roseville and Shoreview profiles come about because the sample houses were selected in 1999 and some of them had not been built as of 1972 (Fig. 6.5). With the passage of time, the assessed values of houses along the traverse reveal a



Census Tract Number	1990 Median Year of Housing Construction	Percentage of Households Living in Same House 1985-90 (%)	1990 Median Household Income (\$)
407.06	1983	34.2	55,838
407.07	1973	60.9	54,175
407.03	1973	55.2	48,099
407.04	1969	50.8	42,791
415	1963	59.5	43,897
416.01	1967	61.5	43,468
416.02	1965	47.9	30,752
304	1963	40.8	25,475
308	1941	62.6	27,575
313	1937	47.8	18,708
326	1935	55.2	20,123
336	1966	36.5	8,941

**Figure 6.1. Traverse H: St. Paul, Roseville and Shoreview.**

Data Source: Population and Housing Characteristics for Census Tracts and BNAs. U.S. Bureau of the Census, 1990.



(a)

Tract 336  
4xx Virginia St.  
Year Built: 1890

	Assessed Value	
	Current \$	Constant \$
1972	5,300	19,589
1980	31,136	55,827
1990	42,400	47,480
1995	42,200	42,200



(b)

Tract 326  
6xx Arundel St.  
Year Built: 1890

	Assessed Value	
	Current \$	Constant \$
1972	7,300	26,981
1980	23,860	42,781
1990	40,000	44,792
1995	44,100	44,100



(c)

Tract 313  
5xx Stinson St.  
Year Built: 1908

	Assessed Value	
	Current \$	Constant \$
1972	13,700	50,635
1980	32,714	58,656
1990	61,000	68,308
1995	54,100	54,100



(d)

Tract 308  
11xx Arundel St.  
Year Built: 1910

	Assessed Value	
	Current \$	Constant \$
1972	14,400	53,222
1980	37,205	66,709
1990	56,200	62,933
1995	55,900	55,900

**Figure 6.2. Sample Houses along the Traverse through St. Paul and Suburbs: 400 through 1100.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



(a) Tract 304  
14xx Arundel St.  
Year Built: 1950

	Assessed Value	
	Current \$	Constant \$
1972	22,200	82,051
1980	46,813	83,936
1990	74,700	83,649
1995	81,400	81,400



(b) Tract 416.02  
21xx Western Av.  
Year Built: 1958

	Assessed Value	
	Current \$	Constant \$
1972	22,400	82,790
1980	54,132	97,059
1990	81,100	90,816
1995	82,700	82,700



(c) Tract 416.01  
28xx Western Av.  
Year Built: 1960

	Assessed Value	
	Current \$	Constant \$
1972	22,900	84,638
1980	60,562	108,588
1990	99,800	111,756
1995	101,400	101,400



(d) Tract 415  
27xx Lakeview Av.  
Year Built: 1976

	Assessed Value	
	Current \$	Constant \$
1972		
1980	67,625	121,252
1990	108,600	121,610
1995	107,600	107,600

**Figure 6.3. Sample Houses along the Traverse through St. Paul and Suburbs: 1400 through 2800.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



(a)

Tract 407.04  
34xx Richmond Av.  
Year Built: 1965

	Assessed Value	
	Current \$	Constant \$
1972	29,800	110,141
1980	80,897	145,048
1990	107,200	120,043
1995	106,400	106,400



(b)

Tract 407.03  
39xx Victoria St.  
Year Built: 1969

	Assessed Value	
	Current \$	Constant \$
1972	28,600	105,706
1980	72,000	129,096
1990	112,000	125,418
1995	108,100	108,100



(c)

Tract 407.07  
441xx Chatsworth St.  
Year Built: 1986

	Assessed Value	
	Current \$	Constant \$
1972		
1980		
1990	111,800	125,194
1995	117,800	117,800



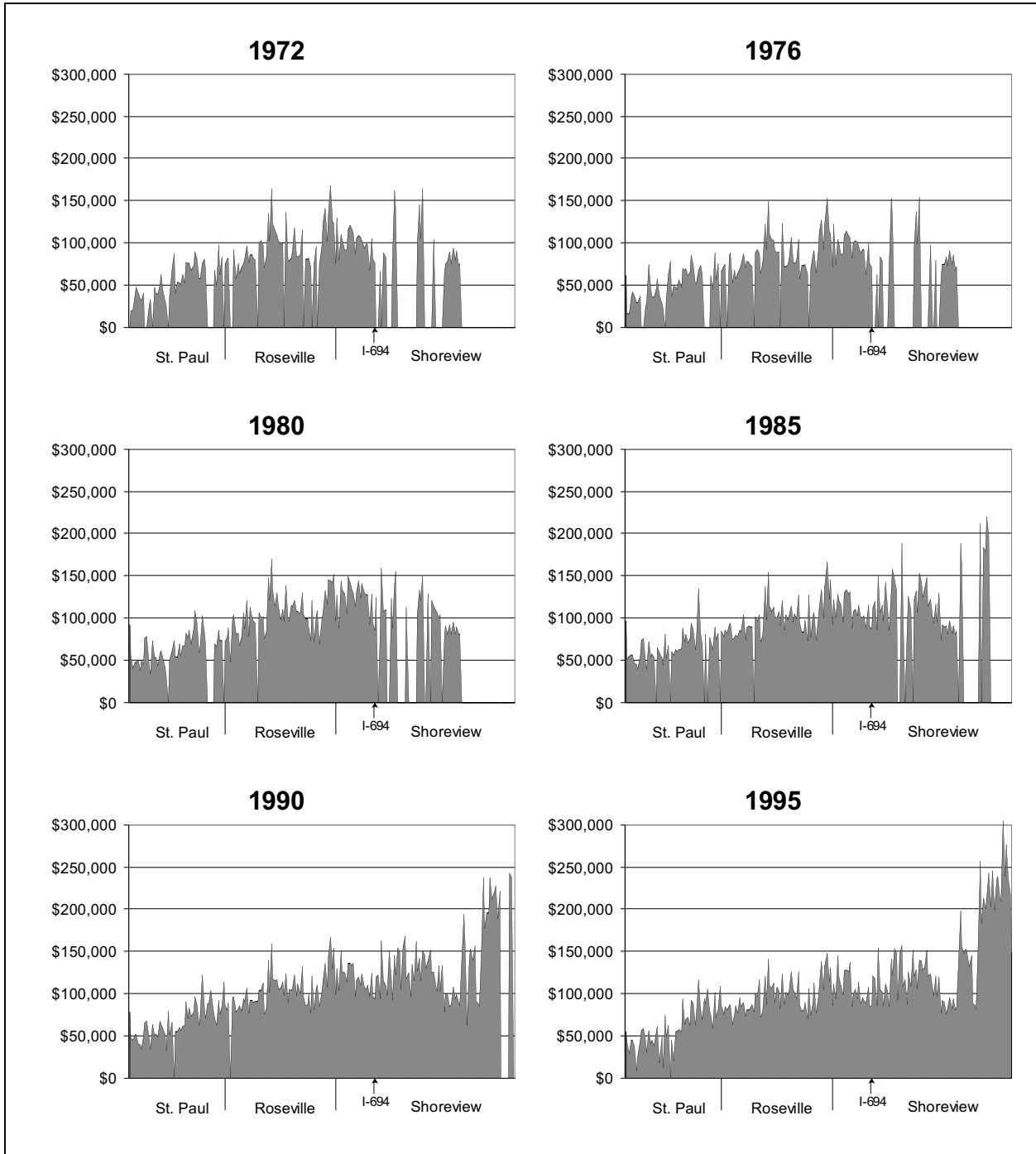
(d)

Tract 72  
12xx W. Royal Oaks Dr.  
Year Built: 1992

	Assessed Value	
	Current \$	Constant \$
1972		
1980		
1990		
1995	210,400	210,400

**Figure 6.4. Sample Houses along the Traverse through St. Paul and Suburbs: 3400 outward.**

From the array of sample units selected in each tract, the house with the median assessed value is pictured. Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.



