The assessment of changes in land values around MARTA stations for the years 1968 - 1976

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THE ASSESSMENT OF CHANGES IN LAND VALUES AROUND MARTA STATIONS FOR THE YEARS 1968 - 1976

A THESIS SUBMITTED TO THE FACULTY OF THE SCHOOL OF ARTS AND SCIENCES IN CANDIDACY FOR THE DEGREE OF MASTER OF ARTS

BY
DAVID LEWIS YANCY

DEPARTMENT OF ECONOMICS ATLANTA UNIVERSITY

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This thesis is dedicated to

my wife, Emma
The assessment of changes in land values around MARTA Stations in the Atlanta area was first discussed with Dr. Sidney Davis, project director of the Urban Transportation Project School of Business Administration, approximately four years ago. We were addressing ourselves to the problem of increasing land values around Transit stations and the type of policy and decision-making for land use that would be addressed by MARTA. In order to assess land value changes, an empirical observation of reasonable data, describing the behavior of land values and establishing value-trends often times would have to be developed. Dr. Davis suggested a descriptive research of sales transactions around MARTA Stations before and during the advent of MARTA to determine if accessibility is a major determinant among several other factors, of land value and location desirability.

From this conversation, an examination and search of theory based on causes and trends of land value and history was begun to structure a thesis project. The purpose of this thesis was to determine if sales transaction data on land values was available, and if so, whether it was possible to trace this data as far back as 1968 around two station sites in order to establish a comparison/value trend due to the advent of MARTA. The initial research to obtain land values for 1968 through 1967 was somewhat limited and difficult to construct. However, when it was established that 1968 through 1976 data existed, it became
certain that sales transactions data could be obtained to establish land value data for individual properties located around MARTA Station sites.

Without the interest, work, and encouragement of the following persons, this thesis project would have not been completed. It is with deep appreciation that I acknowledge: Commissioner Jim Bohanam; Mr. Charles Hogan, Jr., Mr. Parsons, Mrs. Goodman and Mrs. Dance, Atlanta-Fulton County Board of Tax Assessors; Mr. Freddie Simmons, Frank Robert Associates; Georgia Archives; Mr. Richard Eltzroth, Atlanta Historical Society; Mr. Tom O'Connor, MARTA Real Estate Division; Atlanta Regional Commission; Mr. Julian Diaz and Mr. Richardson, International Appraisers and Research; Assistant Deputy, Department of Community Development of Bureau of Industry; and Mr. Mardy Norman, Trade and Research Division.

The key persons who made available the sources of 1968 through 1976 data was Mr. Freddie Simmons, Frank Robert Associates and Mr. Charles Hogan, Jr., Atlanta-Fulton County Board of Tax Assessors. The Atlanta Regional Commission and MARTA provided all the MARTA Station information used in this thesis. Mr. Richard Eltzroth, Atlanta Historical Society, spent many hours locating the appropriate old records for the properties being studied. I am most appreciative to all the above persons' willingness to assist me in the preparation of this thesis.

I am equally indebted to Dr. Sidney Davis, Urban Transportation Project Atlanta University and Professor of Economics; who freely gave his time and assistance. Mr. William Fletcher, Urban transportation project, was most encouraging and helpful.
I wish to thank Mr. Leroy Rankin for his spiritual guidance and for encouraging my success in the completion of this thesis. Again, my sincerest gratitude to Dr. Sidney Davis, my thesis advisor, for giving me his time and knowledge unsparingly and for his guidance through the many months between inception and completion of the first draft of this thesis. Dr. Davis initiated the original concept for this particular research, and I am convinced that without his help, the research would not have been attempted as early as the inception of this thesis nor this phase of it completed; to Dr. Margaret Sims, Professor of Economics and former Department Chairman, for her assistance throughout the years before completion of the thesis; to my wife, Emma Yancy, for her patience understanding, love and devotion. I wish to express my deepest gratitude to all the above mentioned professors.

I would like to thank Mr. Benjamin Hudson, Dean of the School of Arts and Sciences Department for giving me the opportunity to complete this thesis. Special appreciation goes to Mrs. Joyce Standish for editing and Mr. R. Duke Knox for the care and intelligence in the typing of the thesis. Thank you also goes to Mrs. Juane Arrington for typing the drafts of this thesis.
CHAPTER I

Introduction

During the next decade, the profile of Atlanta will undergo a most radical transformation. This transformation will occur in the long-range goals and plans of the community; office construction; highrise apartments; public buildings; commercial and industrial facilities; population and its urban environment. Atlanta has surpassed the nation and most metropolitan areas in its rate of population and economic growth,\(^1\) and these trends are expected to continue. For example, the projection of household growth for the seven-county metropolitan area is 75,000 additional people per year during the 1970's; 85,000 per year during the 1980's and 94,000 per year during the decade of the 1990's.\(^2\) The most observable molders of Atlanta's present urban form have been the several transportation systems which have emerged during its hundred-year history.\(^3\) In the past, development has followed these systems—the footpaths, the railroads, the streetcars, the streets and recently, the expressways.

Rapid transit, the newest transportation system, is expected to have a similar influence on the future distribution of people, commercial establishments, industrial employment, schools and public buildings. No major urban activity should be located

\(^1\)The projected growth rate for Atlanta is 2.9 percent annually according to statistics at ARC.


\(^3\)Land Development Analysts, "Rapid Transit Community Development Study", August 30, 1974
without some regard to rapid transit. This is not to say that all development will take place along the transit corridors; there are other transportation systems which will compete for development and limited space in the corridors themselves.\footnote{Erich Hill and Associates, Inc., \textit{Quarterly Impact Study}, Atlanta, Georgia, 1967.}

One of the fully operating modern rapid transit systems in North America is in Toronto, Canada. Toronto's rapid transit system has existed for twenty-three years. In the metropolitan area, which was approximately the size of Atlanta when construction began, rapid transit completely altered all subsequent land use patterns.\footnote{G. Warren Heenan, "The Influence of Rapid Transit on Real Estate Values in Toronto," a paper presented to the Institute for Rapid Transit Annual Meeting, Boston, June 15, 1966. (Mimeograph.)}

Land values significantly increase in cities that invest in rapid transit systems. For example, from 1954 (when the transit system opened) until 1966, the appraised value of all land and facilities in Metro Toronto increased by $15 billion. Ten billion dollars, or two-thirds of this increase, occurred along the Yonge Street Subway.\footnote{Ibid} Property within two blocks of the subway doubled, tripled and in some cases, increased as much as ten times in value. During the ten-year period from 1952 to 1962, tax assessments in the district contiguous to the Yonge Street Subway increased 45 percent in the downtown area and 107 percent in the uptown area from College Street to Eglinton Avenue, percentages representing a total increase of $136 million. At the
same time, increases in tax assessments for the rest of the city averaged only 25 percent. If real estate history repeats itself, heavy development should occur around MARTA Stations because ease of accessibility has always strongly influenced the development of real property.

Rapid transit, meaning rail transit only, creates and enhances property values like no other transportation project. The greatest cities in the world have that essential common facility—an efficient rapid transit complex. There is no doubt that a transit system has a tremendous impact on land use and consequently, on land values because it brings together two fundamental things for real estate value: people and accessibility.

The information presented in the course of this study represents a first attempt to examine land value changes around MARTA stations. Since it is a first attempt, many of the facts presented here, especially with regard to the calculation of the non-MARTA-oriented development processes characterizing Atlanta, are not as specific as might be desired. Statistical application may be impossible due to the limited data that is available on MARTA's development. Nevertheless, the methodology proposed offers a way whereby the effects of MARTA on land values in Atlanta may be calculated.

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7 G. Warren Heenan, "The impact of Rapid Transit on Business and Real Estate in the Central City", address to the combined Oakland-Berkeley Chambers of Commerce, Oakland, California, March 31, 1967. (Mimeograph.)

8 Ibid. Those great cities include: Washington, Chicago, Los Angeles and San Francisco.
In order to undertake this study, the following framework was established.

1. A general discussion of the underlying theory of land value is presented, followed by a description of the study methodology.

2. In order to establish the basic economic factors influencing general development around MARTA stations, summary presentations are made concerning:
   A. The history of the station area.
   B. Land value characteristics prior to the decision of MARTA and during the occurrence of MARTA.

3. Summarizations of the data presented are made, and the effects of MARTA on land value changes around MARTA stations are estimated.
   A. For example, a series of land value data will be accumulated in order to determine if the anticipation of MARTA produced any land value-trends. This data may identify the trends of land value changes around MARTA stations.

Theoretical Framework

The use of land, like other factors of production, is determined by conditions of supply and demand. Yet, the economic value of land must be calculated on bases other than those used for typical commodities, for the obvious reason that no cost of production is associated with land. The value of land is based on its scarcity and on the social demand for the scarce attributes inherent in each parcel of land.
The classical land-rent theory has illuminated the role that accessibility plays in the determination of the value of the land.\(^9\) If the cost of transportation were zero, then the worth of being situated close to a central market area would be negated; all properties within a region would have equal advantage in terms of accessibility. However, the cost of transportation is obviously not zero, and thus, the value of buildable land in a region is highly dependent upon the accessibility that the land affords to the central market industrial districts, shopping centers, medical and recreational facilities. The rent-cone concept was devised to explain this relationship of land-value to accessibility. As shown in Figure 1, land values in an urban region can be described as peaking at the central business district (CBD), with a gradual sloping off as distance from the core increases. Despite the fact that land at the periphery may be essentially the same as land in the central area, accessibility to the important activities of the CBD emerges as the governing variable in the bid-price of land. In a market situation, developers will be willing to trade off a high cost of land for the low cost of transportation to the central city. Thus, the highest land values in a region will inevitably be those in the core of the city itself, where accessibility to the activities of the regional

---

FIGURE I

THE RENT CONE CONCEPT
The location of particular types of uses or firms within the central city is governed by the principle of "highest and best use", that is, that firm which can derive the greatest marginal productivity increase from a particular location will pay the highest rent for that site. Therefore, wherever a labor intensive use, i.e., banking, insurance, can derive great employee benefits from being situated close to shops, restaurants and public transportation nodes, it should bid for the central city sites. Such a situation results in the location, for example, of office facilities rather than heavy manufacturing uses within an urban downtown area.

These two factors of accessibility to market areas and highest and best use of land are only two of the factors which basically characterize the principles operating within such cities as Toronto, San Francisco, Montreal, Washington D.C., and Philadelphia. The factors operating in the above cities, along with rapid transit, will be discussed thoroughly in Chapter 2. With the advent of a rapid transit system, complemented with other factors, assessibility of the station areas to the central business district will increase, thus, according to theory, the desirability of land at the station and its value may also increase.

10Douglas B. Lee, Jr., "Bart II--pre-Bart Studies of Environment, Land Use, Retail Sales, Part III," in Land Use and Investment 4, Market Street Study (Berkeley: University of California, June, 1973).
11Ibid.
A general discussion will be presented in Chapter 2 on land use and value impacts of rapid transit experience in other cities, what other factors are consistently important and how powerful transit improvements are in comparison with other factors. At this time, however, it is necessary to list the various factors involved. These factors include land availability, its ease of assembly, the social and physical characteristics of the area, general economic conditions, community support, zoning incentives, and public land use policies. In addition to those noted above, the geographical restraints and inducements of ethnic groupings, natural topography, prior development and its value, and early land use controls and taxation policies all have significant effects along with transit. Conversely, when these forces are absent or weak, few land use and value impacts were found. Also, negative forces such as community composition and opposition, physical constraints, and lack of demand for new development can dominate the positive factors, as will be presented in Chapter 2. These factors can be expected to play a key role with rapid transit to impact land use and value around the MARTA transit stations in Atlanta.

Methodology

In order to undertake an empirical examination or test of the assessment of changes in land values around MARTA stations in the Atlanta Metropolitan Area, the following methodology was adopted. First, two station areas and a time frame had to
be defined. The time frame of the study covers the period from 1968 to 1976. The following factors were significant influence in the selection of the station sites chosen:

1. The station sites will encompass only one county to simplify the search for land value changes.
2. The station sites must be restricted in size to the point that data can be handled in the time permitted for this phase of the research.
3. The station sites must encompass adequate room for expansion for office space, high-rise apartments, commercial sites and residential space.
4. Finally, the station sites must basically characterize the rent-cone concept, and the highest and best use of land that operates within and/or near the downtown area of Atlanta.

These factors are the only considerations needed due to the certain power of attraction that may develop around accessible transit station sites. This power is created by a degree and rate of development which has defined it in the past, and thus, can reasonably be expected to define it in the future.

The station sites selected that fulfilled all of the above requirements was the Tenth Street Station, a commercial area, and the West End Station, a residential-commercial area. These station sites were chosen in order to determine some of the real effects that the anticipation of benefits from rapid transit stations have on land values and the future prospects that
will eventually influence current urban land values in their area. These station sites are located on MARTA's thirteen mile line, known as Phase A.

Selected parcels will be examined around each station site where development has been proposed to take place. The parcels to be examined are two blocks, a 1,200-foot radius, in either direction from each station site. According to officials at MARTA and ARC, development is supposed to take place in a 1,200-foot radius from each station site, two blocks in either direction from the station site. The rationale for this development is the enhanced quality of the station site which comes about through its enhanced accessibility. Furthermore, the peaking of land values, illustrated in the rent cone concept described above, is generally accompanied by a peaking in development intensity within a region. Thus, the central business district, in which land values are generally at their highest, will also support the highest development intensities.

On a more microscopic level, this same process can be expected to occur in the areas immediately adjacent to rapid transit stations, where enhanced accessibility of rapid transit should, according to theory, attract higher land values and higher intensities on the average than would occur elsewhere within the central business district. In order, then, to compare theory with fact, parcels were examined with a 1,200-foot radius of each station site; that is, in those areas within
the immediate influence of the two MARTA stations.

Information regarding changes in land value was obtained from the City/County Tax Assessors Office and Frank Robert Associates, real estate appraisers. The land value data assembled from the City/County Tax Assessor's Office and Frank Robert Associates will constitute the underlying emphasis of the study in determining land value changes around MARTA stations. The land value data is presented in Chapter 3. Accordingly, MARTA will be viewed as the prime emphasis, along with other determining factors, contributing to land value changes around MARTA stations. These factors were discussed above in the section designated "Theoretical Framework."

The assessment data needed were as follows:

1. Assessment data prior to the announcement of the decision to build MARTA.

2. Assessment data succeeding the announcement of plans to construct MARTA.

3. Assessment data for parcels of land around MARTA stations, preferably the selected radius in feet from the MARTA station, representing that area which is within the immediate accessibility range of the station. The select radius from each station site is a 1,200-foot range, two blocks in either direction from the station. This radius will determine the parcels of land to be tested for land value changes.

