San Fernando Valley State College

LAND VALUE CHANGES NEAR FREEWAYS

A thesis submitted in partial satisfaction of the requirements for the degree of Master of Arts in Geography

by

Lewis Rose Dixon

Committee in charge:
Professor Richard E. Preston, Chairman
Professor Arnold Court
Associate Professor Morton W. Scripter

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The thesis of Lewis Ross Dixon is approved:

Committee Chairman

San Fernando Valley State College
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ABSTRACT

LAND VALUE CHANGES NEAR FREeways

by

Lewis Ross Dixon

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The economic impact on land values of surrounding properties produced by accessibility to a freeway is a problem having both practical and theoretical value. In this study an attempt is made to determine the economic impact on land value patterns surrounding a three mile strip of the Ventura Freeway, located in the southern part of the San Fernando Valley, based on freeway accessibility advantages and disadvantages.

A statistical analysis of the land value patterns of over 680 properties produced limited results. Commercial, multiple residential, and single family residential properties were studied. Freeway impact on land value patterns of surrounding properties was exhibited for a total distance of three blocks on either side of the freeway. Land value patterns based on accessibility disadvantages, such as lights, noise, fumes, and inconveniences of location concentrated in the adjacent area one to one and one-half blocks on either side of the freeway. Land value patterns based on access to the freeway developed in the next one to one and one-half blocks beyond the adjacent area.
Precise conclusions about the economic impact of the freeway on land value patterns of surrounding properties could not be made due to data limitations and qualitative factors that prevented isolation of the freeway's impact. For this reason the methodology proposed is reviewed and improvements suggested for future freeway impact studies of a similar nature.
CHAPTER I
INTRODUCTION

The effect that accessibility to a freeway has upon the land value of surrounding properties is the subject of this thesis. Chosen for examination was a three mile strip of the Ventura Freeway in Los Angeles, California. The study area is located in the southern part of the San Fernando Valley, and extends westward three miles from Laurel Canyon Boulevard to Van Nuys Boulevard and one and one-half miles north and south of the Ventura Freeway from Oxnard Street to Valley Vista Boulevard (Figs. 1 and 2). In this area, every other major street perpendicular to the freeway is served by on-and-off ramps, at one mile intervals. The on-and-off ramps are all straight line type, east-west in orientation, thus no approach advantage exists, based upon turning ease. This situation appears to be suitable for comparison of land value patterns surrounding streets having greater accessibility to the freeway with the patterns surrounding streets having less accessibility.

The economic effects of freeways in general are expressed in two ways. The first is associated with greater accessibility for the public and is accomplished by allowing through traffic to reduce travel times and distances with increased safety. The second effect is local in nature and is determined by accessibility to the freeway versus the annoyance factors (noise, lights, fumes) produced by freeway traffic, the sum of which is reflected in land values. William L. Garrison, Brian J. L. Berry, et al.,
Figure 1
in their highway studies, classify these two effects as vehicular and non-vehicular and add a third effect, reorganization of land uses and associated social and economic systems.  

It is with the second effect, changes in land value based on accessibility to the freeway, that this study is concerned. Investigations regarding this benefit and other related benefits of highway improvement are known as economic impact studies. Partly as a result of the Highway Revenue Act of 1956, and partly due to the general interest in the subject, research was undertaken in various sections of the United States to ascertain the absolute and relative benefits of freeways to the areas through which they were constructed. These studies may be divided into three categories: bypass studies, land value studies, and land use studies. These undertakings have analyzed primarily single cities or single areas. A small number of studies have considered the freeway impact upon central business districts of cities or upon multiple areas both urban and rural.

The purpose and value of highway economic impact study has been to provide a theoretical base for further work and to provide answers to freeway impact questions. These studies have been used to determine allocation of highway improvement funds, help plan land use in highway oriented areas, and gain acceptance from the public of needed highway projects.