**Figure 6.5. St. Paul Traverse: Assessed Values, Selected Years, 1970-1995, in 1995 Dollars.**

Data Source: Ramsey County Assessor’s Office. Calculations by authors.

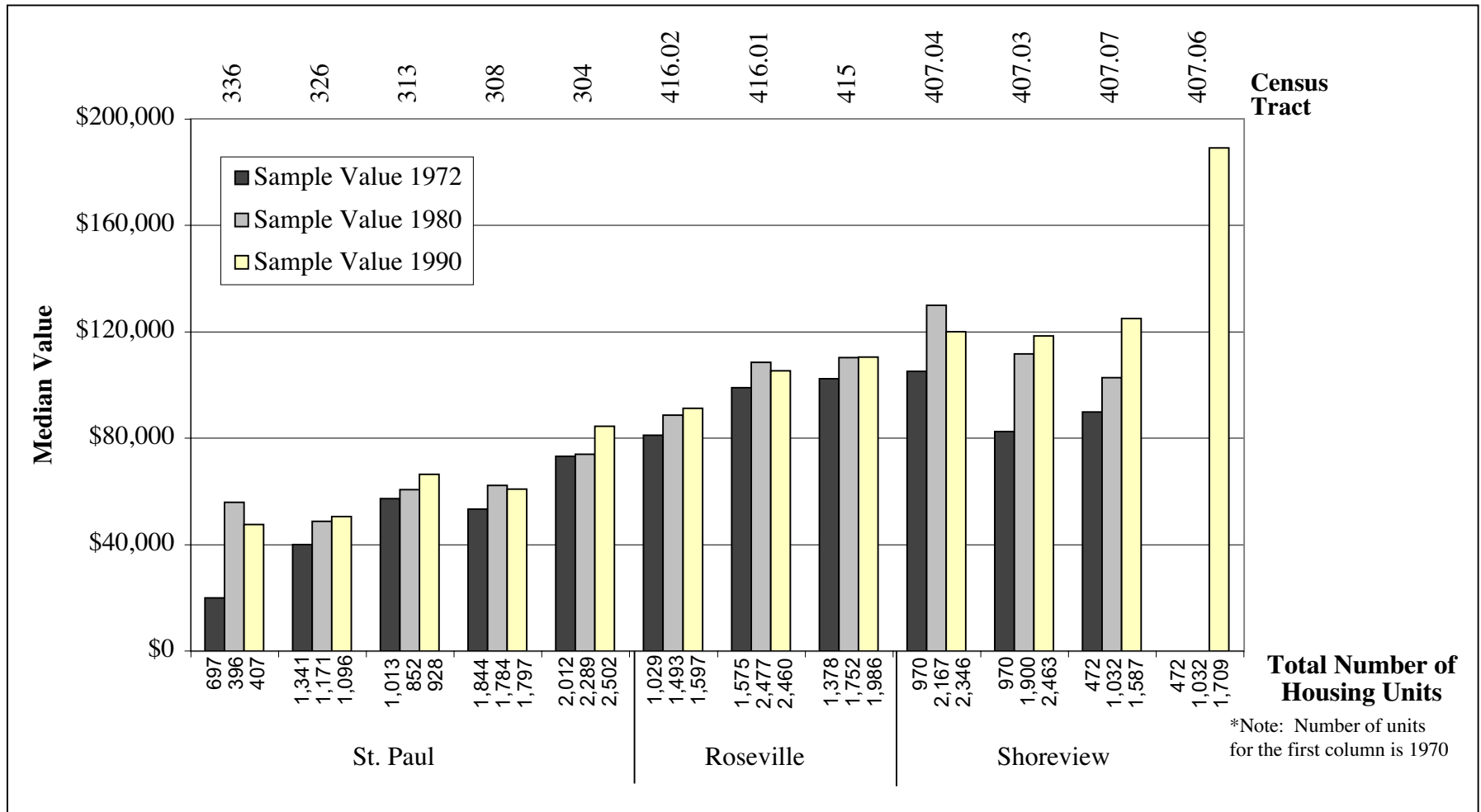
generally upward trend from the edge of downtown to the outer reaches of Shoreview. Houses from the edge of downtown St. Paul to the city limits typically had assessed values between \$50,000 and \$100,000 in all six sample years, but with a conspicuous upward drift from 1985 onwards. Houses in the suburban sample houses had assessed values above \$100,000 and in the outer parts of Shoreview tracts averaged around \$100,000 in 1972, but as the profile filled in after 1985 almost all of the they averaged more than \$200,000.

As we saw in the two Minneapolis traverses, the generally upward shift in real values in St. Paul, accompanied as it is by the upward trend in average assessed values from downtown to the outer suburbs, undoubtedly came about as demand for lower-priced housing—whether rental or owner-occupied—began exceeding supply following 1985, a trend that was aggravated by the 1986 federal tax reform act which removed financial incentives for investors in rental housing.

When the sample units are aggregated by census tract and median values of the sample units are calculated for each tract for each census year, average housing values of the sample units can be seen to rise from downtown core to suburban margin (Fig. 6.6). The four tracts closest to the CBD (i.e., 336, 326, 313, 308) lost substantial numbers of housing units during the period 1970 to 1990. Tract 336, for example, lost more than 40 percent of its housing units between 1970 and 1990, but the disappearance of those units does not directly affect the sample medians because the sample was drawn in 1999.

On the other hand, if a tract undergoes housing abandonment and demolition, it may scare away buyers and thereby depress house prices by reducing demand for them. St. Paul's northernmost tract (304) and all seven suburban tracts gained significant numbers of new housing units between 1970 and 1990. As new houses are added to a tract, values of existing houses may rise at above-average rates, especially if the new houses are larger, more attractive and higher-priced than the existing houses in their midst.

The sample median values expressed in constant 1995 dollars generally are stable over the study period (Fig. 6.6). One exception is the innermost tract 336 which lost many units after 1970. If it was the oldest and most decrepit units that were demolished, and the surrounding infrastructure was upgraded, the values of sample units might well have risen as the neighborhood improved. Something similar may have occurred in Shoreview's tracts 407.03 and 407.07, which added new units at a rapid pace in the 1970s and 1980s. If the new units were sufficiently attractive, that enhancement of the tract's housing stock could have stepped up demand for the sample units



**Figure 6.6. St. Paul: Sample Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract.**

Data Source: Ramsey County Assessor's Office. U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.