The strategy used to gather the above data was very time
consuming because of the difficulties in securing data prior to the announcement of MARTA eighteen years previously. Thus, the objective of the research was to establish a methodology for obtaining land values of identical parcels of land for the years 1968 through 1976. Initially, the years 1964 and 1966 were included for study, but insufficient data for the two years prohibited their inclusion. Although tax assessment records were available for those years, it was impossible to find deed records for the parcels of land being studied. It was assumed, by individuals working in the deed room, that the deeds had never been recorded for those parcels of land necessary for testing.

At the same time, maps were being assembled to give adequate locational information of land parcels in the years 1968 through 1970 in order that the same parcels could be identified easily on 1971 through 1976 documents. A precise mapping of land lots, streets and landmarks was needed. The maps were located in the City and County Tax Assessor's Office for the years 1968 through 1976. Information regarding the transit stations themselves was received from documents at ARC.

Granted that sales are considered a primary factor in determining value, grantors, grantees and sale transaction dates of properties had to be compiled from the field books in the City/County Tax Assessor's Office. In turn, deed records were traced in order to determine a fair market value of the parcel of land being studied. However, the majority of documents gave few or no clues as to sales transactions due to the lack of value indicated on the records. Every deed record available
for the land parcels established was studied carefully for an indication of land value. For instance, sale transactions for the properties were noted by a federal stamp, such as a one-dollar or two-dollar stamp, meaning $1,000 and $2,000, which the majority of the deeds did not indicate.

At this point, a decision was made to seek another source of information, namely, Frank Robert Associates and James D. Landauer Associates, real estate appraisers. Due to the excellent information given by Frank Roberts and James Landauer Associates, it was possible to locate the parcels of property for the years 1968 through 1976.

The parcels of property were selected based upon the methodology approach of the thesis (i.e., parcels were selected two blocks, a 1,200-foot radius, in either direction of the station site). From their real estate atlas, land lots, streets and landmarks were determined and subsequently, the appropriate records for the properties to be studied were located. Sources examined included: tax cards, indicating sale transactions of every land parcel in Fulton County being sold; a real estate atlas of Fulton County, Georgia, identifying the land parcels being examined; and Real Estate Today and Lusk's Real Estate Directory, listing the sale transaction of land parcels sold by the day, month and year in Fulton County.

The information presented tracts of land that had been subdivided or combined into one ownership. Each parcel of property, whether subdivided or combined, was treated as a single entity
for the years 1968 through 1976.

After 1968 through 1976 sales transaction data for the years 1968 through 1976 were established, land value data were obtained for each individual property. This source was much easier to locate because the City/County Tax Assessor's Office had this information on appraisal cards, located in files at the Atlanta Historical Society Building. Data for the years 1972 through 1976 were located in files at the Fulton County Court House. There were 53 values for land parcels established for the years 1968 through 1976, but only 21 values for the years 1971 through 1976 could be used. Thus, since the remaining 32 values for land parcels had insufficient data and land values for the period 1968 through 1970, they were eliminated. The sales transaction data for the years 1968 through 1970 also had to be eliminated.

Since all land parcels studied were recorded and identified according to size at a specific location, it was necessary to reduce all parcels to a common denominator of size, after which value could be stated according to the determined unit of measurement. A square-foot measurement was deemed most applicable for a comparison, i.e., a dollar per square foot was deemed most applicable of land value data for the years 1971 through 1976. Thus, all parcels were broken down into the number of square feet for each parcel, and subsequently, the dollar value per square foot was determined. For example, a 150' x 175' lot valued at $1,000 in 1968, would be 26,250 square feet at $.038 per square foot. The same parcel in 1973 assessed (land value)
at $2,500, would have a square-foot value of $0.095—an increase of 250 percent.

A margin of error was possibly introduced here in utilizing "land" value as opposed to "improved property" value in the years 1971 through 1976. Since the appraisal cards simply recorded the price of the entire property at the time of the change of ownership, the assessment ratio was only 40 percent of the market value at that time (1971 through 1976). During this period, the State of Georgia assessed property at 40 percent of the fair market value, but added an additional 12 percent to the current ratio because it was connoted that the ratio was too low. Therefore, it should be noted that employing this "judgmental" uniform ratio would safeguard the relationship among all data for the test years.

The original intent of the thesis was to determine if the advent of MARTA generated (or gave rise to) any land value changes around its station sites over the time period specified. Hence, the next step was to develop a technique to display the derived data on land values in such a way that value-trends, if any, would be exposed. This technique will be developed in Chapter 3.
CHAPTER II

Previous Studies of Land Values

A reasonably large body of theory exists based upon causes and trends of land values. Wendt theorized that "the total market value of urban land will equal the discounted value of average future net annual returns."\(^1\) Wendt further contended that "the value of urban land at any time will be based upon the expected future return capitalized at a rate reflecting investors appraisal risk."\(^2\) Ely concluded that an increase of efficiency in land utilization caused downward trends in value.\(^3\) Ratcliff hypothesized that the automobile caused a decline in the value of central business areas.\(^4\)

Dorau believed that de-urbanization forces were set in motion by the automobile, but that the change in the value of the dollar and capitalization rates obscured the downward trend in values.\(^5\) Hoyt studied Chicago real estate and concluded that the population increase of a city had a direct influence upon


upward trends in land value and that changes in expected in-
comes and capitalization rates affected value trends. Economists are in general agreement that it is the formation of people into communities which gives use to the utility and scarcity of urban land, and hence, to its value. Dorau and Hoyt did not indicate behavior of value on single parcels, and very little quantitative data on land value has been amassed to support the above noted theories.

An historical consideration of land-values recorded from the time of our earliest settlements provided background for the consideration of land-value contours. Land values from our earliest beginning as a nation plotted on a map probably would produce contours similar to a topographic map showing land-value peaks along the waterfronts of the port settle-
ments that grew to be the first cities in the United States. Between 1850 and 1890, railroads probably caused a peak shift as the rail lines opened up the inland territories and pro-
vided additional focal points of transportation and communi-
cation activities.

The era of 1890-1910, with cable cars, subways, elevated railways, and street cars, brought another peak shift as the downtown areas of cities became the center of business and trade. Downtown development and land values increased until

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6 Homer Hoyt, One Hundred Years of Land Values in Chicago (Chicago: University of Chicago Press, 1933).


8 Ibid.
after World War I, when the automobile, the New Deal and Federal Highway Administration came into being. These programs, along with automotive technology, made it possible for people to live away from the central city and travel downtown to work and purchase needs. After World War II, the development of the shopping center began a duplication of downtown. Another value peak shift located in areas on the periphery of the city where great parcels of land were opened up with the development of the expressway system.

Four empirical studies of land values have been conducted for the Atlanta area. The first, completed in 1903, was a study of front-foot values in the central business district. Hurd reviewed the evolution of urban land value to determine the principles of land values as a means of reducing error in forecasting. He summarized that for land that is suitable only for a single purpose, its value is proportionate to the degree that the purpose is served and the amount that such use can afford to pay. When land is suitable for more than one purpose, then one use or utility competes with another, and the land goes to the most profitable utilization.

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9 Ibid.
10 Ibid.
11 Richard M. Hurd, Principles of City Land Values (New York: The Record and Guide, 1924). Atlanta was one of ten cities of the U.S. in the study. Hurd was the president of a mortgage company and had access to records of real estate sales in the sample cities.
12 Ibid., p. 145.
In 1957, another study, using the values compiled by Hurd in 1903, was completed showing a relationship between land use and land value in the central business district of Atlanta.\(^{13}\) The question addressed in this research was whether or not land value principles had changed in the years 1923-1953. The study showed the major value shifts in land values in downtown Atlanta as businesses moved to new locations outside the central city.\(^{14}\)

In 1960, a third study of Atlanta land values was conducted to determine the economic impact of the North and Northeast Expressways on land values and land use. The primary emphasis of the study was on how changes in use and value occur over time and the spatial patterns these changes make.\(^{15}\) Lemly concluded that even though further improvement is needed in classification of uses and determinants of value, "the data support a tentative conclusion that land use and land value can be treated analytically as two branches from the same stem of economic relationships."\(^{16}\) The most important conclusion drawn from this study was that changes can be identified more readily within a time frame. A systematic procedure for "area-value"


\(^{14}\) Ibid., pp. 31-36.


\(^{16}\) Ibid.
mapping can be developed.\textsuperscript{17} Area-value mapping would provide value for each land parcel in the area.

In 1975, a fourth study was conducted concerning land values for a sector of Atlanta and Fulton County for the years 1920-1970.\textsuperscript{18} This study dealt with land value trends systematically on a comparative basis. The objective was to determine if the flow of value from one given point to another could be demonstrated in a manner that would expose a value trend, if one existed. However, there was no evidence of value trends, only value changes over time.\textsuperscript{19}

Another study concerning public transit was conducted in San Francisco in order to determine some of the real effects that the anticipation of benefits from the Bay Area Rapid Transit (BART) has on land values and office building construction activities in downtown San Francisco.\textsuperscript{20} Although it was difficult to isolate a unique increment as attributable to BART, case studies indicated that the rapid transit system has effected the location of new office buildings, the migratory trends of major San Francisco firms and the value of the land in the downtown area.

\textsuperscript{17}Ibid.

\textsuperscript{18}Fanny Jarvis Bruce, "A Comparative Study of Land Values for a Sector of Atlanta and Fulton County for the Years 1920 and 1970" (thesis, Georgia Institute of Technology, 1975).

\textsuperscript{19}Ibid., p. 20

\textsuperscript{20}Lee, Jr., "Bart II--pre-Bart Studies."
The city of San Francisco has enjoyed a healthy increase in real property values since 1960. Vidgor, in his report, "A Study of Price Movements in Trends in Financing--1960 to 1964" (based on selected sample residential properties in San Francisco Area), shows an average yearly increase experienced during the same period in Washington, D.C.'s Metropolitan Area.\textsuperscript{21}

With the present state of confusion in Washington, D.C., it is difficult to predict property value trends in and around future subway stations sites, as stated by Davis. In Davis' opinion, Washington, D.C. Metro system is approximately eight years behind BART. His personal viewpoint of the substantial increases in property sales prices for residential and downtown areas in San Francisco presents a typical view of what may occur in many neighborhoods surrounding the location of the Metro system station sites. Moreover, Davis felt that the future real estate development pattern for the Washington SMSA should be significantly influenced by the rapid transit system within the next twenty-five years and beyond.\textsuperscript{22} Further examination of recent studies may reinforce what impact rapid transit has had on land use and value in Toronto, Montreal, San Francisco, Philadelphia, Washington, D.C. and Chicago. This portion of the examination describes evidence of impact of these cities.

\textsuperscript{21} Frederick W. Davis, "Proximity to a Rapid Transit Station as a Factor in Residential Property Values", The Appraisal Journal (October 1970): 159-60.

\textsuperscript{22} Ibid.
Toronto

Because of the widespread interest in the Toronto subway's land use and value impacts and the importance of the city's structure and growth patterns in understanding those impacts, this description is more detailed than other cities covered in this review. The Toronto rapid transit system, operated by the Toronto Transit Commission (TTC), is a 26-mile conventional heavy rail network. To date, most all of it is in subway, although about 3.8 miles of the existing system are in open cut or on bridges and parts of a 6.25 mile extension which opened late in 1977 (the Spadina Line) is above-grade. The system was built in several stages, with the first 4-6 mile segment of the Yonge Street Line opening in April, 1954. The system has 49 stations, for an average station spacing of slightly over one-half mile. The original Bloor and Yonge Street subway lines were entirely within the City of Toronto. Later subway extensions have stretched beyond the city boundaries into three other boroughs. The city and five neighboring boroughs together form the Municipality of Metropolitan Toronto (Metro).

The most visible indication of the Toronto rapid transit system's possible impact is the intensive high-rise development which has occurred near many of its stations. Extending along the transit lines radiating from downtown, much of this development is in the form of 10 to 20-story buildings clustered around subway stations and surrounded by expanses of
older structures from one to three floors in height.

Several authors (e.g., Heenan, Kearns and Wacher 23, 24, 25 have commented on the development pattern in Toronto, pointing out its apparent focus on the transit lines. Over the five year period from 1959-63, which is generally acknowledged as the beginning of Toronto's transit-related development period, over 48 percent of all high-rise apartment development in the City of Toronto occurred in four of the city's 24 planning districts. All four districts (Yorkville, Annex, Deer Park and Eglinton Park) are centered on the Yonge Street subway line just north of downtown. This development was much greater than that occurring in comparable or even larger U.S. cities; the transit-centered portion alone was some 4,133,000 of a total of 8,512,000 square feet of office space.26 At the same time, 90 percent of all office construction (5,036,000 square feet out of 5,595,000) occurred in three districts (Downtown, Yorkville and Eglinton Park) also along the transit line.


24 James Kearns, "The Economic Impact of the Yonge Street Subway," address to the American Transit Association 83rd Annual Meeting, New York City, September 1964. (Mimeograph.)


26 Heenan, "The Influence of Rapid Transit."
Heenan, whose writings on this topic have been quoted more than those of any other author, summarized this development by asserting that "two-thirds of all new development in a five-year period was put in place within five minutes walk from the Yonge Street Subway...There is no doubt that a subway has a tremendous impact on land use and consequently land values." Although apparently true in principle, in fairness, this dramatic conclusion must be tempered by several factors not mentioned by Heenan. First, the Yonge Street corridor and downtown were the most heavily traveled and populated areas in the city even before completion of the subway; employment was mainly downtown-centered and a greatly over-loaded streetcar line, one of the world's busiest, had been on Yonge Street for many years. These planning districts were therefore logical places for intensified development even without the subway, and in fact, a substantial proportion of the city's development had already occurred there.

Second, as noted in the earlier description of Toronto's post-war growth, many things not related to transit were generating a rapid rate of development. The encouragement of immigration, Toronto's favorable geographical position, stable political situation, employment opportunities and the lack of major social and ethnic problems are examples. In addition, the late 1950's and early 1960's were a period in which capital was available for development, after a period of "tight

27 Ibid; p. 5.
money." This available capital led to a surge in construction to ease the city's housing shortage; urban apartments were the logical emphasis, since many of those needing housing worked downtown and either could not afford or did not want houses or cars.

Third, the total square footage of new offices and high rise residential buildings cited by Heenan is not the total of all new development in the city, since lower-density housing and other uses were being developed as well. Much of this development was not near the subway. Thus "two-thirds of all new development" in the city did not occur in the planning districts noted by Heenan. Further, Heenan's figures are for the City of Toronto only; a very large amount of development was also occurring at the same time in Metro's five suburban boroughs and beyond.

Heenan's most oft-quoted statement also bears some inspection, since it is derived from his conclusions discussed above.

This small investment (the original $67 million Yonge Street subway) ignited a $10 billion development explosion along the route from Front and York Streets to its northern terminal, Eglinton Avenue. The appraised value of all the land and facilities in Metropolitan Toronto is now $50 billion. $15 billion of this appreciation in physical value has been added in the last ten years and two thirds of this is attributable to the existence of
This statement is apparently a substantial overstatement of the facts and bears correction to protect the credibility of more moderate claims. First, an appreciation of $15 billion in ten years amounts to an annual rate of only about three percent. Much of this must be attributable to inflation, not real growth. Second, the attribution of "two-thirds" to the subway is apparently based on the location of two-thirds of the city's office and high-rise residential construction in planning districts near the line, as already discussed. But this was for a period of five years (1959-63), not ten, and moreover, applied only to the central city, not to all of Metro.