Two questions are of primary importance here: (1) Do land value changes represent freeway impact? and (2) How can land value changes be adequately measured? A methodology for evaluating freeway effect on land value is therefore needed. A consideration of the various methods used in other economic impact studies to measure land value changes as related to highway improvement was undertaken. Evaluation of the most pertinent studies is the subject of the next chapter.
CHAPTER II
A SURVEY OF HIGHWAY ECONOMIC IMPACT STUDIES

With the completion of the first few limited access highways there developed a need for understanding their economic effects on the communities through which they passed or bypassed. These studies have been undertaken with the basic idea that accessibility changes cause economic changes such as increased land value, different land uses, and changes of location. Over the last two decades a great amount of information has been accumulated and studied. Out of this the various methods employed in highway impact studies have developed.

Studies Surveyed

California State Division of Highways 1957, 1959, 1964

The State of California has led in economic impact studies, carried out primarily by the Right of Way Division of the State Department of Highways. Their purpose has been to determine the economic effects of limited access highways so that more precise appraisals could be made for properties that will have to be purchased in the future. For the most part these studies have focused on the effects of freeways bypassing towns or business areas. A few studies have primarily regarded only land values.

3 For a complete bibliography of California impact study, refer to: California Land Economic Studies, Right-of-Way Research and Development, California State Division of Highways, Department of Public Works, Sacramento, California, 1964.
One such study of "Residences and Freeways" concluded that freeway influence on the market value of residences is nominal. This study found sale prices of residences adjoining freeways were one to two percent less than sale prices of residences one block or more away from the freeway. Results were gained from a public opinion survey that confirmed sale prices and asked questions pertaining to qualities of the residences next to freeways such as noise levels, visual effects, problems of financing, reasons for buying next to a freeway and if they would buy next to a freeway again.

This study appeared to be biased towards disproving the idea that freeways have an adverse effect on the market value of residences. The study was also limited to the period after construction of the freeways only. The results of the opinion survey conducted were prejudiced because only the buyers of houses were interviewed. Perhaps many of the sellers were doing so because of the effects of the freeways.

Another study, of the bisecting aspects of the San Bernardino Freeway upon the business district of El Monte, California, employed the before and after technique of analysis. However, the time period is a short one year before and after freeway construction. Retail sales tax figures were compared to determine any loss or gain in sales. Real estate sales were checked to determine any new businesses along the two main thoroughfares, Garvey Avenue and Valley Boulevard, which were divided by the freeway. No isolating effects were found on either street, and business showed an over-all gain in sales. The area continued to encourage new business.

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The short time periods considered limit the effectiveness of this study. Again, a bias was shown. This bias aimed to disprove the feelings of El Monte merchants that the freeway would create a "Chinese wall" or business isolation barrier for the public located on either side of the freeway.

In a preconstruction study of freeway route adoption impact upon land values in Glendale, California, the value of properties adjacent to the freeway route and zoned for multiple dwelling use were compared with other properties throughout the city. The before and after technique was utilized, and a control area added. The study illustrated that properties zoned for multiple dwelling usage and adjacent to the adopted freeway route rose in value by over forty percent during the period from 1959 to 1963, while residential properties in close proximity to the adopted route rose in value by twenty percent. Properties in the control areas rose by twenty percent also. Thus, single family residential areas did not appear to be affected by the adoption of a freeway route in close proximity to them while multiple dwelling land use properties showed a twenty percent greater effect. One interesting aspect was that older single family dwellings on lots zoned for multiple dwelling use within three blocks of the freeway were no longer listed by realtors as homes for sale, but as lots for sale, due to the great increase in apartment construction within that area. The time interval employed, two years before and two and one-half years after, is more satisfactory than in the before and after studies reviewed thus far. The effect of the freeway as a land value change catalyst was shown when areas of single family dwelling use on

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multiple dwelling zoned land throughout the city of Glendale were compared. The effect shown was twenty percent greater for properties adjacent to the freeway.

Three methodological improvements are evident in this study. They are the use of comparable control areas, the extension of the before and after periods to two years, and the division of land use into zones for comparison. The use of a control area greatly increased the validity of the findings.

In general, studies of highway impact by the State of California have been characterized by a concentration on bypass situations and the effects on business activities. Sales tax figures and real estate sales have been used primarily. The comparison of before and after periods has been the basic approach; however, this concept has occasionally been enhanced by the introduction of a control area.