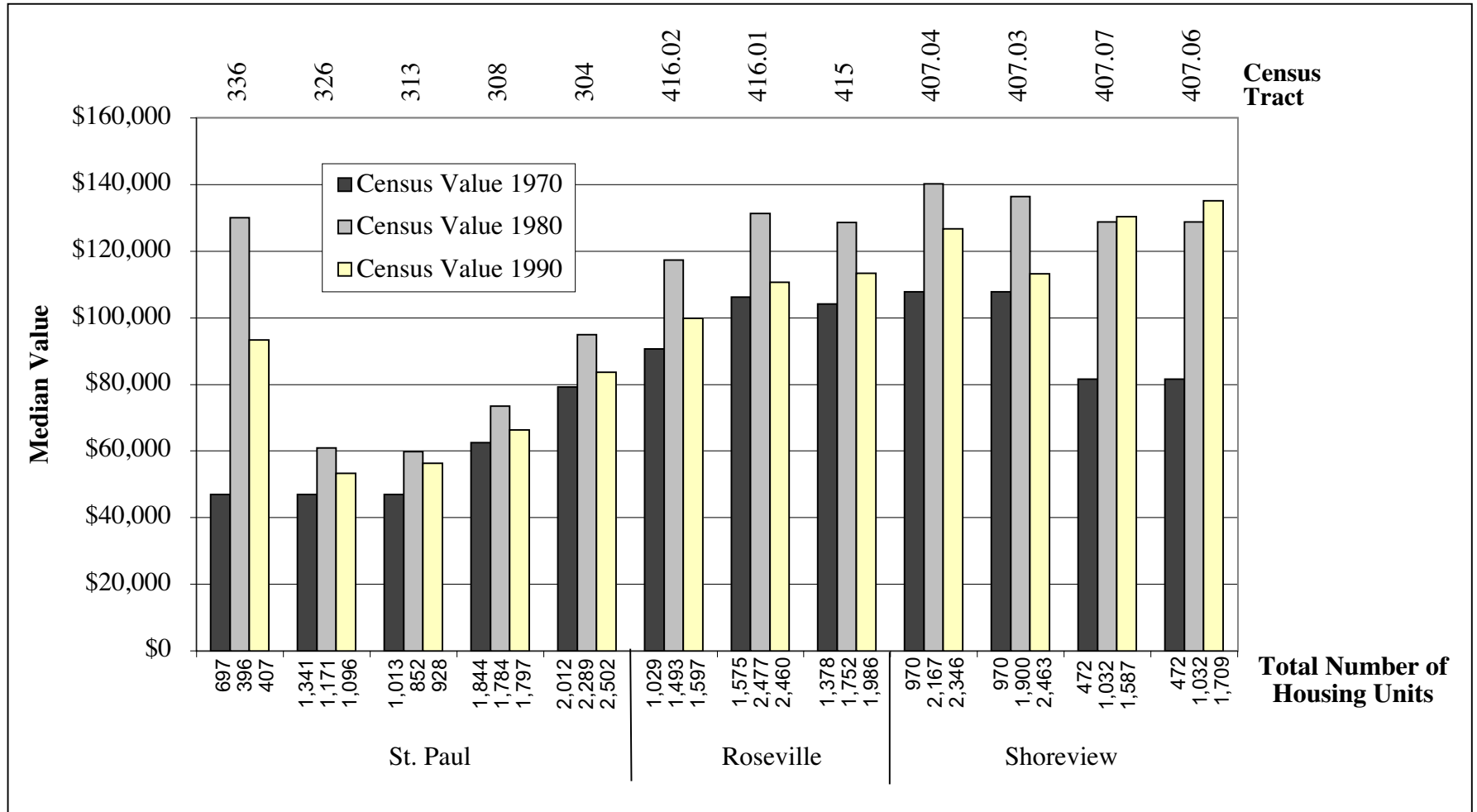
and caused their assessed values to jump between 1972 and 1980, and again in the 1980s. Tract 407.06 had the highest median housing value in 1990, but its sample units were too new to have been present in 1980 or 1972.

### **Census Estimates of Housing Values in Tracts Containing the Traverse**

The median values of owner-occupied housing in tracts along the traverse rise generally from the old core-area St. Paul tracts to the suburbs in each of the three census years (Fig. 6.7). In all tracts except the last two in Shoreview (407.07, 407.06), where new construction was vigorous in the 1970s and 1980s, the 1980 median values (in constant 1995 dollars) exceeded the 1970 and 1990 values. As explained in the earlier discussion of census medians along the South Minneapolis and North Minneapolis traverses, the 1980 estimated housing values reported by sample homeowners probably were exaggerated upward due to the unusually high inflation of the late 1970s, which continued through 1980. By 1990, homeowners were reporting more realistic estimates, but the upward trend in real housing values from CBD margins to the edge of Shoreview is unmistakable.

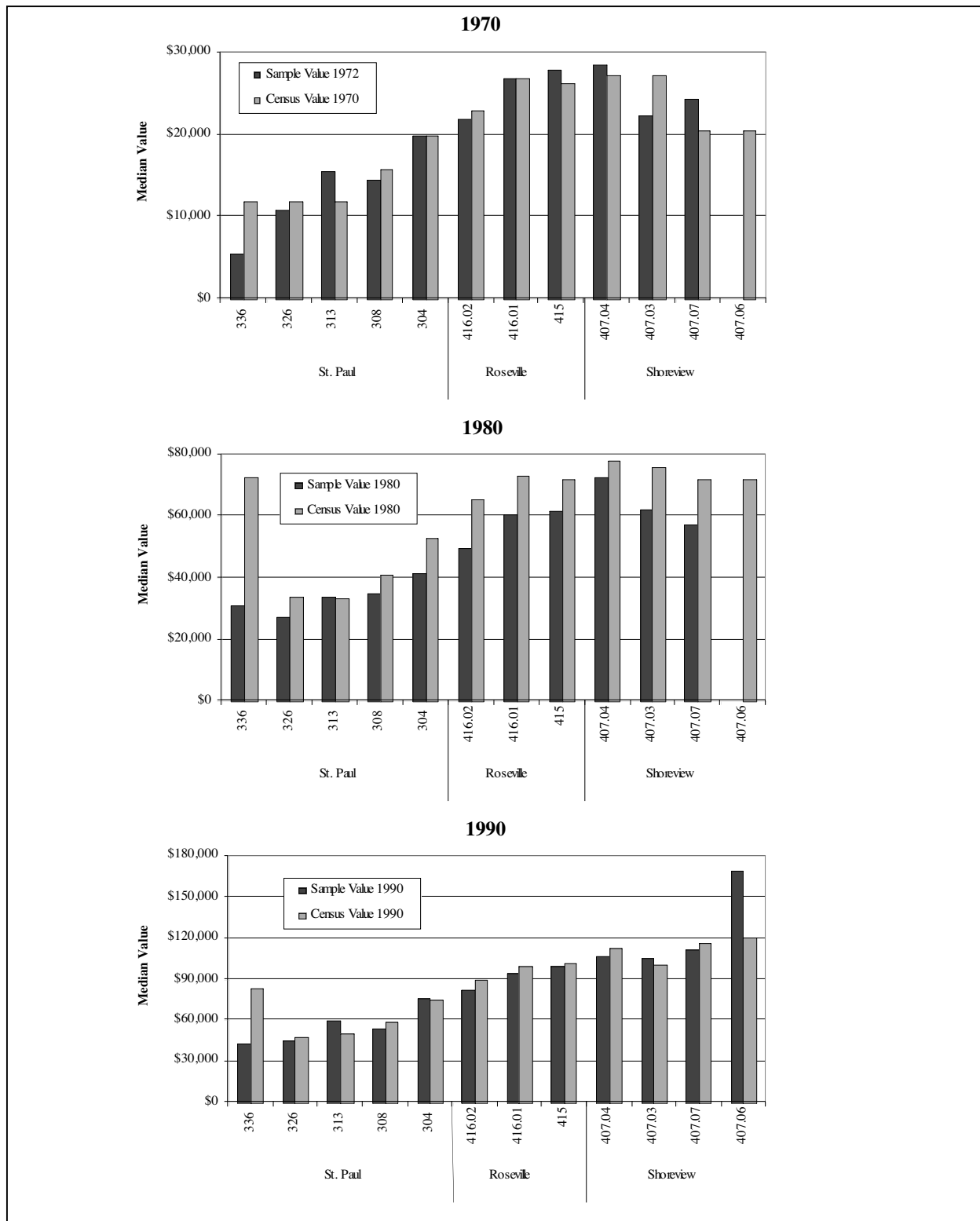
The last two tracts in Shoreview had 1990 census medians that were somewhat higher than their 1980 medians, which in turn were significantly higher than those of 1970. This exception to the profile displayed by the other tracts along the traverse probably is explained by the rapid increase in number of housing units in the tracts between 1970 and 1990, and the likelihood that the houses added to the tracts' housing inventory during the 1980s were larger and more expensive than those that were present in 1970 and upon which the 1970 median was based. Even if the 1980 medians in these two tracts are understood to be exaggerated, the progression upward of census medians can still be explained largely in terms of the rapid rates of new construction after 1970.