The real growth along the subway line can therefore be only a very small fraction of the $10 billion cited by Heenan. Finally, even some of that small fraction must be attributed to the other powerful factors (immigration high cost of low density housing, etc.) which worked independently of the subway to encourage concentrated development. Consequently, the subway and its related factors (focused zoning, increased downtown accessibility, etc.) probably had a significant impact, but much less than that claimed by Heenan.

Abouchar used a large data set of residential sales prices

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28 Ibid; p. 3.
and descriptions for the 1965-72 period. By regression methods, he concluded that the subway has had no impact on the value of the properties studied. However, the study's time period began eleven years after the first subway line was opened and also after most of the rest of the system was either approved or well under construction. Therefore, it is likely that much of any impact on land values had already occurred and would not be detected.

In addition to the subway and the demand-related factors discussed earlier, the land use policies of the City of Toronto and other boroughs have been an important force in the channeling of new development into areas near the subway stations. Since these policies are not only important but also somewhat unique, a brief explanation should be useful.

It is important to recall that in practice, even if not as intended, land use control has been basically a function of local rather than regional government. Thus, until now, the City of Toronto, not Metro, has been responsible for zoning and other planning initiatives. Metro has wielded potential influence over land use largely through zoning and its responsibility for infrastructure, particularly the location, sizing and timing of transit and sewer lines. However, in practice, this potential power, as well as the broader powers described

earlier, has apparently not been used against the policies or plans of the local governments. The result is that the City's authority over land use within its boundaries has been more or less complete.

With respect to control of land development around transit stations, the City's position in the first few years following the opening of the Yonge Street line was merely to react to the proposals of developers, which were generally for intensification of allowable densities. However, as early as 1952, the city formally designated much of the downtown area for intensive high-rise, multiple-use development, typically with a maximum floor area ratio of 12:1. This allowed buildings of fifty stories or more on open sites, contrasting sharply with the then-existing low-rise skyline. Most of the area involved was within a few minutes' walk of a transit station. Since no other areas of the city (or of Metro, for that matter) were zoned to allow such intensive development, this was a powerful incentive to downtown redevelopment.

The city's planners and policymakers were also quick to realize the potential for intensive development around the subway stations away from downtown. Developers were encouraged to attempt such development, first with case-by-case spot variances in allowable floor area ratio and later by a comprehensive policy which allowed high-intensity development within walking distance of most stations. This policy, enacted in 1959, generally defines this radius as 750 feet, but typically
excludes areas of stable, low-density, residential use where so desired by neighborhood property owners. Lesser bonuses are available farther from stations, along some of their feeder bus routes.

The city's affirmative policy toward intensification of station-area development is extremely important, since compared to most U.S. cities, few areas not directly served by the transit system have been allowed such intensive development. Most of the remainder of the city (apart from downtown) is almost entirely built up in structures not over approximately five stories in height. As a result, the transit station areas are virtually unique in their ability to accommodate high levels of construction investment with relatively simple land assembly. The Toronto skyline, with its characteristic high-rise nodes at transit stations towering over an expanse of otherwise almost uniformly low buildings, is eloquent testimony to this policy's successful implementation. It is only lately that high-rise apartment development has occurred in the boroughs away from transit stations; there, developments, almost without exception, have been related to expressways and their interchanges.

A review of the data available on station-area development, augmented by direct inspection and interviews with planning officials, shows that the timing, extent and nature of

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30 This does not mean that such development away from transit stations is insignificant; however, there is substantial new high-rise development along several freeways, such as 401 and 427 South. A specific example is Thorncliffe Park, which was built away from the subway in East York with many 10-15 story apartment buildings.
development have varied greatly from station to station. The factors contributing to the occurrence or absence of development have also varied. In the following pages, the development along several of the major segments of the subway system is described, along with a review of the apparent causes of such development at representative stations.31

Downtown Development.

As described earlier, there has been extensive construction of high-rise commercial office buildings in downtown Toronto since the inauguration of the subway system. Most of this construction began in the early 1960's. Some observers argue that the subway system made this development possible by expediting travel into and out of this formerly very congested area. Other previously-cited factors, such as the region's overall demand for office space and the availability of capital, were also of primary importance. In addition, several officials pointed out that the City of Toronto aggressively promoted downtown development during the 1960's and early 1970's. High-guilding densities were allowed and zoning bylaws were generally permissive. Allowable floor area ratios (FARs) were increased throughout most of the downtown area, most of which is also within two or three blocks of a transit station, either on the Yonge Street or University Avenue subway lines.

Also contributing to development was the local government's decision to build a new City Hall downtown. This $60 million public investment, in the city's former Chinatown, was an important force in improving the area's attractiveness for further development. Both city and Metro government offices are included in this complex. However, the City Hall is at the northern boundary of the historical "Financial District," and major new downtown development has not spread beyond this boundary.

Canadian banks have been the biggest and earliest investors in new construction downtown. The first large development in 1968, was Toronto Dominion Center, a two-building complex (one of 56 floors) housing the Toronto Dominion Bank and also providing office space for lease. This was followed by large office buildings of the Canadian Imperial Bank of Commerce, the Bank of Montreal and the Royal Bank. These large developments occurred just south of the prior downtown center on land formerly occupied by industrial as well as commercial buildings; all were within a few blocks of a subway station. Their size and prestige made further development of this area almost inevitable.

The same downtown area is also the historical retail sales center of Toronto. Several large department stores and many smaller stores have been in their present locations for as long as 100 years. Although Toronto has a number of large suburban shopping centers, most with branches of these same
downtown stores, the main department stores have also strengthened their downtown operations. Most notable among such efforts is the just-opened (February, 1977) new Eaton Centre, a massive in-town shopping center ultimately planned to include 250 stores in conjunction with a 1,000,000-square-foot Eaton's department store. In addition to its own large parking garage, the center has direct connections to two subway stations and added a third when the Centre was completed. According to local officials, the major factors in the decision to build this shopping center were the store's long-standing ownership of most of the land needed, a desire to consolidate the store's downtown operations (which were previously spread among several older buildings nearby) and a belief in the continued viability of the downtown area as a retail center. This confidence was apparently based on the massive new development and increasing office population in the area, and is indirectly but inevitably related to the improvement in downtown traffic circulation as well as access brought about by continued expansion of the subway system.

The 1954 Yonge Street Subway.

Aside from downtown, substantial new development also has occurred around some of the stations farther north on the original Yonge Street subway line. The two most obvious are Eglinton, the original northern terminus, and Davisville. At Eglinton the TTC build a large terminal and a bus station for the heavily used feeder bus lines which converge there. This station
site had long been an important transit transfer point and the site of intensive pedestrian and auto traffic. Development has occurred primarily southeast of the station along Eglinton Avenue for about three blocks, away from stable residential neighborhoods, and where TTC land was already assembled and available. Two high-rise office developments have been constructed at the intersection of Eglinton Avenue and Yonge Street, at or adjacent to the station, and both have direct underground connections with the subway. The Canada Square high-rise complex is situated directly over the subway station and TTC bus garage, thus utilizing air rights opportunities. The other development adjacent to the station consists of two office buildings and two apartment complexes combined with some retail activity.

Danville is of special interest because of the variety of forces which have been important in its development. The availability of a large, old wood and coal yard adjoining the station allowed one developer to build Radcliffe Towers, a large high-rise apartment complex of several buildings. In addition, TTC chose this station as the site for its own new headquarters in 1958. The TTC also built a large transit car maintenance and storage yard here and in 1966, negotiated a lease of the air rights over this yard for a private development of 1,400 apartments and nearly 500,000 square feet of commercial space in four 39-story towers. According to the TTC, the developer has been paying an annual site rental of
$85,000 plus taxes; however, no development has been allowed by the City because of objections of neighboring residents to this scale of land use intensification. Similar objections have completely prevented any intensive transit-related development at several other stations, such as Summerhill and Resedale.

A main intersection of the Bloor and Yonge Street subway lines presents a particularly instructive case. Before the subway was built, this was a stable, high-quality shopping and professional office area primarily of two and three-story buildings. The first building constructed on subway air rights was here, but was only a seven-story structure. With only one exception, no other development occurred at this station for many years. Within the last five years (over twenty years after the first line began operation), high-rise office buildings and a major department store have been built on two of the intersection's four corners, while the other two corners remain occupied by small, two-story structures. Several other large high-rise developments have also recently occurred within a block or two of the station.

North Yonge Extensions.

Substantial development has occurred and is continuing at some, but not all, of the system's four newest stations, opened in 1973-1974. Here, as in many station areas opened earlier, a variety of forces have contributed to development. For example, the Sheppard Station area has been proposed as a regional sub-center in accord with the current emphasis of Metro and city
planning policy on decentralization away from downtown. Two large private office buildings and a federal government office building (for 3,000-4,000 workers) have been built over the subway station across the street. Since this area had been developed previously in only low-density strip commercial uses, land assembly and community support present no major problems. In addition, the area is well served by bus as well as rail transit and an excellent road network.

On this most-recent line, as with elsewhere on the system, development has not been extensive at most stations with commuter parking lots. No air rights development has occurred over the TTC's parking lots, and little intensive development has occurred nearby. Reasons for this are not clear. One possible reason is that surrounding development and land values have not yet increased enough for the air rights to become attractive and viable sites. Still, the availability of transit service (and land, in the form of air rights) have not induced such increases. Observation also indicates that the lots themselves detract from the attractiveness of their general surroundings for intensive development and also tend to isolate the stations from easy direct access from any buildings which might be build nearby. Also, the largest lot (at Finch Station, the present terminus) is located on a hydro right-or-way under high-voltage lines.

Evaluation.

The foregoing evidence clearly shows that the Toronto subway system has had a major impact on the distribution and
intensity of development, even though not the $10 billion in new development which has been cited by some observers. The subway, in conjunction with appropriate zoning and development policies, has helped to strengthen the Toronto central business district. The subway has also encouraged the concentration of many apartments and offices in relatively small areas well served by transit rather than dispersal throughout the region, which in turn, has probably led to substantially less disruption of neighborhoods than likely otherwise. Equally important, the evidence demonstrates that the transit system was not the single cause of these effects. A variety of economic and social factors combined to create a heavy and continuing demand for new central-city office space and apartments—a demand unparalleled today in any U.S. city. Recent historical forces, such as European immigration which insured a strong orientation toward transit usage, are also without parallel today in this country.

These factors, in turn, including transit access, provided a powerful rationale for the city's subsequent policy of encouragement of development at the transit stations. This policy was of paramount importance because of the scale of land use intensity which it permitted, often four or five times that possible in any other locations. Beyond the importance of these general forces, the availability of large or easily assembled tracts of land has been shown to be an important factor in determining whether a specific station area
will be developed. The subway air rights leases have been shown to be an effective way to help make land available and also to generate substantial revenue. On the other hand, neighborhood opposition has been seen to be a powerful deterrent to development, even when all other factors are advantageous.

Obviously, much can be learned from the Toronto experience which can be applied in the United States. At the same time, in such applications, it must be recognized that the large scale of impact observed in Toronto is due in part to factors in addition to transit which are not now present in U.S. cities. Toronto, in the mid-twentieth century, in fact, appears to be more similar—in demographics, immigration, residential and travel preferences, economic growth and other key factors—to the typical large United States city at the turn of the century. However, with the onset of currently developing constraints on auto travel and dispersed development (notably energy shortages), the model which Toronto provides today may become more and more relevant to the United States tomorrow.

Washington

The Washington area's new METRO rapid transit system has been under construction since 1969, after some fifteen years of planning. Formal adoption of the route was in 1968. Of the projected eight-line, 100-mile system, a four and one-half mile segment, with five stations, has been in operation since
the spring of 1976. Two more stations were recently opened. Another line, 19 miles in length and with 13 additional stations, opened in 1977. These first two lines intersect near the White House, at the Metro Center station. Completion of the full 100 miles is in doubt. The construction schedule has been lengthened, and alternatives for much of METRO's planned suburban mileage are under study. Completion of at least 60 miles is apparently assured and scheduled for operation by 1982. Forty-eight miles of the planned system are underground, with most of the remainder at-grade paralleling rail or highway right-of-ways. Thirty-eight miles are to be within the District of Columbia, with the remainder (of the full 100-mile system) evenly divided between suburban Virginia and Maryland.

Metro Center - Gallery Place.

It is clear that METRO did influence the Redevelopment Land Agency's (RLA) (the local urban renewal agency, subsequently absorbed into a broader city agency) selection of properties for acquisition and redevelopment. The RLA elected to concentrate its acquisitions around the two main METRO transfer stations, Metro Center and Gallery Place. Both stations are a few blocks east of the White house, along G. Street, a part of the old downtown retail center of Washington. Much of this area was substandard, although fully developed in

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commercial and residential structures. Ownership tended to be dispersed, with many small parcels and a high degree of trusteeship. The RLA attempted to encourage private developers to assemble and redevelop the area, but land assembly under such conditions was apparently too difficult. As a result, in 1970, the RLA was authorized by the Planning Commission and the City Council to use Federal renewal funds to purchase selected properties otherwise eligible under local and Federal regulations at these two stations. The RLA now owns portions of four blocks at Metro Center and an entire block at Gallery Place.

Thus far, however, none of this land has been sold or redeveloped. One major private development was proposed for the Metro Center holdings in 1973, but the developer failed to obtain financing during that inflation-recession period. Another developer recently (1977) had an option on some parcels, but had not committed the financial backing necessary for development pending agreement with the city regarding a public lease of some of the space. Thus, even with public land assembly, a central location and maximum potential access by rapid transit, and some initial transit service actually in operation, private development activity has not yet materially increased in this older portion of the CBD.

In the same general area, two blocks north of these two stations, is the site of the city's convention center. This site was chosen largely as an impetus to further renewal of
the area, but also because of its ideal access by METRO. Construction of the convention center had been stalled for several years because of the many required approvals, including those of several Congressional committees. However, the project is now completed. Apart from these public efforts, one substantial private investment has been made at the Metro Center station in the form of a direct underground connection between the station and a major department store (Woodward & Lothrop). This $1-million project was entirely financed by the store. No other evidence of development or of unusual increases in land value were found in this area.

Friendship Heights.

The Metro subway station here is situated on the boundary of Maryland and the District of Columbia near Bethesda. It is a prime uptown suburban retail shopping district within a high income residential area. In the 1950's and 1960's, a number of high-rise residential developments, offices and retail shopping facilities were built here. Several additional retail and office developments have been proposed or are under construction in the station area. Their location is primarily attributed by local officials to the attractiveness of the area, with the presence of Metro acting as an additional but not pivotal inducement.