Lemly (1959)

Changes in land use and value along the expressways of Atlanta, Georgia, were studied by James H. Lemly. The before and after approach was employed. Changes in land value were determined by comparing prices paid over the fifteen year period which the study covered. The author examined deed records to obtain these prices and to determine appropriate values for land without buildings. These values were then compared to other vacant properties. A control area was also used. Lemly qualified its use by stating that no two areas are exactly alike due to rapidity of land use changes.

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and stressed that location is an important factor in land value determination. The study concluded that the expressways of Atlanta had been directly responsible for increases in commercial activity on thoroughfares crossing the expressways. In the downtown sector, residential areas gave way to commercial and light industrial use with tremendous increase in land value accompanying these changes. Industrially zoned areas close to expressways increased greatly in value also. However, expressways had no adverse effect on two new residential areas located immediately adjacent to them.

This study exemplifies two methodological improvements. The separation of value of land from total sales price of properties is the more important advance, as this removes the values of improvements which do not truly represent freeway impact. The second improvement is questioning the use of control areas, and stressing the importance of location as a factor in land value.

Adkins (1959)

Expressway impact in Dallas, Houston, and San Antonio, Texas, was researched by William G. Adkins. Adkins applied the before and after concept to each city along with the use of control areas to indicate net expressway effect. Two measurement techniques were used, unadjusted and adjusted sales prices of properties. Unadjusted sales price did not separate land values from improvements, while adjusted sales price subtracted the appraised value of the improvements multiplied by a construction cost factor.

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to determine the value of the land. In the Dallas and Houston studies a three band zone of properties adjacent and parallel to the expressways were compared to control band zones one to two miles distant. Only one band was used in the San Antonio study. Adkins' conclusions show impact concentrated in the zones immediately adjacent to the freeway and then in the third band with the middle band or area showing the least effect.

The study also contained a methodological discussion in which problems of the before and after approach, control areas, and retail sales analysis are presented. Adkins' refinement of the concept of separating land and improvement values by adjusting retail sales prices is the important methodological contribution. His method of separation is not without problems however. A constant degree of uniformity has to be maintained and this requires careful conversions and analyses which are often difficult to determine.

Bone and Wohl

A large-scale analysis of the impact of a suburban freeway, Massachusetts Route 128, on the suburban area surrounding Boston was done by Bone and Wohl. Industrial and residential development were studied. The before and after approach with control areas was utilized. The study employed Adkins' technique of comparing bands adjacent to the freeway with control areas and focused on residential areas in the towns of Needham and Lexington. Assessed valuations, building permits, house densities, and real estate sales were used as indicators of real estate development. A second

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Method based on distance access zones was also employed in which zones were set up at 0 - 1/2, 1/2 - 1 and 1 - 1-1/2 miles travel distance from an interchange. These zones were compared to one another and with control zones. Results indicated that the band adjacent to the freeway and the 0 - 1/2 mile access zone demonstrated the greatest development in all categories. The comparisons used in the 1948 to 1950 period averages as the "before" period with the "after" period being from 1956 to 1958.

Methodological improvements introduced in this study included the use of distance access zones and analysis of house densities and building activity.

Washington State Highway Commission: University of Washington 1951 to 1959

If one other state could be compared with California for its interest in highway improvement studies, that state would be Washington. Since 1951, studies by faculty members of the University of Washington for the Washington State Highway Commission have had a tremendous influence on the methodology of highway impact studies throughout the nation. Various departments and colleges of the University collaborated on similar studies all aimed at a better understanding of the state. Two examples of this work are considered below.