A comparison of the sample medians (in constant dollars) with those reported from the census discloses a high degree of correspondence for each of the three census years, 1970/2, 1980 and 1990 (Fig. 6.8). In other words, either is a generally good predictor of the other. Divergence between the two measures occurs at the two ends of the traverse where the stock is changing its composition. Near the CBD, old units are being removed and some of them are being replaced by new units. At the suburban margins, the stock is expanding by steady construction of new units on greenfield sites. This divergence is notable in St. Paul's tract 336 next to the CBD in the early 1970s. In 1980, the census medians exceeded the sample medians in all but one tract (313). In 1990 the two measures closely resemble one another except for the tracts on the volatile ends



**Figure 6.7. St. Paul: Census Median Values of Housing in 1995 Dollars and Total Number of Housing Units by Tract.**

Data Source: U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.



**Figure 6.8. St. Paul: Census vs. Sample Median Values of Housing, 1970/2, 1980, and 1990.**

Data Source: Ramsey County Assessor's Office. U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.

of the traverse. Recall that the point of the comparison between census-based estimates of housing values and sample-based estimates is to verify that our samples are reliable and can be used with reasonable confidence when analyzing house price movements between censuses.

### **House Price Inflation and Deflation along the Traverse Through the Submarket**

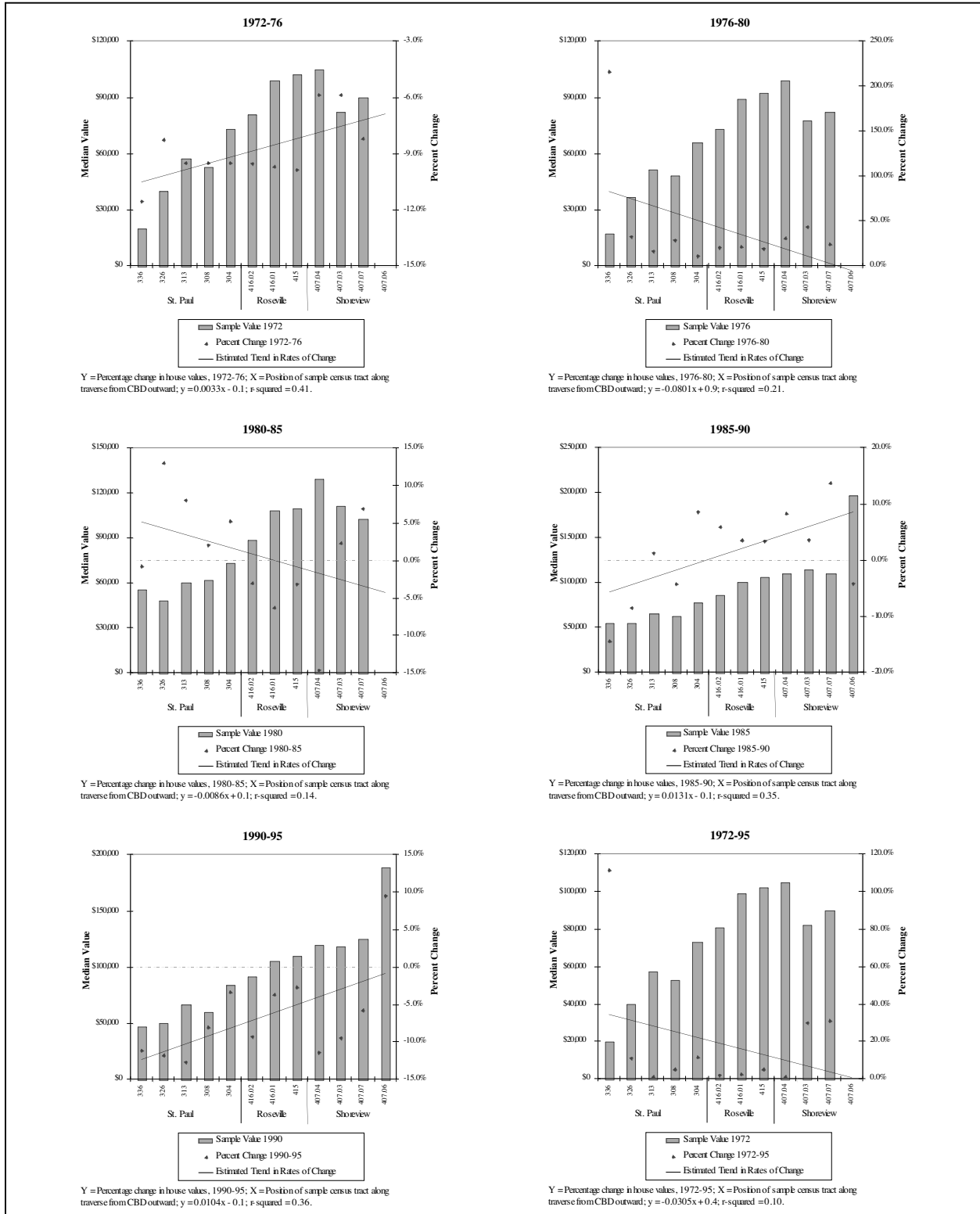
The goal of this analysis has been to estimate house price inflation rates at various times and locations within Sector H from the northwest edge of downtown St. Paul to the outer edge of suburban Shoreview, with the expectation that amounts and rates of inflation generally would be low or negative for older, smaller, less valuable units in the inner-city tracts, higher for housing in newer areas at the edge of the central city and in older Roseville, and highest in the outer suburb of Shoreview. The fact that our sample median data for 1972, 1980, and 1990 closely matched census medians for the 1970, 1980 and 1990 years seems to be sufficient justification for using the sample data for estimating inflation trends for shorter time periods between decennial censuses, as well as for the entire period from 1972 to 1995 (Fig. 6.9).