The prestige Neiman Marcus (N-M) department store is being constructed adjacent to the station as part of a 50-store shopping complex. N-M's location here was a marketing decision based on the desire to take advantage of the existing
consumer appeal of Saks Fifth Avenue and other prestige stores already established nearby. Auto access is expected to continue to be dominant, and no provisions have been made for direct access to the subway station from this or any other development in this area. Also adjacent to the station, a large office/commercial complex was proposed by the landowner as a redevelopment project. The plans called for increasing the existing 125,000 square feet of retail/office facilities to nearly 750,000 square feet. The proposal was ruled out by the County Council because the proposed increase would exceed overall density requirements established by the official development for the area. Very little additional development has taken place recently in the station area due to the County Council's desire to adhere to limitations established in its development plan.

Potomac Avenue.

This station site was analyzed and reported by Reynolds & Reynolds for the joint development study.33 Here, a private developer assembled a block at the station for a government office building, but the required rezoning was denied. This station is at the edge of the increasingly affluent Capitol Hill residential area, where extensive private restoration of homes has been in progress for years. These residents have

effectively opposed such changes in zoning. The site in question is now zoned for mixed commercial and apartment use, but remains vacant. Reynolds & Reynolds assert that the developer's selection of this site was definitely due to the anticipated METRO station.

No other new construction was underway or planned at Potomac Avenue at the time of the Reynolds study. Based on their knowledge of the area, experience in real estate evaluation and a case-by-case review of local property transfers, they concluded without further discussion that the added convenience of METRO is likely to increase nearby land values by approximately twenty percent, or from $13 million to $20 million, within twelve years. However, as with the other Reynolds forecasts, no explicit justification is given for this projection and no impacts to date are identified.\textsuperscript{34}

\textbf{Other Washington Cases.}

Interviews by the author indicated that in a number of instances of recent development, METRO's location was influenced by the development, rather than vice versa.\textsuperscript{35} Such situations include the L'Enfant Plaza and Waterfront station areas. Similarly, the location of the Van Ness station was


\textsuperscript{35}Knight and Trugg, \textit{Report on Land Use}. 
influenced by the decision of the Washington Technical Institute to build a campus there on a large tract of excess land held by the National Bureau of Standards.

Similar situations occurred outside the District. METRO stations are located in the large office developments of Rosslyn and Crystal City, but there is no evidence that the stations were a major factor in these developments. Rosslyn and Crystal City were already well underway when the station locations were selected. Pentagon City's development was anticipated to occur by the start of revenue operations; however, zoning delays resulted in the development subsequent to METRO operations. Its design and rate of construction were apparently influenced by the station's presence, but demand for the complex was strong and interviews by the author felt that it would have occurred without METRO.

It is apparent that METRO has had little effect on actual development around its stations at this early stage in the system's own life. However, the system seems to have had a substantial effect on public authorities, who are attempting both to encourage transit-related development and control its nature and effects. Several city and county studies have been conducted, in anticipation of development, to guide these public land use policies. The District, through its redevelopment agency (a function now incorporated into another city department), acted aggressively to encourage station-area plans and development incentives. But despite such efforts, neither
public nor private development has appeared to any significant degree. This situation is partly attributable to the fact that very little of the system is yet in operation, and its ultimate extent is not yet known. As already noted, neighborhood opposition has been another reason in several cases. Yet another is the District's strict height limit policy, which makes it difficult to offer incentives to developers. Finally, many METRO stations tend to be either in fully developed commercial areas (where the costs of redevelopment are high), in deteriorated areas (where demand is low) or in low density residential areas (where resistance is strong). So far, the advantages of METRO, coupled with the efforts of public agencies to encourage development, have not been strong enough to overcome these obstacles. Since so little of the system is in operation, the system's power to induce land use change and value is not conclusive.

Little study of possible land value impacts was found. Although the various impact studies conducted thus far have tended to predict such effects, almost none has reported any such effects to date. The Reynolds & Reynolds studies of three station areas predicted land value impacts for the future, but found none to date through their review of sales data.36 Again, however, these results should be interpreted

36 Reynolds & Reynolds, Inc., Value Impact of the Metro Mass Transit System upon the Rhode Island Avenue Station Area.
only as a very early benchmark in the transit system's generation of land use and value impacts.

Montreal

The major objective in designing the Metro system in Montreal was to ease bus and auto congestion downtown and yet provide public transit for high-volume, frequent and reliable travel within the densely built-up central area of the metropolitan region. The system's lines are not long, and it serves only the most densely populated corridors on Montreal Island. Thus, it was not intended to function primarily as a long-distance suburban commuter facility. Construction was started in 1961, and in 1966, the 16-mile, all-underground system was opened. A 4.8-mile extension was opened in 1976.

For the entire system, there are 26 stations, with an average spacing of about one-fourth mile in the downtown area and slightly over one-half mile systemwide. Metro stations are typically very large and modern; of the North American systems they are rivaled only by those of the BART system in San Francisco. Many stations have direct connections to adjoining stores, office buildings and recreational complexes, and major stations have large underground mezzanines with several concessions and retail displays. One station, Berri-DeMontigny, has three levels of tracks plus such a mezzanine. Typically, only entrances/exits are at ground level, with all other facilities below ground. Metro is comprised of three
lines, all intersecting at the Berri-DeMontigny Station.

In 1978, a 5.2-mile southwesterly extension was completed adding eight stations to the system. Since the line formerly ended at the western edge of downtown, this extension of the line has opened an entirely different area of the city to rail transit service.

**Downtown Development.**

The decision to build Metro, with radial lines leading downtown, was founded on the desire by the city fathers to support the downtown so that it would remain a viable center. With the exception of Longueuil and Sherbrooke stations, virtually all new development which could be associated with Metro has taken place downtown. It is the opinion of local public officials that without the building of Metro, the downtown area would have continued to decline and given way to decentralization of offices and retail activities. Such a trend was already in progress before the system was built. Any new downtown development, such as office buildings, would have taken place on a smaller scale than has actually occurred, according to these officials.

The new downtown development in Montreal is dramatic both in its intensity and diversity. In addition to expansion of commercial and governmental office space, there has been a major strengthening of the CBD's retail shopping role. Three major department stores, Eaton's, The Bay and Dupuis, have expanded or built large new facilities at the main downtown Metro.

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37 Knight and Trugg, *Report on Land Use*. 
stations, and two of these are connected directly to the underground subway concourses. Unlike the direct store connections found in some United States subways, these are typically large and open continuations of the station mezzanine itself.

In addition to the direct store connections, downtown Montreal has an extensive system of underground passages connecting major buildings. This concept was adopted by the city before Metro, but prior to the subway only a few developers had seen fit or been induced to provide them in their buildings. Now, however, the downtown is laced with such passages, some built privately and some built as joint public/private ventures. Most passages connect with one or another of the subway stations, and some link buildings as far as four blocks distant. Although the system is not complete, it is an important factor in the pattern of downtown pedestrian activity, especially during the cold winter months. The passages from McGill, Place Bonaventure and Square-Victoria stations carry a total of some 150,000 pedestrians per weekday, a large proportion of the 370,000 persons who are estimated to enter the entire CBD each day.38

All officials interviewed by the author agreed that the Metro was the key to the rapid development of the underground

Developers, and especially the nearby department stores, saw the passages as an important benefit; some of the passages leaving the Metro stations are actually sales floors of the major department stores with direct connections. At the other end of the store, below-street corridors, some lined with display windows and small shops, continue the passage into the next block of buildings. Thus, the subway patron benefits from a warm, convenient walk to his or her destination, while the stores benefit from exposure of their merchandise to a large potential clientele. It must be concluded that the direct connections and underground passages are important ways in which the subway system has provided an impetus for integrated design and function in adjacent areas of the central business district.

The city's study of Metro impact downtown concluded that the system had not materially shaped or altered the overall structure of the area. This study involved three parallel analyses. In the first, actual 1962-72 changes in the quantity and type of development in the downtown area were compared with the 1962 predictions. The differences found could not be attributed to the Metro. Second, 1962-72 land use data at the census tract level were compared, but these units proved

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39 Montreal Urban Community Transit Commission, The Montreal Metro, Montreal, Canada, 1974

40 Service d' Urbanisme, Ville de Montreal, Centre Ville: Bulletin Technique No. 3 (with translation), Montreal, Canada, 1964
to be too large to reflect any local changes. Finally, an analysis was made of the land use changes which had occurred during the ten-year period in the blocks within 500 feet of each Metro station. Changes studied included land use and floor area for several different functions, such as retailing and commercial office. These changes were then compared with those which had occurred in the same functions over larger areas of downtown. No consistent correlation was found to indicate that Metro has shaped the development which occurred downtown during the study period. The study concluded that "undoubtedly the Metro has made the downtown area more accessible, and has thus encouraged new development in a general way, but it did not alter the structure of downtown." However, it did not attempt to assess Metro's impact on the importance or strength of downtown development relative to that in the remainder of the city.  

According to local officials, this development is likely to have been a much more important effect. Certainly a very large amount of new downtown development has occurred during the past twenty years. Some of this development occurred in the late 1950's, before the transit system was a certainty, and utilized air rights made available at that time over a rail line and yard of the Canadian National Railway at Place Ville-Marie.  

41 Ibid.

42 City of Montreal Service de l'Habitation et de l'Urbanisme, 200,000 People in Your Own Basement: Building Rights over Metro Sites, n.d.
land had been a major constraint on downtown development. The subway system subsequently opened other downtown land for development and also greatly enhanced access.

In general, the construction of Metro required the taking of very little land, since almost the entire system was tunnelled and only two outlying parking lots are provided. The leasing of air rights over downtown Metro stations was an important inducement to development at Guy and McGill stations, among others. These sites were attractive to developers primarily because of transit access and land availability.\(^{43}\) Some limited air rights development has taken place at Sherbrooke Station in the form of high-rise buildings. In addition, the 1976 Olympic site includes two stations (Pie-TX and Viau), but the transit line was located here to serve the Games rather than the reverse.

The only other major development to occur, to date, around stations outside the CBD has been at Longueuil. At the southern terminal point of the No. 4 line, across the St. Lawrence River, this station (and line) was constructed to serve Montreal's now-permanent "Expo" exhibition. This station also serves as a major terminal for the South Shore Communities. Extensive private development has taken place around the station in the form of high-rise apartments, commercial activities and offices. Although the station has served as a focal

\(^{43}\) Ibid.
point for this development activity, the original development opportunity was directly attributable to the coming of Expo. The land, which had been a military property, was sold to the city by the Federal Government for Expo parking with the understanding that it would later be redeveloped. Development was also spurred by the Longueuil city fathers' strong desire to develop this area. The transit system appears to have provided essential access, because without Metro, the Jacques Cartier bridge to downtown would not have been able to accommodate the tremendously increased travel demands generated by the new development. Major developer investment thus became logical at this readily developable location.44

Evaluation

It is clear that Metro has influenced the nature and intensity of retail shopping activity in downtown Montreal, as shown by the success of the direct connections to major stores and the extensive network of underground pedestrian passages extending from the stations. The net transit system seems to have dramatically speeded the development of the underground passageway system by private property owners; moreover, it has probably helped to increase the overall strength of the CBD relative to other areas for office as well as shopping activities. At the same time, other unrelated forces, such as the availability of developable land, have also played a strong role in the

44 H.M. Romoff, "Commuter Trains: CP Rail's Experience in Montreal" (Montreal, Canada: Canadian Pacific, 1975), article prepared for Urban Transit in Canada, ed: Pendakur, University of British Columbia, Vancouver, B.C. (Mimeographed draft.)
revitalization of the downtown area.

Outside the CBD, and with the exception of the Longueuil and Sherbrooke stations, effective constraints to develop seems to be the unattractiveness of many of the station areas relative to other locations; this is primarily due to the lack of substantial vacant or redevelopable land or its high cost. In addition, few encouragements in the form of zoning and other regulatory incentives have been provided, in contrast to Toronto. Under such constraints, provision of Metro access has been an insufficient inducement to create or redirect development.

San Francisco

The San Francisco Bay Area Rapid Transit (BART) system began partial operation in 1972, following over ten years of design and construction. The full 71-mile system was in operation by 1974. One station, Embarcadero, in downtown San Francisco, was added to the original 33 in 1976. Train frequencies are still less than half the intended level, due to continuing problems with the automatic train control system, train car reliability and funding for operating costs.

Urbanization Patterns

An important factor in the development of the San Francisco Bay area is its unique topography. The Bay itself is a major barrier, separating San Francisco from much of its tributary area. The city is accessible from the northern
suburban area of Marin County only by the Golden Gate Bridge and limited ferry service. Similarly, most of the East Bay population (about half of the SMSA's nearly four million) can reach San Francisco only via the Bay Bridge or BART's underwater Transbay Tube. The Bay is also ringed by the hills of the Coast Range, which tend to force development into long corridors along the bay shores. Substantial development has also occurred in Contra Costa County to the east beyond the hills, connected to Oakland and the rest of the region by a major tunnel as well as highways through the few passes. These physical constraints, plus the continued growth of the region's population, have combined to generate suburban development in almost all relatively accessible and developable areas throughout the region.

One interesting aspect of the Bay Area development partially attributable to these physical constraints is the growth of Santa Clara County. This area, centered on San Jose at the southern tip of the bay (35 miles south of the San Francisco CBD), is the most populous and fastest growing portion of the region and is now designated a separate SMSA. The county's 1975 population was 1.2 million, out of 4.8 million for the entire nine-county region. Largely because of land availability, the aerospace and electronics industries settled on the bay shores of the peninsula between San Francisco and San Jose in the 1950's. This settlement, in turn
generated other commercial as well as residential activity, which is forecast to continue through the end of the century. 45

Effects of BART on Regional Development

Since BART is a high-capacity system with several radial lines extending from the CBD far out into the surrounding suburbs, it is reasonable to suggest that the urban area might be reshaping around the system. In particular, one might expect suburban fringe development to be occurring more rapidly near the BART line terminals than in other parts of the region not served by transit. In the few years since BART's inception, there is as yet little evidence to support this hypothesis, as might be expected. As noted in the earlier description of the region's development, the most populous and rapidly growing suburban area is Santa Clara County, far from any BART line. In addition, rapid growth is occurring to the southwest toward Livermore and in the North Bay counties, also not served by BART. The Concord line terminus is in a fringe area which has been growing rapidly since 1960. BART has surely contributed to the speed and volume of this growth; commuter travel from here into the downtown San Francisco area is heavy, and BART's heaviest patronage is in this corridor. All five station parking lots along this line are overflowing. BART travel time to downtown is competitive with the auto, and developers of apartments and single-family

45 Knight and Trugg, Report on Land Use, p. 56
housing tracts here have emphasized BART access in their promotion. However, other factors have also been important. First, transit service already existed; BART replaced Greyhound express bus service to San Francisco here. Without BART, this service would almost surely have been upgraded in quality and capacity. Second, BART is either in the median strip or within a thousand feet of a 6-to 8-lane freeway from its Concord terminus all the way into central Oakland; this freeway, which was completed along with BART, provides direct access into downtown San Francisco. This freeway improvement (some all-new construction and some widening) was made in response to the travel demands already developed in the Concord corridor and was a major inducement to further growth. It should be noted, however, that funds were made available for the widening of much of this freeway only because of the opportunity for reconstruction afforded by BART's median-stripl alignment. Thus, BART "caused" the freeway expansion.\footnote{McDonald & Smart, Inc., A generalized No-BART Alternative, BART Impact Program, prepared for Metropolitan Transportation Commission, U.S. DOT and HUD (Springfield, Virginia: National Technical Information Service, 1975).} Finally, the area was a natural location for growth in any case, since it was one of the few places within reasonable commuting distance of the CBD with an attractive environment and available land at acceptable cost. BART's role was therefore that of an important member in a complex of pro-development forces, rather than the only one. However, its
influence on the freeway widening in addition to its own more direct land use impact made it a particularly powerful force in speeding the rate of development.