Garrison and Marts (1958)

The objectives of this impact study were to draw conclusions regarding highway influence upon travel patterns, various categories of business

10 For a complete bibliography of Washington State Highway Improvement studies see William L. Garrison, et al., op. cit., p. 293.
activity, and land values in the area of Marysville, Washington. The study employed 'before and after' periods of three years, and control areas consisting of adjacent and presumably unaffected communities. To test the hypothesis that travel patterns were the main effectors of changes, individuals were questioned on personal trip patterns and about highway improvements. Data from twenty types of businesses, expressed as a percentage of their mean, was compared in three ways: temporal and spatial, linear trends, and seasonal fluctuations. Property values were determined by sales but no differentiation was made between land and improvement values. The authors knew of no exacting method by which to make the separation.

Results of the study showed that travel patterns, business activity, and property values had changed. However, only a few generalizations concerning these changes were offered. The authors were unwilling to make specific impact statements due to their feeling that the data were not adequate to provide answers to the specific questions they sought to answer. They also considered a problem basic to their type of research; namely that there is no plausible theory that is general enough to explain how every kind of land use would react to highway improvements under every situation.

Garrison, Berry, Marble, Nystuen and Morrill (1959)

Each author contributed an evaluation of studies of highway development and geographic change in this work. The book is divided into four

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12 Ibid., p. 98.

13 Garrison, et al., op. cit.
major sections: (1) highways and retail business, (2) highways and urban residential land use, (3) analysis of customer movement and retail business location, and (4) highways and services. One chapter was devoted to the value of access to residential land and was of particular importance. Land value analysis through the use of standard regression techniques was utilized to determine relations between the location of residences and their value. Poor results were obtained, however. Another chapter considered the spatial aspects of residential land use. The studies covered in this chapter dealt with the impact of highway improvement on spatial patterns of residential land use. This criticism concerned primarily subtleties of capacity or ease of movement as related to residential site selection by an individual.

In this work, as in the Garrison and Marts study, the authors were not willing to offer any specific conclusions and stayed primarily with generalizations about broad topics, emphasizing that more general formulas were needed to explain the total effects of highway improvement.

The Washington State research introduced two methodological improvements that were of importance to highway impact research, the analysis of specific types of businesses or land uses instead of grouped business activity analysis, and the use of digital computers. Also demonstrated was the need for more general theories to further explain the complex system of effects related to highway improvements.

Summary and Conclusions

The impact studies described cover a relatively small variety of purposes and techniques. The questions they sought to answer were both general and specific. However, fundamental approaches and indicators of impact were centrally clear in all studies.
The core of highway impact research is composed of before and after and control area approaches. Both are used to measure several primary indicators of highway impact: (1) travel patterns, (2) traffic volume, (3) retail sales, (4) population change, (5) land use change, and (6) land values. Other indicators have been used in special studies; for example, parking meter revenue in the central business district, and in a few cases a survey of building permits was used to determine freeway impact. The selection of which indicators to use depends upon the purpose and scope of each study.

The use of before and after and control area techniques in highway impact studies has raised many questions about their validity. These questions have focused on the time period utilized in the before and after approach and the definition of a control area.

Much discussion has been devoted to what length of time should be used to adequately exemplify impact and all its effects. In works surveyed here three years was the most frequently used interval of time. However, Stroup and Vargha demonstrate that any period of less than five years does not allow for any lagging internal adjustments. Another question about the before and after approach concerns the particular period of time on which the measurement of impact should be based. Bardwell and Merry felt that different settings of time applied to different indicators. The first announcement date of freeway location makes the public aware, resulting in land


speculation around the adopted route. Thus, this would affect the value of adjacent lands at the time of route adoption and not at the later date of freeway completion. Retail sales reflect contemporary demand, not the values of anticipation, and are best studied after the freeway is completed. Herr, in his study of ten impact areas, found that freeway impact begins before a highway is in service, surges to a peak shortly after it opens, and falls to a lower level in a few years, and either disappears or remains as a permanent increment to growth. 16

In using control areas, the primary objective is to choose an area which has not been affected by highway improvement. Land value changes that are directly related to highway impact are assumed to be located adjacent to the highway under study. Therefore, control areas should be located at some distance from the study area, in some part of the same general area that is presumed to be unaffected by the highway improvement. In metropolitan areas, such as Los Angeles, control areas are very difficult to find and define. Retail sales analysis is hampered in the control area approach because sales tax disclosure laws very often force analysis to be on a community wide basis rather than by individual business type. For these reasons control areas are most often chosen from "unaffected communities" nearby or from the county within which the study area lies. Bardwell and Merry also comment that economic changes taking place at the community level are similar to changes taking place at the county level, and that this relationship is likely to persist over a few decades, thus giving a predictive quality to the relation. 17

17 Bardwell and Merry, op. cit., p. 40.
In the Los Angeles metropolitan area, the use of control areas seems to be of dubious validity because almost all communities or areas have been affected by the freeway system in some way.