#### 1972-1976

In the early 1970s prices appear to have declined in constant dollar terms, although the inflation of those years probably masked that fact. Yet the rates of price decline differed by location, as indicated by the upward-trending line which illustrates how the newer houses in Shoreview held their value better than did the older houses in St. Paul and Roseville. The  $r^2$  value of 0.41 is reasonably robust, so the profile that emerges matches our hypothesis.

#### 1976-1980

The late 1970s again are the anomaly, with exceptional inflation across the board. All sample medians increased, with the median for St. Paul's tract 336 increasing by 216 percent. There were only three sample houses in this tract. Two of them date from the 1890s, but the third was built in 1974 in an urban renewal area. The sample median for the tract in current dollars was \$6,600 in 1976, then jumped to \$31,136 in 1980 as the new unit was appropriately assessed. In constant 1995 dollars the change was from \$17,665 to \$55,827. This extreme change reflects what happened with our sample units, but distorts the trend. With tract 336 excluded from the analysis, the scatter plot for the other ten tracts shows no trend whatsoever. If tract 336 were dropped from the calculation of the trend, the slope would disappear and the  $r^2$  value would drop to insignificance.



**Figure 6.9. St. Paul: Sample Median Housing Values, and Trends in Rates of Change, Selected Years, 1970-1995, in 1995 Dollars.**

Data Source: Ramsey County Assessor's Office. Calculations by authors.

### 1980–1985

The peculiarities of the late 1970s continued into the early 1980s. Most St. Paul tracts had modest increases in their sample medians; Roseville tracts saw declines; and Shoreview had increases. To the extent that negative real mortgage interest rates of the late 1970s produced house price distortions on the positive side, there appear to have been corrections in the early 1980s as interest rates turned positive and housing markets returned to normal.

### 1985-1990

The late 1980s trend in rates of change of sample medians (in constant 1995 dollars) slopes upward to the right and is accompanied by an  $r^2$  of 0.35, a value that is pulled down by Shoreview's tract 407.06, which was developing rapidly in this period in ways that may have affected assessed values of our sample housing units. In general, the trend matches our hypothesis.

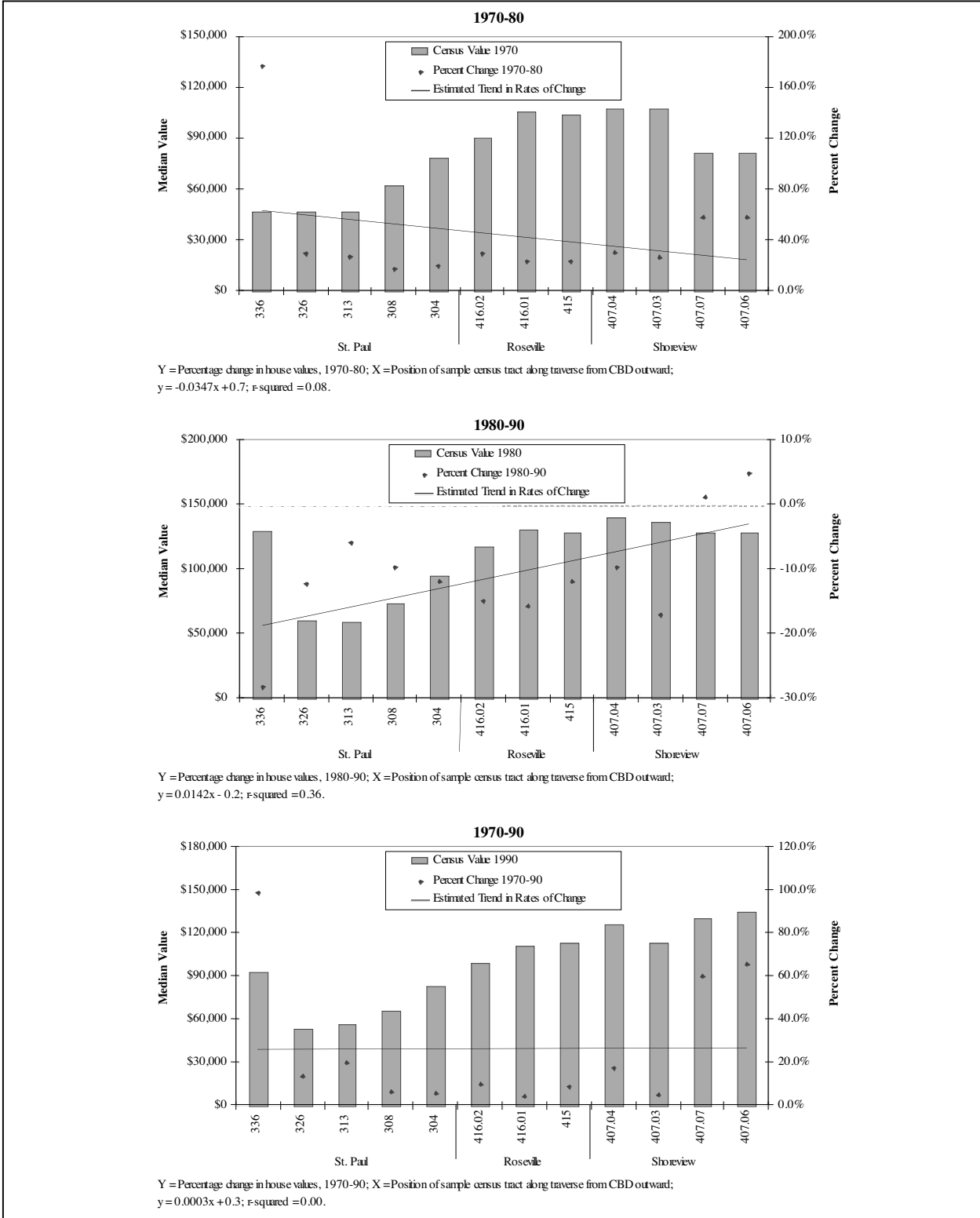
### 1990-1995

Sample medians from the early 1990s reveal a continuation of the previous trend, which is sloping upward to the right with an  $r^2$  of 0.36. When the effects of inflation are removed, the rates of change emerge as slightly negative for all but the last tract in Shoreview, but the estimated trend again matches our hypothesis.

### 1972-1995

A summary of changes in sample median values of housing over the period 1972 to 1995 discloses modest real increases along the traverse, with exceptions at the extreme ends. Tract 336 at the edge of the St. Paul CBD appears to be an anomaly compared with the other St. Paul tracts; however, inexpensive houses have experienced significant jumps in value in the 1990s as a shortage of rental units and low interest rates have shifted households from the rental to the owner markets and driven up the price of starter homes to disproportionately high levels. The other possible explanation for the tract 336 is that our sample units are not representative of the tract. Meanwhile the sale and resale of large, attractive Shoreview homes have boosted their values and helped them post real price increases in the 30-percent range over the study period.

Census tract medians for the 1970s typically show increases in constant dollars of around 20 percent (Fig. 6.10). St. Paul's tract 336 next to downtown, which was a site of renewal and replacement housing, had increases that were much higher, as did the newer tracts in Shoreview. With tract 336 included in the calculation of the trend, the slope is downward to the right and the  $r^2$  value is negligible. Inspection of the scatterplot for the other eleven tracts clearly suggests that if tract 336 were dropped from the calculation, the slope would be upward to the right and the  $r^2$



**Figure 6.10. St. Paul: Census Median Housing Values, Decennial Rates of Change, and Trends in Rates of Change, 1970-1990, in 1995 Dollars.**  
 Data Source: U.S. Bureau of the Census, 1970, 1980, 1990. Calculations by authors.

value would rise.