In Concord, other powerful forces in addition to transit have encouraged development in the Fremont area. First, many square miles of easily developed flat land was available. Second, urbanization has converged on Fremont from both north and south, through growth spreading south from Oakland-San Francisco and north from Santa Clara County. Third, the city government has encouraged growth. Fourth, the area was already well served by the Eastshore Freeway, extending both north and south; hence, its eventual development was probably inevitable. Also, the area was growing very rapidly several years before BART was placed in service, and its rate of growth has not increased since then. On the basis of such forces, Wells concluded that BART had not been an important factor in the decisions of residential and commercial property buyers to locate in this area.\(^47\) The promise of BART service probably added to these other forces, but it appears certain that development would have occurred without the transit system, even if less rapidly.

The period since 1960 has seen a dramatic rate of high-rise office construction in downtown San Francisco. From an

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almost insignificant rate in the previous decade, an average of 1,300,000 gross square feet of such space has been completed each year. Buildings now under construction or projected for completion by 1980 will raise this rate even higher if all go forward as planned (Figure 2). These buildings are almost entirely within about 1,500 feet (five blocks) of the Montgomery and Embarcadero BART stations on lower Market Street. A smaller cluster is located farther to the west near the Civic Center and City Hall. Between these two, along the line (under Market Street), lies the main shopping district and a declining older commercial-residential district to the north, and a similar but more deteriorated area all along the south side of Market. This "south-of-Market" area has been the scene of large-scale demolition of old hotels, housing and commercial structures for the proposed Yerba Buena redevelopment project. In addition, in recent years, new high-rise office buildings have begun to appear here (Figure 3). As Figure 3 shows, this intensive construction activity has coincided with the BART planning and construction period. A relationship between the two is therefore possible. Several detailed studies have been done to test this hypothesis. 48

FIGURE 2
HIGH-RISE SPACE CONSTRUCTION STARTS IN
DOWNTOWN SAN FRANCISCO 1960-1975

- BART District created by legislature
- Bond issue approved by voters
- First line opens
- Transbay service

Graph: Numbers of 10 Stories or more.

* Commerce and Industry: Commercial Trends, San Francisco Department of City Planning, July 1975, and Bay Area Rapid Transit District Office of Public Information
FIGURE 3
LOCATION OF MAJOR DOWNTOWN SAN FRANCISCO OFFICE BUILDINGS1
CONSTRUCTED 1960-1975 AND PROPOSED FOR COMPLETION BY 1980

1Buildings or portions of buildings with a height of at least 10 stories or 118 feet.
Source: San Francisco Department of City Planning.
extensive review of data on property assessments, sales and building completions and also interviewed a variety of developers and planning officials. The data concluded that BART had been one of several significant factors in the extent and location of the downtown development.

Gruen, Gruen & Associates' work draws upon the authors' detailed knowledge of the area and experience in commercial office market evaluations to provide a complement to the more academic style of the Institute's work. In addition to interviews with developers, an historical view of trends in property values, rents and development locations was employed along with a review of zoning and other public policy factors. Results were similar to Lee's at the Institute; Gruen and Gruen also concluded that BART had been a significant contributor to the intensity and location of downtown development, although by no means the only such force. Much of the development would probably have occurred without BART, but more slowly.

Both studies cited several other factors unrelated to BART, including rezoning of the entire CBD to allow floor area ratios as high as 25:1 and the historical dominance of the lower Market Financial district (the "Wall Street of the West"), not only within the region, but also as the major headquarters.

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city of the West and the Pacific Basin. To these forces might be added the historical attractiveness of the Bay Area and its San Francisco urban center, as well as the region's unusual geography which allows almost no alternative to a continued focus on the San Francisco CBD for major regional office development; the Bay and hills have forced all new development into corridors in which the transportation arteries and bridges all lead to San Francisco.

Several writers have called attention to San Francisco's 1966 rezoning which provides incentives for the development of sites near the BART stations. Actually, two ordinances are involved. In 1960, a liberalized city-wide zoning ordinance permitted floor area ratios of 20:1 everywhere in the CBD north of Market, and 25:1 on corners. This rezoning was apparently unrelated to BART, since at that time, the BART bound issue had not even been passed.

In 1966, this zoning was changed following a heated public debate on desirable downtown densities. Specific provisions were made for BART as well as the parallel Muni Metro subway which was to accompany BART. This new zoning approach broke the CBD into its functional subareas. Highest densities were allowed in the Financial district, but even here, the maximum was only 14:1 instead of the earlier 20:1. However, the new ordinance did allow maximum 20 percent density bonuses for buildings which had direct access to BART or were directly

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adjacent to a station, and 10 percent bonuses to buildings within 750 feet. Some development rights transfers are also allowed.

In view of the strength of development pressures in downtown San Francisco, both the 1960 and 1966 policies were probably essential in "lifting the lid" on the overall size and height of the city's downtown development. Their limits were used by many developments and clearly contributed to the intensification of use which occurred. The city's later policy of limiting parking to 7 percent of the floor area of new downtown buildings was also a factor complementary to transit use, and at the same time encouraged CBD construction by reducing cost. Moreover, Gruen, Gruen & Associates concluded from their study of the Montgomery Street BART station's impact on property value and development that the presence of BART and these development incentives along Market Street served to draw development into the lower-status, south-of-Market area more quickly than would have otherwise occurred; this resulted in a general upgrading of this area, as well as of lower Market Street itself. This conclusion appears to be reasonable, although it must be pointed out that there was almost no other direction for the financial district to develop.

51 *San Francisco Downtown Zoning Study*, Department of City Planning, 1966
Effects in Other Station Areas

The BART system includes 34 stations, typically located in areas of varied land uses, often between low-density residential and local shopping districts. In general, very little if any BART-related development has occurred yet at any of these locations.

Skaburski's\textsuperscript{52} and Gruen, Gruen & Associates\textsuperscript{53} studied land value impacts around the Rockridge station in Oakland. Both found small effects on value but no development, largely because of successful community campaign to have the area downzoned specifically to avoid such a change in intensity. In addition, BART is in the median of an elevated freeway built at the same time at this location, which makes it difficult to isolate the transit system's effects. This is a case in which community opposition prevented an impact (of the joint highway-transit facility) which almost certainly would have been substantial; the area is attractive and easily accessible to San Francisco as well as Oakland and Berkeley, and substantial land assembly was in progress up until the time of downzoning. Gruen, Gruen & Associates' inventory of recent

\textsuperscript{52} A. Skaburski, "A Search for the Rockridge BART Station's Impact on the Sales Price of Single Family Houses," 1975 (Mimeograph.)

development around BART stations for the BART Impact Program concluded that BART has had measurable effects on land values around some BART stations, but not necessarily in others, and that BART's impacts are stronger in areas where other factors are also favorable. This study involved comparisons of 1965 and 1975 aerial photos as well as interviews with local planners in all BART communities and direct observations throughout the system, and is the most recent as well as most comprehensive review to date.\textsuperscript{54}

Although no attempt was made to specifically attribute development to BART, the study found so little development in most cases that attribution was irrelevant. The study also indicated that changes in land use policy had been made for 24 of the 34 BART station areas; in instances when a change had been made, its effect was more often to encourage development than to restrict it. Restrictions were most common in low-density residential areas in inner cities such as Oakland and Berkeley. Although several suburban cities rezoned to encourage development, little has yet occurred. Several others, however, refused to change zoning for this purpose, thereby nullifying any BART effects.

\textbf{Evaluation}

So far, BART's impacts on Bay Area land use seem largely confined to the San Francisco central business district, where it was one of several forces which led to a boom in

\textsuperscript{54} Ibid.
office construction during the 1960's and 1970's. Without BART, this development probably would have occurred, but not to the same high degree. In addition development probably would have remained more on the north side of Market Street, rather than extending to the south to revitalize the declining area there, and Market Street itself probably would not have been upgraded as it was.

In attempting to apply the San Francisco experience to other cities, it is essential to remember that the San Francisco CBD never experienced the degree of deterioration common in downtown areas elsewhere in the country. The city's historical role as the major banking and corporate center of the West and the Pacific Basin, as well as the magnitude and importance of its tourist trade, served to keep the downtown prosperous and interesting. With these advantages, suburbanization or outright decline in office functions have never been as serious a concern as in many other cities. Finally, the Bay Area's topography makes it almost imperative to travel through San Francisco to get from one major suburban area to another; this is true for bus as well as rail transit, since all the region's transit systems lead into the CBD. Hence, office locations regionally competitive to downtown San Francisco scarcely exist, and BART did not have the degree of opportunity for impact which might be encountered in cities without such constraints.

Impacts of BART outside the CBD appear slight to date. In
the cases in which development has occurred, other factors in addition to BART tend to be important. Most important has been the role of other public policies, particularly zoning and the use of urban redevelopment powers as a means of assembling land. Community support has also been shown to be essential; residential opposition to BART-related apartment and office development has resulted in downzoning and prevention of development, even when other factors appeared positive.

Philadelphia

The Lindenwold High-Speed Line began service in early 1969. The system consists of one double-track line extending from central Philadelphia across the Delaware River and southeasterly into New Jersey, a distance of 14.5 miles. The system is in essence a regional rapid rail line, similar in function to BART's Concord or Fremont lines in the San Francisco East Bay. The line serves the city's suburban south Jersey area, with six stations spanning 8.5 miles. In addition, there are two stations serving the central area of Camden, across the river from Philadelphia, and five stations in the Philadelphia central business district.

Downtown Philadelphia

It is impossible to establish whether the opening of the Lindenwold Line had any impact on downtown Philadelphia. This area already had been served by 13 commuter rail, 4 rapid transit and 5 "subway-surface" lines (on-street outside the CBD),
i.e., a total of 22 rail transit lines.\textsuperscript{55} Renovation and extension of the "Bridge Line" as part of its upgrading into the Lindenwold Line, could not have a major visible physical impact on the largely built-up, old city center. While a number of high-rise office buildings and condominiums were constructed during the early 1970's some atop the Line on Locust Street, it is impossible to estimate the contribution of any one of the many factors causing that construction.

The only formal study to seek evidence of the Lindenwold Line's effect on the CBD was that of Gannon and Dear,\textsuperscript{56} who assembled and reviewed data on trends in the locational distribution of the region's employment and new office construction. They found that the city of Philadelphia's share of employment in the SMSA declined steadily during the 1960's, from 60.1 percent in 1960 to 49.4 percent in 1970. These figures amount to a loss of some 32,000 jobs, while the suburban area gained 158,000 jobs. More recently developed figures prepared by the Center for Urban Policy Research at the State University, New Brunswick, New Jersey (in 1977) indicate a much larger recent decline in employment for the city. According to 1976 employment figures, the city's share of employment in the SMSA has dropped to 31 percent.

\textsuperscript{55}Knight and Trugg, Report on Land Impact.

Gannon and Dear's review of office space construction trends indicated that Center City Philadelphia's share of the SMSA's office space declined from 30 percent in 1960 to 28 percent in 1970. However, during that time, Center City floor space expanded at a mean annual rate of 3 percent, or a total of some 5 million square feet, making the downtown area still the focal point for intensive new office construction in the region. Gannon and Dear's findings are limited in that their data covered only the 1960-70 period, thus encompassing only the first two years of the Lindenwold Line's operation. A recent study by the Philadelphia City Planning Commission on Center City office space indicated a rapid acceleration of downtown office construction in recent years. Between 1970 and 1974, an additional five million square feet of office space was added. Between 1975 and 1976 alone, another four million square feet of new office space has been constructed. Although this has coincided with the Lindenwold Line's construction and early operations period, no other information was available from local sources to support or deny a direct correlation between this accelerated pace of office construction and implementation of the Lindenwold Line.

Suburban Residential Property Values

The University of Pennsylvania researched the Lindenwold Line residential property value impacts. The study sought to

57 Knight and Trugg, Report on Land Impact.
test the appropriateness of various theories of transit's impact on land value, most notably the "travel savings" hypothesis. These theories state that the savings in a household's journey-to-work costs (so far, only for CBD commuter travel) due to the transit line will be capitalized as added value of the residential property. The study relied on extensive data files on property sales prices and physical characteristics. The general approach was to attempt to separate the effects of the travel savings from those of other factors such as lot size, type of construction, location and year of sale. Multiple regression analysis, as well as more innovative statistical decomposition techniques, were used for this purpose, some with substantial success in terms of their ability to account for much of the variation in the data. The study supported the savings theory in general, and indicate a substantial impact of the line on property values of residences in the line's market area. The study noted that the spatial pattern of savings suggested by the model is quite different from the "conventional wisdom" that benefits are strictly a function of the distance from the transportation improvement; if the model is correct, for radial improvements such as the Lindenwold Line the study concluded that the greatest absolute benefits will accrue to residents of the generally

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older and poorer inner suburbs. However, greater relative benefits (savings/cost) may accrue to inner suburbs.

Evaluation

It is apparent from the research conducted on the Lindenwold Line that substantial impacts attributable to the transit system have occurred. The most important of these is an apparently substantial increase in residential property values in areas served by the line, most notably in those areas most distant from downtown Philadelphia. Patronage and accessibility increases of the line alone are not large enough to be an effective force against trends as powerful as evolutionary central city decline; other complementary factors, such as available land, attractive surroundings, an expansionist business climate, and competitive advantages such as increased density allowances are essential. However, the impact on downtown Philadelphia neither can be measured (as discussed above) nor can it be so dominant, since the Line is only one of many serving that area.

Chicago

The examination of "The Elevated System and the Growth of Northern Chicago" posed two major questions: First, what was the impact of the elevated system upon the growth of settlement patterns in the northern sector of Chicago immediately

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59 Some observers dispute this, noting that large increases in value can also be observed near the stations closer to Camden and Philadelphia such as Collingswood, where some older row houses have nearly tripled in price since 1968. In any case, values along the line have risen measurably because of its influence.
following the first operation of the "L"? Second, what was the impact of the elevated system upon land values in this early period?  

The greatest amount of new-building construction immediately following the first operation of the "L" took place in the "L" station areas. These areas were farthest from the CBD which previously was served ineffectively by transportation. Settlement tended to occur as close to the "L" stations as land availability permitted, with a consistent pattern of decreasing new settlements away from the "L" stations occurring.  