Problems often occur in the use of the various indicators of highway impact. Travel patterns are stressed as the single most important indicator by Garrison, yet he found them very difficult to measure due to a heavy reliance on interviews to secure the data. Traffic volume measurement is another way of determining travel pattern changes. However, in an area such as metropolitan Los Angeles, such volume changes are only temporary and are subject to change as each new link in the total freeway system is opened.

Retail sales analyze freeway impact upon business activity. State laws forbid the disclosure of individual business data but allow some data by collective business types to be used. The construction of freeways does cause some population changes but does not create trends of population change. It is important to compare economic changes that are related to population trends with changes related to highway improvement. Both elements create changing patterns of land use, land values, and business activity. These are often difficult to separate. When analyzing land use and land value there is a problem of separation, as land value is determined by land use or utility. Actual land sales in an open market are the best value indicator. If there is only a small number of sales recorded, then the use of appraised value data is required. Assessed valuations have the limitations of lagging a year or more behind market value in some areas and of being influenced by non-market conditions. If sufficient sale prices are available then the problem of separating land value from the value of improvements occurs. A method for
accomplishing this is proposed by Raup.\textsuperscript{18} Raup's method for separating land value is based on the calculation of the ratios of assessed value of land to assessed value of structures on the land for each property included in a market sale. These ratios are applied to the sale price and market value of the land determined. This does not free the method from errors associated with the use of appraised values, however.

A few generalized conclusions about the nature of highway studies are possible from the works surveyed in this chapter. A definite methodology, the before and after approach and control area approach has been formulated to facilitate the study of highway impact. However, the lack of general, all-encompassing theories prevents a full understanding of highway impact and limits the scope of the studies undertaken. Measurement of impact is also a difficult process. Evaluation of each study for its individual contributions to measurement is required because lack of adequate data often prevented the precise measurements sought in each case.

Finally, the two questions asked at the end of Chapter I: Do land value changes represent freeway impact? and How can land value changes be adequately measured? were not satisfactorily answered by the survey of impact studies. It was ascertained that land value changes are one method of measuring impact and that valid measurement of actual land value separated from improvement value is difficult. For these reasons, a different approach was needed to show the effects of freeway impact upon land values in the San Fernando Valley. This new approach is described in Chapter IV.

\textsuperscript{18}P. M. Raup, "The Land Use Map Versus the Land Value Map," Highway Research Board, Bulletin No. 227, 1959, p. 87.
CHAPTER III
BACKGROUND OF STUDY AREA

Early Development

The early historical development of the San Fernando Valley can be linked with a few families and the subdivision of their large land holdings. Land promotion and subdivision within the study area were associated with four such families: Lankershim, Van Nuys, Sherman, and Chandler. These families were instrumental in establishing the communities of North Hollywood, Van Nuys, and Sherman Oaks during the early 1900's. 19

Accompanying the land promotions were two other developments of importance to land value patterns in the study area. The first development was the establishment of the Pacific Electric Railway system in the Los Angeles metropolitan area. This system reached its peak usage in 1947 when 575 million passenger trips were made through the Los Angeles area. 20 Within the study area the railway lines ran east-west along Chandler Boulevard and branched north-south along Van Nuys Boulevard (Fig. 2, page 3). The second important development was the increased use of Ventura Boulevard by vehicular traffic to the point that it became the major east-west arterial

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19 The Van Nuys News and Valley Green Sheet, microfilm copies of editions of the years 1911 to 1930, The Van Nuys News and Valley Green Sheet, as available.

across the San Fernando Valley by the mid 1940's. 21 It will be shown later that land value patterns developed based on proximity to these two boulevards.