The 1980s trend of census median values of owner-occupied housing in tracts along the traverse is in the expected direction, namely sloping upward to the right, and the  $r^2$  value is a respectable 0.36, but the rates of change in constant dollar terms are all negative, with the exception of the outermost Shoreview tract which was rapidly developing in the 1980s. One explanation for the negative rates of change can be traced to the varying degrees to which owner-occupants over-value their houses. In 1980 in the midst of the real estate inflation frenzy, the tendency to overstate probably was greater than was the tendency to overstate during the onset of the recession of 1990. Taken together, when the census medians from 1980 are compared with the census medians from 1990, the percentage changes in constant-dollar terms turn out to be mostly negative, but the slope still is upward and to the right as expected (Fig. 6.10).

The summary of census median changes for the 20-year period is the same as what emerged from the analysis of the sample medians. There were real increases along the traverse of under 20 percent for the 20-year period, with exceptions at the two ends of the traverse. Tract 336 at the edge of the St. Paul CBD again emerges as an anomaly compared with the other St. Paul tracts, and the two outer tracts in Shoreview show big increases, some probably due to enhanced values of existing homes, and some certainly due to the construction of houses more expensive than those already present in those tracts.

### **Housing Market Dynamics within a Submarket: Demand, Supply and Prices**

The general hypothesis that was presented at the beginning of this report argued that house prices generally advance at rates above inflation for newer and more desirable units toward the outer tracts of a residential sector or submarket, and that the inner tracts, other things held equal, will feature housing with prices that advance at rates below inflation.

Changes in sample medians based on assessment data and in medians based on the decennial census for tracts intersected by the St. Paul traverse generally are consistent with the hypothesis, but with perturbations from time to time and from tract to tract, indicating that there are a variety of forces, other than directional bias in intra-urban mobility and financial considerations, that influence the generalized trends. As explained in the discussion of the North Minneapolis case, the deviations from expectations can arise due to movements into the sector by foreign and domestic migrants and movements out by retirees and by persons leaving the Twin Cities. For example, the entry into St. Paul of large numbers of immigrants from Southeast Asia and from

Central America after 1970 has produced major changes in the economy and social geography of the city. Over the 25-year period covered by this study, migration flows in and out have waxed and waned in ways that have affected the demand for housing and its price.

Meanwhile, housing supplies varied from tract to tract over the study period, with older tracts losing significant numbers of units while suburban tracts gained. In urban renewal areas close to downtown, removal of century-old housing and new construction were proceeding side by side. In short, there is nothing in these data as presented that appears to contradict the hypothesis raised at the outset, but there obviously are many additional features and events that probably have affected the operation of the housing submarket in Sector H during the period 1970 to 1995, and have brought about general shifts in real estate values outward over the study period.

## **End Note**

1. Adams, J. S. and VanDrasek, B. J. Minneapolis-St. Paul: People, Place and Public Life. Minneapolis: University of Minnesota Press, 1993. pp. 107.



## Chapter 7

# Conclusions, Interpretations, and Implications from the Empirical Investigation

### Review of the General Hypothesis

The general hypothesis presented at the beginning of this report argued that house prices advance at rates exceeding inflation for newer and more desirable owner-occupied units located in the outer tracts of a residential sector or submarket, and that the inner tracts, other things held equal, will contain housing with prices that advance at rates below inflation. There were two main lines of argument in support of this hypothesis. The first argument holds that households on average prefer newer, larger and lower-density housing over older, smaller high-density housing. American cities were built from center to edge, so the former and more desirable kinds of housing opportunities typically have been found in the newer parts of the central city and in the suburbs, while the latter less desirable options are concentrated in neighborhoods close to the downtown. Thus, the argument goes, households tend to press outward over the years as their circumstances permit, placing strong demand on the supply of houses newer than the ones they occupy, thereby holding up or raising their market prices. Meanwhile the older, cheaper houses from which households move, are often present in localized volumes that exceed demand at those places, so prices slide.

A second argument is related to the first and holds that newer housing often can be a better financial bargain than old housing for several reasons: the generous income tax treatment of mortgage interest, real estate taxes and capital gains on residential real estate, and the ways in which utilities and infrastructure serving newly developing areas usually are priced to households at levels well below the full marginal costs of providing them. Meanwhile, older housing closer to the downtown using infrastructure that has been installed and paid for for years is charged more than the marginal costs of the services consumed. The capitalized tax advantages and capitalized values of underpriced infrastructure and utilities, the argument goes, contribute to above-average capital gains for newer houses, while the modest tax advantages—if there are any tax advantages at all—associated with cheap houses and coupled with high-priced utilities and infrastructure translate into below average gains and sometimes capital losses for the low-priced houses near city center.

## Summary of Findings

The sample and census data from census tracts intersected by traverses originating in South Minneapolis, North Minneapolis and northern St. Paul are generally consistent with our hypothesis, but deviations and anomalies from time to time and from tract to tract indicate that there are forces other than directional bias in intra-urban mobility and beyond financial considerations that influence generalized trends. The deviations come about from localized, tract-level changes in housing demand and housing supply. For example on the demand side there have been major movements into some sectors by foreign and domestic migrants, as well as movements out by retirees and by persons leaving the Twin Cities. Over the 25-year period covered by this study, migration flows in and out have waxed and waned in ways that have affected housing demand. On the supply side, obsolete units regularly are removed from inner-city tracts, and new housing is built in urban renewal areas. Meanwhile, thousands of new units are built each year in the expanding suburbs, and each of our sample traverses intersected tracts that grew rapidly after 1970.

Additional sources of flux that stimulated or are reflected in market data on property values include:

- extreme variations in rates of house-price inflation after 1970;
- general economic conditions, including major recessions in the early 1980s and again in the early 1990s;
- fallout from the North Side civil disturbances of the late 1960s;
- substantial immigration from Southeast Asia, Latin America, and Africa into Minneapolis and St. Paul since 1970;
- perceptions about crime and public safety; and
- issues centering on the perceived quality of public education.

In short, there is nothing in these data as presented that appears to contradict the hypothesis raised at the outset, but there are obviously many additional features and events that probably have affected the operation of the housing submarkets in the three sample sectors during the period 1970 to 1995, and have brought about general shifts in real estate values outward over the study period.

## **Relationship between This Investigation and Other Reports in the Transportation and Regional Growth Study**

In order to describe the principal features of Twin Cities regional dynamics for the period 1970 to 2000, first it is necessary to break down the subject into manageable parts (Fig. 2.1). Examining the movement of house prices along transects within three of the Twin Cities' 24 sectoral submarkets is one such task, and sheds light on how housing supply and housing demand have come together in specific places during the study period. The picture is incomplete, but an outline of major processes and trends has been portrayed.

Other investigations and reports in this series have examined changes in the study area's trunk highway network, patterns of land development within the 24-county study area, the nature of government regulation, fiscal structure of a sample of cities and school districts, and measures of how changes in the highway system and changes in land development have led and lagged one another during the study period.

## **Ideas for Further Research Once Census 2000 Data Become Available in 2002**

The decennial U.S. Census of Population and Housing was completed during the first half of 2000. Small-area sample data for tracts and blocks from the census will start to become available at the end of 2001. The sample data will include estimates of housing values and contract rents. As those estimates become available, it will be possible to extend our analysis for the period 1990 to 2000 using a consistent data set, shedding further light on Twin Cities regional dynamics.