The greatest increase in land values immediately following the first operation of the "L" took place, as had the settlements, in the "L" station areas. These areas were farthest from the CBD and previously were inadequately served by transportation. More than 80 percent of the station areas had their highest land values in the first block zone around the "L" stations. Each of the "L" station areas had both higher land values than their control areas immediately after the first "L" operation and a greater increase in land values from the pre-L to the post-L period.

60 Frederick W. Davis, "Proximity to a Rapid Transit Station," pp 159-160.
62 Ibid.
The "L" had a marked impact upon the early development of the city. Although the "L's" influence has been diminished by the competition of other transportation modes, it provided a striking impetus to the growth of Chicago, and today, continues to serve the city it helped to build.

General Conclusions

1. Recent major rapid transit improvements have been important inducements to downtown development near stations, but only when supported by other powerful forces.

The Toronto, Montreal and San Francisco studies concluded that the transit improvements in those cities were significant forces in the extent and nature of the intensive high-rise commercial office development in the CBD. In Toronto and Montreal, in particular, the new subways provided a much-needed increase in the accessibility of the downtown area and thus assisted its growth. In such cases, where inadequate prior access was actually a recognized constraint on downtown growth, the evidence indicates that transit has been a virtual necessity for intensification of development to occur. In San Francisco, the BART subway and the associated beautification of Market Street were partly responsible for the expansion of the financial district southward across Market, revitalizing that declining area. As in Toronto and Montreal, BART also enhanced the CBD's accessibility by providing additional commuter capacity in some major congested radial corridors. However, in all three cases, other factors were also essential in this down-
town development.

In subsidiary centers outside the CBD, recent transit improvements have so far had relatively mixed effects. Largely transit-induced commercial development has occurred in several such centers, notably in Oakland and Berkeley along the BART system, Haddonfield on Philadelphia's Lindenwold Line and at several stations on the Toronto system. At the same time, much of this development has been less than had been hoped. Moreover, no significant commercial development attributable to transit improvements has occurred at other subcenters such as San Francisco's Mission Street and other BART-served subcenters such as downtown Hayward.

2. The primary factor behind such impacts has been the existence of a strong and effective demand for new office and retail space. This factor appears to have been determined by social and economic forces of regional and national scale. A related factor present in all instances was an already healthy and active downtown area, which encouraged both consumers and developers of land. If subsidiary business centers throughout a metropolitan area are stagnating, there is little reason to expect that transit service to one of them will generate development. In a period of slow or no economic growth, little impact can be expected under the best of circumstances.63

Timing of such new development appears to have been deter-

63Knight and Trugg, Report on Land Use.
mined largely by these same economic forces, such that new development (downtown and elsewhere) cannot be predicted to occur within a short time after the transit system is announced or built. In Toronto, Montreal and San Francisco, the downtown subways were opened in 1954, 1966 and 1973, respectively, but intensive downtown development began at about the same time (1958-1960) in all three. Consequently, decision makers should not expect similar development to occur immediately after a transit improvement.

The availability of land for development has also been a major factor; this refers not only to nearby open or under-utilized parcels, but also to the feasibility of their assembly into a site large enough for economically viable development. In many instances in this study, it was observed that fragmented or clouded ownership of otherwise highly attractive sites absolutely prevented development that otherwise would have occurred. The most striking example is at the intersection of Toronto's two subway lines north of the CBD, where interspersed with new development are block-long areas at the station in which complexities of ownership are likely to prevent development indefinitely. This situation suggests that this factor should be a consideration in the early stages of transit planning, particularly in the location of stations.64

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64 Ibid, p. 196
Another similar factor was the placement of the station with respect to the business district. At BART's Hayward station, the commercial district is actually several blocks away. Other BART stations are located in the center of the Berkeley and Oakland shopping and office areas, where related development has occurred.65

Other public investments coordinated with the transit improvement also appear to have been influential in encouraging transit-oriented development, although in many instances their effect has been overshadowed to date by opposing forces such as the lack of consumer demand. Typical of such investments are the Federal Government's Social Security complex near BART's Richmond station, the Oakland Museum and Laney College at the same system's Lake Merritt station, the Canadian government's large office complex now being completed at Toronto's York Mills station and the convention center planned near Metro Center in old downtown Washington, D.C.

Formal urban renewal activities coordinated with transit development have been an important aspect of this public investment in several cases. Even without the construction of public facilities, the simplification of land assembly for private developers has in some instances led to redevelopment, as in downtown Oakland. In others, such as Oakland's Lake Merritt and downtown areas, the combination of publicly

65 Ibid.
assembled land and the presence of new public buildings has proven attractive to private developers. This fact is especially significant since the area involved was otherwise deteriorated and without significant development for many years. Similar efforts at public-private renewal activity around transit stations have been attempted elsewhere, notably Washington. Although development appears inevitable, a variety of forces including lack of economic demand and the general unattractiveness of the specific areas involved have restrained action by developers.

Recent major rail transit improvements have played a key role in intensification of land use in station areas not in the CBD, but only when joined with other favorable forces. Examples of such land use include the high-rise apartment development at several suburban Toronto subway stations, the location of large office complexes at Boston's suburban North Quincy station and the intensification of use at small existing subcenters. The latter case is best illustrated by the Yorkdale station on Toronto's not-yet-completed Spadina line, where the owner of a suburban shopping center whose parking lot adjoins the station is planning to build a series of connected office buildings to join the station and the main shopping mall. Here, as for the other issues discussed earlier,

66 Ibid., p. 197
such development has, of course, not always occurred. Little has happened at most suburban BART stations as well as most of those in Montreal and some in Toronto. Philadelphia's Lindenwold Line presents an in-between case; extensive low-density residential development partly attributable to the transit line has occurred in the corridor, with thousands of commuters driving to the transit stations. However, even most of the apartment developments nearby are not within walking distance, and there is no high-density development of the type most complementary to rapid transit. As with downtown development, a number of forces have been influential in complementing or counteracting the development potential provided by transit improvements. These include neighborhood opposition, social and physical characteristics of the area, ease of access to the station site, availability of developable land and public policies toward development. Each of these forces is considered in the following paragraphs.

Neighborhood Opposition

In existing low-density residential areas, the placement of a transit station seems almost certain to generate strong opposition among residents, often leading to the official imposition of tight controls on development in the area. As a result, irrespective of other factors favoring more intensive development, few, if any, changes in land use have occurred. This factor has been powerful at several BART stations (e.g.,
Rockridge, El Cerrito Plaza), as well as the areas surrounding some Lindenwold stations and others in suburban Washington--almost everywhere stations have been or are to be sited in such areas. Even in Toronto, where transit-related development has been most intense, such areas are typically protected by zoning. In some cases, the neighborhood residents have not been successful in combating other forces such as the city's desire for increased taxes, but this is much less so today than it was during previous decades.

These facts suggest that if such intensification of land use is desired as a complement to rapid transit service, such established residential areas are poor choices. In such areas, if redevelopment does occur, the resulting disruption of the social environment can be severe, while if it is prevented, much of the transit system's potential benefit is lost. 67

Social and Physical Characteristics

Transit's effect on land use appears to have been minimal when development of a scale and type necessary to be economically viable was not complementary to the surrounding land uses. For example, the stations of Montreal's north-south subway line are situated largely in working-class neighborhoods of three and four-story apartment blocks. Air rights on the cleared areas above the stations are available and

67 Ibid., p. 198
more intensive uses are permitted, yet, almost no development has occurred. According to the authors interviews with local officials and observers, the primary reason is that construction costs allow only luxury high-rise apartments, and prospective tenants would prefer to live in other parts of the city.  

Physical characteristics, particularly blight, have sometimes been added to social problems to render areas even less likely to be developed into uses complementary to the transit station. The BART stations in older, disadvantaged neighborhoods in Oakland are unlikely to attract private investment despite their high-accessibility locations. Areas around Lindenwold Line stations in Camden have similar problems.

Ease of Access to the Station Site

Where new transit stations are isolated from surrounding activity or available land, little development has occurred. This factor's effects are seen most clearly in Chicago and Cleveland. These two studies were not examined in this review but serve as a means to explain the above force. In Chicago, the location of the three newest rapid transit extensions in freeway medians has resulted in a separation of the station from any land which might be used for comple-

68 Ibid.

69 Ibid., p. 199.
mentary development. This separation is as dramatic psychologically as it is physically; the station is connected to its surroundings only by bridges over heavy traffic, escalators and long ramps. In Cleveland, much of the rapid transit line parallels a wide railroad switching area, substantial earth embankments and a heavy industrial corridor. Development in these station areas is as yet nil, with the main potential for activity resting in the station's parking lot air rights.

Availability of Developable Land

Examples of lack of development attributable in part to the difficulty of land assembly or the high cost of conversion are given here. The examples present how this factor has been used to advantage. In Toronto, several station sites adjoined obsolete and underused wood and coal yards. These large tracts were in single ownership and were quickly developed into high-rise apartment and office structures compatible with their direct access to the subway. In Montreal, the Longueuil station is on a large tract originally a military post, which, after the subway opened, was used first as a parking lot for Expo '67 (one subway stop distant, on an island) and afterwards, was developed into high-rise apartments, as well as office and hotel space. The point is clear; where large-scale land assembly was facilitated the potential for transit-oriented development was much enhanced.

Public Land Use Policies

Whether influenced most by neighborhood preferences,
infrastructure capacity or other forces, the local government's objective and policy concerning the preferred or permissible forms of station-area development has in some cases been a particularly powerful determinant of what land use impacts actually occur. In Toronto, allowance of very high densities of development (up to 12:1 in floor area ratio) in many areas around transit stations provided a strong incentive to intensive development. The fact that relatively small and well-defined areas were so designated, in contrast to the low densities allowed throughout most of the rest of the Metropolitan area, further enhanced the power of this incentive. Since the region's demand for such development was strong, much of it, then, had to occur around the stations, where transit access provided an important added inducement. Thus, transit and land use policy were fully complementary.

The major rapid transit improvements, as well as, its impact on land use and value, in Montreal, Philadelphia, San Francisco, Toronto and Washington, D.C., have been presented. The above material researched by various authors, has presented a very large quantity of observational and some statistical information covering rapid transit impacts on land use and value. The examination of the available literature provided evidence that rapid transit influence on urban land use and value is governed by many other factors. Conversely,
when these forces were absent or weak, few land use and value impacts were found. Thus, the evidence presented summarizes what may occur around the MARTA transit station locations if rapid transit is supported by other powerful forces.
CHAPTER III

West End Station: Existing Conditions, 1968-1976

The West End Transit Station Area Development (TSAD) Plan was prepared by representatives of the community, members of the concept charette team, the Atlanta Planning Bureau and representatives of applicable governmental departments and agencies. The charette planning process was utilized to formulate the West End TSAD plan. The charette planning process is defined as a compressed time-frame plan making effort designed to formulate rapidly a plan by utilizing tools, expertise, resources and inputs from applicable disciplines and affected residents.

The West End Station will be located on the south line of the rail rapid transit system. The station will be situated south of Gordon Street, east of Lee Street, west of west Whitehall Street and north of Beecher Street, as shown in Figure 4.

The adopted station facility will be an aerial facility. The parking lot will be situated immediately around the station facility within the bounds outlined above. The parking facility will provide 315 parking spaces.

The West End Transit Station site will be located 1.79 miles southwest of Five Points. Also, the West End Urban Renewal Area and a portion of the Model City area are situated
within the proposed West End Station Site. The West End Transit Station Site area is within the southwestern part of the "inner ring" of the Atlanta Central Business District (CBD). As other parts of the inner ring area, the West End and Model Cities communities, situated within the station site area, provide a number of supportive services to the CBD. In particular, the West End Area possesses significant commercial, office space, warehousing, educational and cultural facilities. Of note are the West End Mall, the Candler Warehouse Complex, the Atlanta University Center, Dean Rust School and the Wren's Nest. The area also contains some of Atlanta's finest Victorian-styled homes.

The West End Station will be a community station serving community commercial and office center types of uses. The community commercial classification stresses the following developmental objectives: (1) promote enlargement of, or additions to, such centers only in planned development form rather than as strip commercial extensions; (2) encourage a new housing supply at medium-high densities; (3) encourage office use where suitable locations are available; (4) promote and provide protection for adjacent low-density residential uses; and (5) where feasible, require combined vehicular access points for uses along major routes to stations to reduce marginal friction.1

---
1 Bureau of Planning, Department of Budget and Planning, West End Transit Station Area Development Plan, January, 1975
Based on 1970 U.S. Census Data, the population of the policy area (the term "policy area" denotes the area around the proposed West End Station site constituting the primary service area) is 20,257. Table 1 presents the total population; of that total, 76 percent of the population are black. While 33 percent of the total population are under 18 years of age, 17 percent are 62 years and over. The mean annual income for the West End Transit Station area's population is $5,924.²

While 6,664 housing units are situated within the West End Transit Station Area, only 1,747 units are owner-occupied. The average value of dwelling units within the area is $10,300. Approximately twenty percent of all dwelling units are public housing. These units include John O. Chiles Homes, Joel Chandler Harris Homes and the McDaniel Gleen Apartments. Table 2 represents the West End census data.

There has been a slight decrease in population, an 11 percent decrease from 1970 to 1973;³ however, it should be noted that some areas southwest of the West End Station Area have experienced a significant increase in population. The Southwest Community and Adams Park have more than doubled their population since 1970, which appears to be only a population shift to that area.

²Ibid.
³Ibid.
## TABLE 1

### TOTAL POPULATION

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NUMBER</th>
<th>NET CHANGE</th>
<th>PERCENT CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>51,567</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960</td>
<td>48,221</td>
<td>3,346</td>
<td>6</td>
</tr>
<tr>
<td>1970</td>
<td>38,603</td>
<td>9,618</td>
<td>20</td>
</tr>
<tr>
<td>1973</td>
<td>34,276</td>
<td>4,327</td>
<td>11</td>
</tr>
</tbody>
</table>

**SOURCE:** Galambos, Eva C., *"Land Use and Marketability, West End Rapid Transit Impact Area"*. January 1974.
<table>
<thead>
<tr>
<th>Total Population</th>
<th>20,157</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Black</td>
<td>76</td>
</tr>
<tr>
<td>Percent In Group Quarters</td>
<td>2.16</td>
</tr>
<tr>
<td>Percent Under 18 Years</td>
<td>33</td>
</tr>
<tr>
<td>Percent 62 Years and Over</td>
<td>17</td>
</tr>
</tbody>
</table>

| Total Year Round Housing Units | 6,664 |
| Lacking In Some/All Plumbing Facilities | 283 |
| Units In One Unit Structures | 2,464 |
| Units/Structures of 10 or More Units | 1,113 |

| Total Owner Occupied Housing Units | 1,747 |
| Lacking In Some/All Plumbing Facilities | 72 |
| Average Number of Rooms | 5.3 |
| Average Value (Dollars) | 10,300 |
| Percent Black | 54.2 |

| Total Renter Occupied Housing Units | 1,342 |
| Lacking In Some/All Plumbing Facilities | 188 |
| Average Number of Rooms | 3.93 |
| Average Contract Rent Dollars | 70.38 |
| Percent Black | 68.57 |

| 1.01 or More Persons Per Room | 1,093 |
| Total | 1,093 |
| With All Plumbing Facilities | 1,051 |

| One Person Households | 1,955 |
| With Female Head of Family | 1,582 |
| With Roomers, Boarders or Lodgers | 360 |

*SOURCE: 1970 Census Data*
The racial composition of the policy area is expected to change only slightly between 1973 and 1983 from 65 percent black and 35 percent white to 68 percent black and 32 percent white.\textsuperscript{4} It appears that the population has begun to stabilize.