Filling-in Process

Since the 1900's the development of the study area has been one of gradual filling-in by subdivisions of the large original lots and open spaces connecting the three communities. This process is still going on with subdivisions becoming smaller as the larger open areas are used up. This filling-in process, nearly completed by the early 1940's, was accompanied by a transformation of the character of the study area from agricultural to suburban residential. City planners had established a zoning pattern for the area by the early 1940's (Fig. 3). A comprehensive zoning ordinance was adopted for the entire city of Los Angeles in 1946. 22 This ordinance had little effect on the study area as it adopted virtually the same uses already set up in the early 1940's. By 1955 this existing zoning had become somewhat outdated in some areas and a major reclassification took place. A description of the existing zoned usage of the 1940's and the reclassification follows.

Zoned Usage

The zoning pattern of the 1940's was based on the grid system of the major streets. It consisted of single residential usage in the central areas surrounded by limited multiple residential use along the major streets, with commercial usage at the intersections of the major streets. Three major

21 Ibid.

22 Mel Scott, Metropolitan Los Angeles: One Community, The Haynes Foundation, Los Angeles, 1949, p. 89.
ZONED USE OF STUDY AREA 1942

SCALE IN MILES

USES
- R-1
- R-2
- R-3
- M-1 & M-2
- C-2

Figure 3
streets were exceptions to this pattern: Van Nuys, Ventura, and Laurel Canyon Boulevards. These streets were either zoned entirely for commercial usage or had large portions zoned commercially. Since the early 1940's there has been relatively little change in the overall zoning pattern; thus, the suburban residential character of the area has remained fairly constant. One zone change did affect the entire area, however.

**Important Zone Changes**

From 1946 to 1954, population in the southeastern San Fernando Valley increased very rapidly. One type of zoned land usage, R-2 (a class limited at that time to 4 family dwellings per lot), offered too few dwelling units per unit area to adequately meet the demands for housing created by the population increase. In order to meet the pressure of increasing population this classification was re-zoned throughout the entire San Fernando Valley in 1955 to the present day R-3 classification which consists of multiple dwelling unlimited in number per lot. At the same time, all of the old R-3 zones in the San Fernando Valley were re-zoned to the present R-4 classification, which includes multiple dwellings, office buildings and hotels. Within the study area virtually all major streets had some old R-2 and R-3 zones; thus, because of the sweeping zone change it was necessary to study all such affected properties separately in this analysis of the impact of the Ventura Freeway. Also, from 1946 to 1954 several areas along some major streets were re-zoned R-1, and thus were developed as single family residential areas. This type of property did not have to be studied separately as they

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23 Planning Department, City of Los Angeles, Zoning Maps for 1942.
were traceable to before the freeway route was adopted (Fig. 4). A small
number of areas were re-zoned in other ways than those mentioned above, and
had to be eliminated entirely from the analysis. Such areas are shown
as all other use changes in figure 4. The present zoning pattern in the study
area is shown in figure 5.24

Increased Use of the Automobile

By the 1930's and early 1940's increased use of private automobiles
in the San Fernando Valley led to a decline in use of the Pacific Electric Rail-
way system, and finally led to its abandonment in the Valley in the 1950's.25
In fact, use of the private automobiles was so great in the Los Angeles Metro-
politan area by 1940 that the City Planning Department found that one of the
most pressing problems confronting the city was transportation. Prior to this
date, sixteen major studies of transportation were conducted by various
agencies. These studies agreed on six aspects vital to the transportation sys-
tem within the metropolitan area:26

1. The population pattern is unlike that found in any other
large metropolitan center.

2. No large city even approaches the high automobile owner-
ship, nor the widespread use of the automobile that is
found in Los Angeles.

3. No mass rail rapid transit system could be financially
successful in Los Angeles without a substantial subsidy
or increase in fare charged.