**APPENDIX A**

**SOUTH MINNEAPOLIS (TRAVERSE B) DATA TABLES**

**Table A.1. Traverse B: Census Median Value of Owner-Occupied Housing, 1970, 1980, 1990; and Sample Median Assessed Value of Single-Unit Detached Housing, Selected Years, 1970-95; by 1990 Census Tract.**

Census Tract	Census Median Value of Housing 1970 (\$)	Census Median Value of Housing 1980 (\$)	Census Median Value of Housing 1990 (\$)	Percent Change 1970-80 (%)	Percent Change 1980-90 (%)	Percent Change 1970-90 (%)
<i>Minneapolis</i>						
60	11,400	27,500	53,900	141.2	96.0	372.8
72	11,500	33,000	43,500	187.0	31.8	278.3
79	12,600	36,300	45,400	188.1	25.1	260.3
85	14,900	45,900	58,100	208.1	26.6	289.9
96	15,900	47,200	62,400	196.9	32.2	292.5
110	18,400	54,500	75,100	196.2	37.8	308.2
117.01	21,800	64,600	92,800	196.3	43.7	325.7
117.02	24,700	66,100	90,800	167.6	37.4	267.6
<i>Richfield</i>						
247	23,200	62,600	84,700	169.8	35.3	265.1
249.01	19,600	55,500	74,000	183.2	33.3	277.6
249.02	23,100	62,100	82,300	168.8	32.5	256.3
248.01	22,500	61,400	83,300	172.9	35.7	270.2
249.03	24,600	65,100	85,500	164.6	31.3	247.6
248.02	22,300	61,300	82,400	174.9	34.4	269.5
<i>Bloomington</i>						
252.01E	21,000	59,300	80,400	182.4	35.6	282.9
252.01W	21,500	59,400	80,400	176.3	35.4	274.0
252.03N	21,900	61,400	84,000	180.4	36.8	283.6
252.03S	23,900	64,400	85,300	169.5	32.5	256.9
253.01	33,400	85,800	117,600	156.9	37.1	252.1
<i>Burnsville</i>						
607.02	35,000	77,900	104,500	122.6	34.1	198.6
607.12	36,800	84,400	109,800	129.3	30.1	198.4
607.13	36,800	86,700	113,800	135.6	31.3	209.2
607.08	33,500	84,300	118,800	151.6	40.9	254.6

Before 1990, census tract 252.01E was 252.01, tract 252.01W was 252.02, tract 252.03N was 252.03, and tract 252.03S was 252.04. Census tracts 607.12 and 607.13 made up tract 607.06 in 1970. Census median value of housing is for specified owner-occupied housing.

Data Source: *Population and Housing Characteristics for Census Tracts and BNAs*, U. S. Bureau of the Census, 1990. *Census of Population and Housing for Census Tracts*, U. S. Bureau of the Census, 1970, 1980. Calculations by authors.

**Table A.1. (cont.) Traverse B: Census Median Value of Owner-Occupied Housing, 1970, 1980, 1990; and Sample Median Assessed Value of Single-Unit Detached Housing, Selected Years, 1970-95; by 1990 Census Tract.**

<b>Census Tract</b>	<b>Sample Median Assessed Value of Housing 1970 (\$)</b>	<b>Sample Median Assessed Value of Housing 1975 (\$)</b>	<b>Sample Median Assessed Value of Housing 1980 (\$)</b>	<b>Sample Median Assessed Value of Housing 1985 (\$)</b>	<b>Sample Median Assessed Value of Housing 1990 (\$)</b>	<b>Sample Median Assessed Value of Housing 1995 (\$)</b>
<i>Minneapolis</i>						
60	11,750	12,300	23,700	35,650	57,000	49,000
72	10,050	10,500	22,200	41,300	39,500	35,000
79	11,100	12,400	23,800	40,100	43,000	36,000
85	14,000	15,800	36,000	49,400	52,000	54,500
96	13,750	17,350	39,550	56,950	60,500	61,500
110	14,750	18,500	41,900	59,700	72,000	71,000
117.01	19,500	23,100	56,000	76,400	83,300	100,500
117.02	22,000	25,150	51,400	71,350	84,250	93,000
<i>Richfield</i>						
247	22,200	27,900	56,800	74,000	80,700	89,000
249.01	23,700	30,200	60,100	75,900	80,600	88,500
249.02	19,800	26,650	54,200	71,600	76,250	81,500
248.01	20,700	27,800	54,400	71,100	76,300	83,000
249.03	17,400	22,300	48,900	65,100	71,600	75,000
248.02	18,900	24,800	50,700	67,100	74,300	80,000
<i>Bloomington</i>						
252.01E	17,040	23,000	45,200	62,300	71,000	71,350
252.01W	15,150	19,900	35,600	52,600	55,400	61,700
252.03N	17,235	24,200	46,700	64,750	74,550	79,450
252.03S	20,355	27,700	49,000	69,100	83,200	92,900
253.01	32,180	34,900	55,400	75,600	88,900	102,600
<i>Burnsville</i>						
607.02					92,350	104,500
607.12					119,600	139,800
607.13					89,200	101,700
607.08					98,400	104,700

Dakota County records were not available for the years preceding 1990. Estimated market values were used for the years 1970, 1975, and 1980; limited market values were used for the years 1985, 1990, and 1995. Assessed values for 33 properties in Bloomington were not available for the year 1970; the assessed values for 1969 were used instead.

Data Source: Hennepin County Assessor's Office, Dakota County Assessor's Office.

Calculations by authors.



## **APPENDIX B**

### **NORTH MINNEAPOLIS (TRAVERSE E) DATA TABLES**

**Table B.1. Traverse E: Census Median Value of Owner-Occupied Housing, 1970, 1980, 1990; and Sample Median Assessed Value of Single-Unit Detached Housing, Selected Years, 1970-95; by 1990 Census Tract.**

Census Tract	Census Median Value of Housing 1970 (\$)	Census Median Value of Housing 1980 (\$)	Census Median Value of Housing 1990 (\$)	Percent Change 1970-80 (%)	Percent Change 1980-90 (%)	Percent Change 1970-90 (%)
<i>Minneapolis</i>						
29	13,400	43,900	61,800	227.6	40.8	361.2
22	13,300	40,000	50,000	200.8	25.0	275.9
16	14,200	40,800	50,200	187.3	23.0	253.5
9	15,300	44,000	54,700	187.6	24.3	257.5
4	15,900	45,400	57,800	185.5	27.3	263.5
2	16,900	46,900	61,400	177.5	30.9	263.3
1.02	15,300	44,700	58,000	192.2	29.8	279.1
<i>Brooklyn Center</i>						
205	18,900	53,100	71,300	181.0	34.3	277.2
206	19,400	54,700	72,600	182.0	32.7	274.2
202	23,800	63,200	82,400	165.5	30.4	246.2
<i>Brooklyn Park</i>						
268.15	22,300	67,000	89,000	200.4	32.8	299.1
268.98	22,100	62,000	110,900	180.5	78.9	401.8

Before 1990, census tract 268.15 was 268.05, and tract 268.98 was 268.01.

Census median value of housing is for specified owner-occupied housing.

Data Source: *Population and Housing Characteristics for Census Tracts and BNAs*, U. S. Bureau of the Census, 1990. *Census of Population and Housing for Census Tracts*, U. S. Bureau of the Census, 1970, 1980. Calculations by authors.