While the entire West End Area had approximately 13,110 dwelling units in 1973, 6,664 are situated within the transit station area. An increase in dwelling units has been recorded in the total West End Area from 1970 to 1973. The increase was mostly evidenced in the western fringe portion of the West End Transit Station Area. Most of the new development was of the multi-family type.\textsuperscript{5}

The major land use within the concept area (within 2,000 foot radius of the station site) is commercial-retail, warehousing, banking and low-medium density residential. Table 3 lists the type of work found in Atlanta and the West End Area. Atlanta University Center, a complex of five major institutions of higher learning, is approximately one-fourth mile north of the station site. A significant amount of developable land is situated immediately east and west of the station site.

Presently, accessibility to Interstate Route 20, Gordon Street, Asby Street, West Whitehall Street and Steward Avenue

\textsuperscript{4} Ibid.

\textsuperscript{5} Ibid.
The study area incorporates a varied employment profile. The major categories are wholesale/retail, manufacturing, services and government. Presently, 26 percent of the total employment is directly related to office employment. While 36 percent of all jobs within the Atlanta Metropolitan Region is classified as office related employment. The market generated by the transit station is expected to significantly increase the existing levels of employment and generate a more varied profile. SEE TABLE III

### TABLE III

#### TYPE OF WORK

The study area incorporates a varied employment profile. The major categories are wholesale/retail, manufacturing, services and government. Presently, 26 percent of the total employment is directly related to office employment. While 36 percent of all jobs within the Atlanta Metropolitan Region is classified as office related employment. The market generated by the transit station is expected to significantly increase the existing levels of employment and generate a more varied profile. SEE TABLE III

<table>
<thead>
<tr>
<th>WORK AREA</th>
<th>CENTRAL ATLANTA</th>
<th>NON-CENTRAL ATLANTA</th>
<th>SOUTHWEST ATLANTA</th>
<th>WEST END</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Mining</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Contract Construction</td>
<td>3%</td>
<td>6%</td>
<td>3.1%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>12%</td>
<td>24%</td>
<td>21.8%</td>
<td>24.7%</td>
</tr>
<tr>
<td>Transportation, Communication,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td>9%</td>
<td>10%</td>
<td>8.9%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Wholesale/Retail</td>
<td>24%</td>
<td>26%</td>
<td>30.5%</td>
<td>35.7%</td>
</tr>
<tr>
<td>Fire***</td>
<td>13%</td>
<td>5%</td>
<td>2.7%</td>
<td>3.5%</td>
</tr>
<tr>
<td>Services</td>
<td>22%</td>
<td>13%</td>
<td>12.6%</td>
<td>12.4%</td>
</tr>
<tr>
<td>Government</td>
<td>17%</td>
<td>16%</td>
<td>20.3%**</td>
<td>10.0%</td>
</tr>
</tbody>
</table>

|                      | 100.0           | 100.0               | 100.0             | 100.0   |

* Less than 1%
** 9.4% - without Fort McPherson
*** Finance-Insurance-Real Estate

SOURCE: Ibid., Calambos.
provides the area with major arteries to other parts of the inner core and outlying areas. A main line of the Central of Georgia Railroad serves major segments of the industrial development located within the adjacent to the West End Area. Existing MARTA bus routes form an integrated transportation network for area residents. The most significant concern associated with the circulation network is the lack of adequate east-west circulation between the areas east and west of the central of Georgia Railroad. Presently, the Gordon-Glenn/Murphy underpass is the major conduit which provides an adequate grade-separated link between the east-west areas.

Future developments of the West End Transit Station Area are as follows: (1) Land use, (2) changes in intensity in land use around the rapid transit station, (3) changes in the public land use, (4) changes in the industrial land use, and (5) proposed zoning changes to enforce proposed land use changes.

Assessment Data for "West End Station Area"

The summary results of the information collected in the test of the assessment data for parcels located around the "West End Station Area" are presented in table 4. Incorporated in this portion of the analysis for the West End Station Area were twenty-one (21) selected properties out of the total fifty-one (51) properties selected. Only eight (8) properties out of twenty-one (21) could be assessed for the
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>14-107-6-12</td>
<td>$2,500</td>
<td>$560</td>
<td>$2,228</td>
<td>$386</td>
<td>$1,842</td>
<td>82.7</td>
</tr>
<tr>
<td>14-107-6-30</td>
<td>2,700</td>
<td>540</td>
<td>2,406</td>
<td>372</td>
<td>2,034</td>
<td>84.5</td>
</tr>
<tr>
<td>14-107-8-18</td>
<td>2,030</td>
<td>270</td>
<td>1,809</td>
<td>186</td>
<td>1,623</td>
<td>89.7</td>
</tr>
<tr>
<td>14-107-8-49</td>
<td>3,800</td>
<td>440</td>
<td>3,387</td>
<td>303</td>
<td>3,083</td>
<td>91.0</td>
</tr>
<tr>
<td>14-107-9-35</td>
<td>1,510</td>
<td>220</td>
<td>1,346</td>
<td>152</td>
<td>1,194</td>
<td>88.7</td>
</tr>
<tr>
<td>14-107-2-26</td>
<td>54,790</td>
<td>17,420</td>
<td>48,832</td>
<td>12,013</td>
<td>36,819</td>
<td>75.4</td>
</tr>
<tr>
<td>14-106-4-20</td>
<td>3,430</td>
<td>610</td>
<td>3,057</td>
<td>421</td>
<td>2,636</td>
<td>86.2</td>
</tr>
<tr>
<td>14-107-6-16</td>
<td>2,720</td>
<td>540</td>
<td>2,424</td>
<td>372</td>
<td>2,052</td>
<td>84.7</td>
</tr>
</tbody>
</table>

1 Adjusted for inflation.
period 1968 through 1976. There were no records/activity of sale transactions for the other thirteen (13) properties during the examination period. It was assumed that these properties were being held by owners for further speculative reasons. The data included in Table 4, represent the valuation of the eight (8) properties.

Judging from the relationship between market value and assessed value, eight (8) selected parcels in the West End Station area have experienced moderate increases in land values. Between 1968 and 1974, the assessed values for the eight (8) selected parcels averaged an increase of 648.1 in 1968 and 85.4 in 1976. The 1968 data show a higher percentage increase in land value, while 1976 gains are moderate. There is no evidence to indicate the reasons for the higher-to-moderate increases in land values during the two periods.

The assessment data indicate that land value within the area has increased between 1968 and 1976. Figures 5 and 5(a) display the location of the selected parcels. Indeed, the area has experienced physical change since 1968: banking, West End Mall, a proposed new hotel and new (future) development in the Atlanta University Center area. The area is, therefore, increasing in desirability, as illustrated by the increasing land values and by the stated future developments and locational benefits conferred on the area by MARTA. MARTA may contribute somewhat to these moderate increases
in land values around the West End Station. However, there is not enough data available to quantify how much MARTA contributes to the high to moderate increases. Therefore, the relative amounts are indicators of the market value.

In summation, the average increases of 648.1 and 85.4 percent in land assessment values enjoyed by this area are only a partial reflection of the true increases; the table values are only the assessed values of the City/County Tax Assessors; the market value is higher than the assessed values; and those true increases are, without doubt, higher than the summary figure suggest.

Many of the economic impacts generated by transit are long range in nature and are impossible to qualify with any degree of precision. This is true particularly of attempts to predict how the private market will react to transit in terms of detailed location investment and development decisions. Development decisions were not given major emphasis in this assessment.

However, investor confidence and attitudes, technology and public policy can have major influences on the eventual response to the developmental potential of the transit station area. Therefore, public policy in the areas of zoning, capital improvements and development will have significant influences on the development patterns around the West End Station, as they will for the Tenth Street Station Area.

The definitive location of the West End Station, in-
flation, the success of the regional shopping center, the proposed new developments in the area, the improved accessibility from the southwest part of the city to the West End area, the growing importance of West End as the interchange hub for feeder buses, interconnecting with each other and the MARTA system are factors which have caused certain changes to be made in land use and value in the area surrounding the West End rapid transit station site.

The above assessment data for the West End Station seem to ascribe that the land values are due to the advent of MARTA as well as other factors. Yet, to formulate an exact estimation regarding the above assessment data would be extremely difficult without knowing the effects or causes of the other factors on MARTA station sites. Presently, there is not enough time to quantify or adjust for any of the other factors. However, the analysis has revealed significant facts regarding the factors which have caused certain changes around the West End Station site, as stated above.

**Tenth Street Station: Existing Conditions, 1968-1976**

The Tenth Street Station is located 2.0 miles north of Five Points on the Central MARTA Line which follows the Peachtree Ridge between the CBD and Pershing Point. The station will be constructed under Columbia Avenue between Peachtree Place and Old Tenth Street, and with auxiliary facilities will occupy an area of 1.3 acres, between Peachtree Place,
Tenth Street, Southern Bell and One Tenth Street Apartments.  (Refer to station location map in Figure 6.)

The Tenth Street Station will provide service to Midtown and Home Park neighborhoods, Georgia Tech and the Peachtree Business Corridor. The station was located as close as possible to Tenth Street, a major east-west artery, to provide convenient auto and bus access.

A high development potential will be created around the station by its situation relative to downtown; its location along the Peachtree Corridor; its position straddling the Peachtree Ridge (a major topographic feature of Atlanta's physiography); and the relatively underdeveloped and dilapidated nature of the area. New development, if realized, will have a major impact on the Peachtree Corridor and surrounding neighborhoods. The Tenth Street Station policy area has been drawn to include all of those areas where impact of the MARTA system and related future development may be exhibited.

Noda development is one of the primary concepts proposed for the Tenth Street Station, as shown in Figure 7. Three general principles of nodel development exemplify its impact as a policy document on the form and extent of future development in the city. The plan states that each node should be

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6G. Eric Harkness, Tenth Street Station Area Development Plan, Bureau of Planning, Department of Budget and Planning, Atlanta, Georgia, December 1974
7Ibid.
divided into three concentric zones, as graphically represented in Figure 7.

The three zones are as follows:

1. The immediate impact, or core zone, would measure from 1,000-2,000 feet across, based on average walking distance and would contain multiple uses at high densities.

2. The transition zone would be planned as an area surrounding the core, acting as a "buffer strip" in which changes in land use and scale would take place to accommodate surrounding low-intensity areas.

3. The preservation zone would be planned to allow preservation of existing residential neighborhoods, industrial or commercial areas outside the proposed development nodes; programs would be devised for their maintenance, improvement and/or orderly change.

The Tenth Street Station is one of the areas identified for high-intensity nodal development. 8

Land use within the policy area (around the proposed Tenth Street Station site constituting the primary service area) divides into functional areas corresponding to residential neighborhoods, commercial and park uses. Zoning can be defined as the control of land development in accord with the City Comprehensive Development Plan. Zoning is the vehicle by which regulations are placed on the use of land and

8 Ibid.
the structures upon it providing for: lessening congestion in the roads and streets, thus securing safety from fire and flood and other dangers; adequate light and air; promotion of the health and general welfare; encouragement of such distributions of land development and utilization as will tend to facilitate economic and adequate provisions for transportation; communication; roads; airports; water supply, drainage and sanitation; education; recreation and other public requirements.

Existing zoning in the policy area is fairly equally divided between low-density residential, medium to high density residential, central area, commercial and industrial. Land speculators and developers are showing special interest in the Midtown Peachtree Corridor (the Tenth Street Station Area) based on aggregated ownerships and serious planning efforts being pursued by some developers. The interest can be credited to three factors. First, major development has shown a general movement from the downtown north along the Peachtree Corridor. Development in the Tenth Street and Arts Center Station Areas has been made more feasible by the underdeveloped and deteriorating conditions of much of the area in the midtown Peachtree Corridor.

Figure 8 shows a number of areas where real estate firms, developers and owners have consolidated properties for speculative or development potential. An acquisition or develop-
FIGURE 8

1. COLONY SQUARE
2. PIONEER 14TH ST., INC.
3. CARLOS BROTHERS
4. SELIG ENTERPRISES
5. HOOKER/BARNES
6. FOX/SOUTHERN BELL
7. SECURITY MANAGEMENT, INC.
8. PARTNERSHIP INVESTMENTS, INC.
ment direction is also indicated by an arrow where that trend has been identified. Population data are included in Table 5.

The policy area has a wide variety of housing types available to all economic groups. As new development occurs in the area, it is likely to replace housing for the lower-in-come groups with housing for middle and high income people. Employment in the policy area is centered in two activity areas, along the midtown Peachtree Corridor and at Georgia Tech.

The Tenth Street Policy Area includes a number of community facilities: Grady High School, O'Keefe Middle School, Home Park Elementary School, Fire Station No. 11, YWCA, Home Park and Piedmont Park. A number of churches and service organizations have community outreach programs: the Community Crisis Center, Eleventh Street Drug Clinic, Renewal House, Aurora and Metanoia. These facilities have been established to help with youth problems. Land values as low as $10 - $20 per square foot have been recorded recently, 1975 - 1976, in the immediate area of the Tenth Street Station site. The highest price for the subject station area is $20 per square foot. Since most high-rise projects have 10 to 15 percent of their total value in the site, it is now possible to establish a relationship between the total project costs and the site value. Tables 6 and 7 reflect a matrix of site values at various project costs. As a note of interest, there was

9 Ibid.
<table>
<thead>
<tr>
<th>Neighborhood or Area</th>
<th>Mean Family Income ($)</th>
<th>Employment</th>
<th>Total Population</th>
<th>% Pop. Under 18</th>
<th>% Pop. Over 62</th>
<th>Total Housing Units</th>
<th>Single Family Units</th>
<th>Owner Occupied Units</th>
<th>Average Value ($) Owner Occupied</th>
<th>Rental Units</th>
<th>Average Rent ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midtown Peachtree Corridor</td>
<td>10,000</td>
<td>12,963</td>
<td>1,617</td>
<td>10.8</td>
<td>21.6</td>
<td>1,126</td>
<td>22</td>
<td>14</td>
<td>--</td>
<td>953</td>
<td>104</td>
</tr>
<tr>
<td>Midtown</td>
<td>9,000</td>
<td>1,433</td>
<td>5,913</td>
<td>12.7</td>
<td>15.0</td>
<td>3,188</td>
<td>402</td>
<td>379</td>
<td>17,195</td>
<td>2,819</td>
<td>94</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>7,500</td>
<td>2,240</td>
<td>4,019</td>
<td>14.4</td>
<td>10.6</td>
<td>336</td>
<td>202</td>
<td>103</td>
<td>11,766</td>
<td>177</td>
<td>65</td>
</tr>
<tr>
<td>More Park *</td>
<td>8,000</td>
<td>553</td>
<td>2,224</td>
<td>26.3</td>
<td>15.1</td>
<td>823</td>
<td>377</td>
<td>256</td>
<td>12,125</td>
<td>511</td>
<td>80</td>
</tr>
<tr>
<td>TOTALS</td>
<td>8,625</td>
<td>17,189</td>
<td>13,773</td>
<td>16.0</td>
<td>15.6</td>
<td>5,473</td>
<td>1,033</td>
<td>752</td>
<td>14,352</td>
<td>4,190</td>
<td>86</td>
</tr>
</tbody>
</table>


* Section of Home Park within 10th Street Station Area.
TABLE 6

Demand for Office, Residential, Commercial and Hotel Use in Tenth Street Station Impact Area

<table>
<thead>
<tr>
<th></th>
<th>Office in Sq. Ft.</th>
<th>Residential in Units</th>
<th>Commercial in Sq. Ft.</th>
<th>Hotel in Rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total in Central Corridor</td>
<td>32.65 million</td>
<td>18,000</td>
<td>3,200,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Tenth Street Station</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1970 - 1980</td>
<td>400,000</td>
<td>500</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1980 - 1990</td>
<td>835,000</td>
<td>1,500</td>
<td>250,000</td>
<td>400</td>
</tr>
<tr>
<td>1990 - 2000</td>
<td>800,000</td>
<td>1,500</td>
<td>150,000</td>
<td>200</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2,035,000</td>
<td>3,500</td>
<td>400,000</td>
<td>600</td>
</tr>
</tbody>
</table>

Percent of Central Corridor

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6.2%</td>
<td>19.4%</td>
<td>12.5%</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

### TABLE 7

Land Value at Three Levels of Project Cost for Tenth Street Station Impact Area November, 1974

<table>
<thead>
<tr>
<th>FAR 1/</th>
<th>Site Cost at % of Project Total Cost</th>
<th>Site Values of $40/sq.ft. proj. cost</th>
<th>Three Levels of Project Costs2/</th>
<th>$50/sq.ft. proj. cost</th>
<th>$60/sq.ft/ proj. cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10%</td>
<td>$20/sq. ft.</td>
<td>$25/sq. ft.</td>
<td>$30/sq. ft.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12%</td>
<td>$24/sq. ft.</td>
<td>$30/sq. ft.</td>
<td>$35/sq. ft.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15%</td>
<td>$30/sq. ft.</td>
<td>$38/sq. ft.</td>
<td>$45/sq. ft.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>10%</td>
<td>$40/sq. ft.</td>
<td>$50/sq. ft.</td>
<td>$60/sq. ft.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12%</td>
<td>$48/sq. ft.</td>
<td>$60/sq. ft.</td>
<td>$70/sq. ft.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15%</td>
<td>$60/sq. ft.</td>
<td>$75/sq. ft.</td>
<td>$90/sq. ft.</td>
<td></td>
</tr>
</tbody>
</table>

1/ An example of a development with a FAR of 5 is a 500,000 square foot office building on a 100,000 square foot property. A development with a FAR of 10 could be the same 500,000 square foot structure on a 50,000 square foot property.

2/ Project costs include construction, land and all soft costs, such as professional fees.

no economic analysis of this kind prepared for the West End Station Area.

While the $60 (1974 constant dollars) per square foot includes all "soft" costs as well as construction and last costs, it is considered high for most Atlanta Markets. At a Fare Annual Rent (FAR), also known as economic annual rent, of $10-$75 per square foot appears to be the maximum future land value at the Tenth Street Station (FAR is usually used for lease purposes to governmental agencies for commercial use). A range of $25 to $40 (constant 1974 dollars) per square foot is seen as justifiable in the immediate area of the station. Office structures of 150,000 to 200,000 square feet are estimated minimums for the subject area.¹⁰

According to the Bureau of Planning, Department of Budget and Planning, the Tenth Street Station Area will be a sound environment for housing developments.¹¹ Strong public policy should support and extend this trend. When this quality of environment is coupled with the historical precedent in other cities having modern rapid rail systems, the heaviest impact has generally been seen to have occurred within the central areas at terminal stations.

¹⁰Ibid.

¹¹However, commercial development will dominate most of the area.
ASSESSMENT DATA FOR "TENTH STREET STATION AREA"

The summary results of the information collected in the survey of the assessment data for land located around the "Tenth Street Station: are presented in table 8. Included in this portion of the analysis for the Tenth Street Station area were thirty-two (32) selected properties out of the total fifty-one (51) properties selected. Only fourteen (14) properties out of the thirty-two (32) could be assessed for the period 1968 through 1976. There were no records/activity of sale transactions for the other eighteen (18) properties during the examination period. It was assumed that these properties were also being held by owners for further speculative reasons. The data included in table 8 represent the valuation for only the fourteen (14) properties.

The area is situated 2.0 miles north-east of Five Points and includes all 14 selected properties, 13 of which had full 1968-through-1976 data available. The summary of assessment values within the area increased an overall average between 1968 and 1976 by 723.8 and 81.1 percent respectively. The development in the area is generally characterized by underdeveloped and deteriorating conditions--the "hippie era." However, a high development potential may be created around the station by its situation relative to downtown. The area is, however, increasing in desirability, as it illustrated by the high-to-moderate increasing land values and by the no da development concept proposed for the area discussed above.
TABLE 8

SQUARE FOOTAGE VALUE FOR TENTH STREET STATION AREA--1968-76

<table>
<thead>
<tr>
<th>Parcel Number</th>
<th>Unadjusted Assessed Land Value 1976</th>
<th>Adjusted(^1) Assessed Land Value 1968</th>
<th>Unadjusted Assessed Land Value 1968</th>
<th>Adjusted(^1) Assessed Land Value 1968</th>
<th>Adjusted 1968-76 Changes</th>
<th>1976(^1) % Change</th>
<th>1968(^1) % Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-106-1-73</td>
<td>$8,330</td>
<td>$7,424</td>
<td>$1,100</td>
<td>$759</td>
<td>$6,665</td>
<td>89.8</td>
<td>878.1</td>
</tr>
<tr>
<td>17-106-1-74</td>
<td>7,550</td>
<td>6,729</td>
<td>1,000</td>
<td>690</td>
<td>6,039</td>
<td>89.7</td>
<td>875.2</td>
</tr>
<tr>
<td>17-106-5-35</td>
<td>34,980</td>
<td>31,176</td>
<td>3,780</td>
<td>2,607</td>
<td>28,569</td>
<td>91.6</td>
<td>1095.9</td>
</tr>
<tr>
<td>17-106-6-76</td>
<td>7,750</td>
<td>6,907</td>
<td>690</td>
<td>476</td>
<td>6,431</td>
<td>93.1</td>
<td>1351.1</td>
</tr>
<tr>
<td>17-106-7-16</td>
<td>50,290</td>
<td>44,822</td>
<td>12,180</td>
<td>8,400</td>
<td>36,422</td>
<td>81.3</td>
<td>433.6</td>
</tr>
<tr>
<td>17-106-7-93</td>
<td>31,670</td>
<td>28,226</td>
<td>4,800</td>
<td>3,310</td>
<td>24,916</td>
<td>88.3</td>
<td>752.7</td>
</tr>
<tr>
<td>17-106-8-48</td>
<td>30,880</td>
<td>27,522</td>
<td>3,570</td>
<td>2,462</td>
<td>25,060</td>
<td>91.1</td>
<td>1017.9</td>
</tr>
<tr>
<td>17-106-4-19</td>
<td>8,700</td>
<td>7,754</td>
<td>1,070</td>
<td>738</td>
<td>7,016</td>
<td>90.5</td>
<td>950.7</td>
</tr>
<tr>
<td>17-106-4-80</td>
<td>30,400</td>
<td>27,094</td>
<td>5,360</td>
<td>3,697</td>
<td>23,397</td>
<td>86.4</td>
<td>623.9</td>
</tr>
<tr>
<td>17-106-7-35</td>
<td>9,670</td>
<td>8,619</td>
<td>2,580</td>
<td>1,779</td>
<td>6,840</td>
<td>79.4</td>
<td>384.5</td>
</tr>
<tr>
<td>17-106-7-54</td>
<td>32,250</td>
<td>28,743</td>
<td>7,220</td>
<td>4,979</td>
<td>23,764</td>
<td>82.7</td>
<td>477.3</td>
</tr>
<tr>
<td>17-106-7-46 &amp; 93 78,680</td>
<td>70,125</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>17-106-10-3</td>
<td>31,080</td>
<td>27,701</td>
<td>6,860</td>
<td>4,731</td>
<td>22,970</td>
<td>82.9</td>
<td>485.5</td>
</tr>
<tr>
<td>17-106-12-24</td>
<td>14,250</td>
<td>12,701</td>
<td>2,050</td>
<td>1,414</td>
<td>11,287</td>
<td>88.8</td>
<td>798.2</td>
</tr>
</tbody>
</table>

\(^1\)Adjusted for inflation
Developers and appraisers, the latter being Frank Robert Associates, have stated that the prime motivation for special interest and aggregated ownership was the proximity of MARTA to the area. The mean average per square foot in 1967 is $2.86, disregarding the undercapitalized nature of the area. Given the moderately high land values and the proximity of the area both to MARTA and increasing speculations, it appears that the area may experience a "boom" in development in the near future. Again, there are not enough data to quantify how much MARTA is contributing to the value increases. At this point it is hard to determine what other factors are present at the Tenth Street Station site.

While the assessed land values for the area indicate an increase between 1968 and 1976, a total average increase of 723.8 and 81.1 percent, these figures do not adequately summarize the true changes (market value) within the area. The assessed values are assessment values of City/County Tax Assessors, 52 percent of the market value. Nevertheless, even this figure reflects the changing character of the Tenth Street Station Area. Consequently, the relative assessed values are indicators of market values.

Again, to formulate an exact estimation regarding the above assessment data would be extremely difficult without knowing the causes or effects of the other factors on MARTA station sites. Due to increasing speculation and the Noda Development Concept proposed for the Tenth Street Station
Site, certain changes, such as value increases, around the station site have developed.

**Conclusions**

Transit Impact at the Tenth Street Station and the West End Station

This study represented a first attempt to describe the before and after effects of rapid transit on land value changes around two MARTA station sites. This task has not been accomplished due to a lack of quantitative land value data that is unavailable. Despite this complexity, the analysis has revealed a number of significant facts regarding the effects of a rapid transit station on land values. These facts are presented below.

Chapter II presented cases where recent major rapid transit improvements have been important inducements to intensified development near stations, both in central business districts and outlying areas, although only when supported by other favorable forces. The experiences of Toronto, San Francisco, Montreal, Washington, D.C. and Philadelphia were given. Their experiences, as indicated earlier, presented evidence that rapid transit improvements have been important inducements to development near transit stations, but again, only when supported by other complementary factors.

To formulate an exact estimation regarding the data collected for the Tenth Street Station and the West End Station would be extremely difficult without knowing the
causes or effects of the other factors present at MARTA stations. Once again, the experiences in other areas have shown that rapid transit does impact land use and value if complemented by other powerful forces. If these factors are present around MARTA transit stations, the same experiences are expected to occur in Atlanta as in the cases mentioned earlier.

The effects of MARTA on land values around its stations could have been estimated more easily if adequate land value records had been available. However, the study has shown that land values around MARTA station sites have increased fundamentally since 1968, due to the station being located within an economically healthy area, particularly within existing activity centers or areas about to develop such as the Tenth Street and West End Station sites. The land value increases may also be contributed to the expectation of increase or improved accessibility, according to the theory and topographical features presented in earlier cases, along with other complementary factors. Also, the earlier studies stated that rapid transit would influence or speed up development around station sites when other factors were present. Decisions on route alignment and station location are key determinants of the overall joint development potential of transit systems. However, it must be remembered that MARTA is only one of many factors influencing the potential for
land development. In addition, those areas situated adjacent to MARTA stations have experienced higher and faster increases in the last few years. These increases have occurred despite the fact that much of the area in the study is developed with archaic and disassembled structures. Development potential, causing land value increases, will be limited in scope unless a transit station area offers a market for new development. Frequently, transit station areas suffer from a severe lack of development potential, the major reason being poor station location. However, the station sites examined in this thesis are not examples of poor station location. Such short-term increases in land value can be mainly attributable to the advent of MARTA, although allowances must be made for other factors influencing the value of adjacent properties. These factors were addressed in the earlier part of this thesis.

The sectors studied, of course, are too small to make general statements about the behavior of land values for the entire Atlanta Metropolitan Area. A great deal more data must be gathered to fill in the gaps in quantitative material.

The Atlanta area is largely developed and partially urbanized, but the role of land value distribution in determining area growth policies and MARTA affect on real estate value is yet to be defined. This small beginning of establishing a methodology for the accumulation of empirical data on land value has been a step in this direction. However, the avail-
ability of more data would have provided a more successful presentation.

The data presented in Chapter III for the West End Station and the Tenth Street Station show high increases from 1968 to moderate increases in 1976. However, the data are too small to quantify how much MARTA contributed to the land value changes. Furthermore, it is too early to know the causes and effects of the other factors on MARTA station sites.

In summary, the methodology for establishing land value data has been determined, as well as the feasibility of using tax assessment data exclusively for further research. At this stage of research for empirical data on land values, there is no evidence of value trends, only value changes over time. Nevertheless, it is firmly believed that empirical data on land values, over time, for the entire metropolitan transit system will indicate value trends/changes from which factors affecting value can be identified. This belief is recognized by previous studies indicating land value changes around transit station sites two or three years after the station sites have been built. For example, the studies formed in Toronto and San Francisco were assessed three to five years after the construction phase of their station sites were completed.

**Future Research**

The gathering of the data in the course of this study
was an extremely time-consuming task. When future and more detailed studies of MARTA transit stations are conducted, it should be possible to start making quantitative estimates of the component of MARTA's impact on land value, if and when someone decides to commence with the collection of land value data for research of this nature, at least on specific properties, in like manner for all properties.

Two important steps can be taken to ensure that transit stations will be well located to attract development, thereby increasing land value. 12

First, an economic analysis of the likely development impact associated with alternative station locations and route alignments should be undertaken. A methodology would have to be developed to allow local planners to undertake such station area analyses and to obtain detailed quantitative results quickly and at a low cost.

Second, the administrative framework of the transit planning process can be changed to assure that adequate attention is devoted to new economic and other data relevant to joint development prospects. Specifically, agencies other than the transit authority must be given a greater role in the early stages of transit planning to ensure a broadening of perspective.

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