**Table B.1. (cont.) Traverse E: Census Median Value of Owner-Occupied Housing, 1970, 1980, 1990; and Sample Median Assessed Value of Single-Unit Detached Housing, Selected Years, 1970-95; by 1990 Census Tract.**

<b>Census Tract</b>	<b>Sample Median Assessed Value of Housing 1970 (\$)</b>	<b>Sample Median Assessed Value of Housing 1975 (\$)</b>	<b>Sample Median Assessed Value of Housing 1980 (\$)</b>	<b>Sample Median Assessed Value of Housing 1985 (\$)</b>	<b>Sample Median Assessed Value of Housing 1990 (\$)</b>	<b>Sample Median Assessed Value of Housing 1995 (\$)</b>
<i>Minneapolis</i>						
29	11,850	15,000	23,500	39,200	43,700	46,000
22	12,900	15,000	28,600	49,000	47,700	42,750
16	12,000	14,800	28,650	48,900	48,850	43,250
9	12,250	16,100	32,450	47,600	50,900	49,500
4	12,000	16,900	33,600	45,900	48,200	48,900
2	10,000	13,500	26,000	34,900	36,600	46,000
1.02	11,000	16,300	35,900	48,900	53,000	52,000
<i>Brooklyn Center</i>						
205	15,600	22,000	40,400	61,800	68,600	70,200
206	16,500	21,060	41,500	60,800	68,050	68,550
202	17,790	24,640	46,500	65,100	72,850	72,850
<i>Brooklyn Park</i>						
268.15	15,000	21,165	45,900	65,100	81,800	85,550
268.98	16,125	23,915	45,550	66,200	85,200	89,000

Estimated market values were used for the years 1970, 1975, and 1980; limited market values were used for the years 1985, 1990, and 1995. Assessed values for 24 properties in Minneapolis were not available for 1985 Beginning Year; the assessed values for 1985 Year End were used instead.

Data Source: Hennepin County Assessor's Office. Calculations by authors.



## **APPENDIX C**

### **ST. PAUL (TRAVERSE H) DATA TABLES**

**Table C.1. Traverse H: Census Median Value of Owner-Occupied Housing, 1970, 1980, 1990; and Sample Median Assessed Value of Single-Unit Detached Housing, Selected Years, 1970-95; by 1990 Census Tract.**

Census Tract	Census Median Value of Housing 1970 (\$)	Census Median Value of Housing 1980 (\$)	Census Median Value of Housing 1990 (\$)	Percent Change 1970-80 (%)	Percent Change 1980-90 (%)	Percent Change 1970-90 (%)
<i>St. Paul</i>						
336	11,800	72,500	83,300	514.4	14.9	605.9
326	11,800	33,900	47,600	187.3	40.4	303.4
313	11,800	33,300	50,200	182.2	50.8	325.4
308	15,700	40,900	59,200	160.5	44.7	277.1
304	19,900	52,900	74,600	165.8	41.0	274.9
<i>Roseville</i>						
416.02	22,800	65,400	89,100	186.8	36.2	290.8
416.01	26,700	73,200	98,800	174.2	35.0	270.0
415	26,200	71,700	101,200	173.7	41.1	286.3
<i>Shoreview</i>						
407.04	27,100	78,200	113,100	188.6	44.6	317.3
407.03	27,100	76,000	101,000	180.4	32.9	272.7
407.07	20,500	71,800	116,300	250.2	62.0	467.3
407.06	20,500	71,800	120,600	250.2	68.0	488.3

In 1970, census tracts 407.03 and 407.04 made up tract 407.02. Before 1990, census tracts 407.06 and 407.07 made up tract 407.01.

Census median value of housing is for specified owner-occupied housing.

Data Source: *Population and Housing Characteristics for Census Tracts and BNAs*, U. S. Bureau of the Census, 1990. *Census of Population and Housing for Census Tracts*, U. S. Bureau of the Census, 1970, 1980. Calculations by authors.

**Table C.1. (cont.) Traverse H: Census Median Value of Owner-Occupied Housing, 1970, 1980, 1990; and Sample Median Assessed Value of Single-Unit Detached Housing, Selected Years, 1970-95; by 1990 Census Tract.**

<b>Census Tract</b>	<b>Sample Median Assessed Value of Housing 1972 (\$)</b>	<b>Sample Median Assessed Value of Housing 1976 (\$)</b>	<b>Sample Median Assessed Value of Housing 1980 (\$)</b>	<b>Sample Median Assessed Value of Housing 1985 (\$)</b>	<b>Sample Median Assessed Value of Housing 1990 (\$)</b>	<b>Sample Median Assessed Value of Housing 1995 (\$)</b>
<i>St. Paul</i>						
336	5,400	6,600	31,136	44,200	42,400	42,200
326	10,800	13,692	27,166	43,900	45,000	44,450
313	15,500	19,382	33,831	52,300	59,300	58,000
308	14,400	18,006	34,646	50,600	54,300	55,900
304	19,800	24,758	41,204	62,000	75,400	81,650
<i>Roseville</i>						
416.02	21,900	27,383	49,443	68,600	81,400	82,700
416.01	26,750	33,386	60,478	81,050	94,000	101,400
415	27,700	34,511	61,497	85,200	98,700	107,600
<i>Shoreview</i>						
407.04	28,400	36,942	72,390	88,400	107,200	106,400
407.03	22,300	29,008	62,198	91,050	105,700	107,200
407.07	24,300	30,829	57,301	87,650	111,600	117,800
407.06				157,200	168,900	207,300

Estimated market values were used for all years. Assessed values for the year 1970 were not available; the assessed values for 1972 were used instead. The assessed values for the year 1976 were then used instead of the assessed values for the year 1975. Assessed values for 10 properties in Shoreview were not available for the year 1980; the assessed values for 1981 were used instead. Assessed values for 17 properties in St. Paul were not available for the year 1990; the assessed values for 1989 were used instead.

Data Source: Ramsey County Assessor's Office. Calculations by authors.



## **APPENDIX D**

### **CONSUMER PRICE INDICES FOR HOUSING IN THE MINNEAPOLIS-ST. PAUL METROPOLITAN STATISTICAL AREA (MSA), 1970–1995**

**Table D.1. Consumer Price Indexes for the Selected Item of Housing in the Minneapolis-St. Paul Metropolitan Statistical Area (MSA).**

<b>Year</b>	<b>Index</b>
1970	33.4
1972	35.9
1975	46.2
1976	49.6
1980	74.0
1985	105.8
1990	118.5
1995	132.7

Base Period: 1982-84=100.

Data Source: U. S. Bureau of Labor Statistics.  
1998. *Consumer Price Indexes*.

The Consumer Price Index (CPI) represents changes in prices of goods and services purchased for consumption by urban households. We used the Price Index for the selected item of Housing in the Minneapolis-St. Paul Metropolitan Statistical Area to adjust our assessed valuation data and census data series into inflation-free dollars.

The Price Index for Housing is a “rental equivalence” approach to home-owners’ costs. Rental equivalence measures change over time in the value of the shelter services provided by an owner-occupied home (the value of the consumption of services provided by a home vs. the value of an investment in a long-lived asset). However, before 1983 when the Bureau of Labor Statistics switched to the rental equivalence approach, an “asset price” approach was used. This approach considered financing costs, taxes, insurance, and other expenses in calculating the index.