24 Planning Department, City of Los Angeles, Zoning Maps for 1955,
1966.

25 Pegram, op. cit., p. 32.

26 Los Angeles City Planning Commission, A Parkway Plan for the
City of Los Angeles, Department of City Planning, Los Angeles, 1941, p. 4
MAJOR ZONED USE CHANGES 1942 TO 1966

Figure 4
ZONED USE OF STUDY AREA 1966

Figure 5

SCALE IN MILES

USES

R-1

R-3

R-4

M-1 & M-2

C-2
4. The present traffic situation is rapidly approaching a state of stagnation.

5. The area of Los Angeles and the topography of the region mark it as an unusual city.

6. Under the circumstances it is impossible to compare Los Angeles with any other American city, or to apply the same standards or criteria that are frequently applied to cities in design of transportation systems.

The Parkway Plan

Based on these six findings, the Traffic Engineering Board of the City of Los Angeles prepared a report, "A Transit Program for the Los Angeles Metropolitan Area," developed around the concept of parkways or limited access highways. The report was adopted by the City Planning Commission one year later, in 1941, and became part of the overall development plan for the City of Los Angeles. This parkway plan is basically the same as that utilized today for the Los Angeles Metropolitan area freeway system.

Thus, as early as 1940 Los Angeles' transportation system was so dominated by automobiles that it appeared that a comprehensive parkway system was the only feasible answer. Los Angeles was the first major city to adopt this type of comprehensive plan, and the planners stressed that it should be carried out at once to derive maximum benefits. This would have been possible under the Parkway Authority Bill introduced in the California Legislature in 1941, and by acquisition of federal funds to purchase the right of way. However, World War II prevented enactment of the plan until 1946, when construction was started on the system, on a priority of demand basis, from central Los Angeles outward in a radial pattern.

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27 ibid., pp. 1-40.
Freeways for the San Fernando Valley

By the early 1950's freeway routes had been formally adopted for the San Fernando Valley, and in 1956 the Interstate Highway Act made federal funds available for construction of a 41,000 mile expressway or freeway type interstate highway system in the United States. Three of the freeways planned for the San Fernando Valley qualified for these funds: the Golden State, the Ventura, and San Diego, and were constructed during the late 1950's and early 1960's. Another freeway, an extension of the Hollywood Freeway northward to the Golden State Freeway, did not qualify for federal funds but was completed in July of 1968.

The Role of Freeways in the San Fernando Valley

The growth and development of the San Fernando Valley provides an example of economic benefits accompanying improvements in a transportation system. Freeways have not only supplied the impetus for development of urban fringe areas such as Canoga Park, Woodland Hills, and Chatsworth, but have aided in revitalizing business and real estate activity in the older and more established areas close to the central city.

Approximately 200 miles of freeway and secondary highways in the Valley connect it with all parts of the Los Angeles Metropolitan area, as well as with other major market areas located within Southern and Central California.

Freeway development has had a significant impact upon the pattern of growth in the San Fernando Valley. During the 1950's freeways provided the much needed home-to-work transportation for the many residents whose place of employment was outside the Valley. Today they perform an additional
important function, that of facilitating the flow and movement of goods and services produced within the Valley's expanding economy. 28

Importance of the Freeway in the Study Area

The primary benefit received by the study area from construction of the Ventura Freeway was the removal of most of the through traffic from its surface streets. This removal reduced congestion and allowed a fuller development within the area. Businesses were not only more readily accessible to local residents but also to customers who previously would not drive to the area because of congestion. Additional single and multiple residential development was also more feasible as the area's streets were opened for local traffic.

The freeway also changed the general traffic pattern in the study area from one of east-west movement along major streets to one of north-south movement to the freeway on-and-off ramps. This effect is especially evident during morning and evening peak commuter periods.

Based on the freeway's importance to the study area, a pattern of land value based on accessibility to the freeway should develop. Determination and measurement of this pattern of land value is the subject of the following analysis.

CHAPTER IV
METHODOLOGY

Lack of two important factors prevents measurement of the net impact of freeway construction in the San Fernando Valley. The factors are a control area unaffected by freeway construction and adequate data to properly analyze land value determining systems.

Lack of Control Area

A survey of previous research indicated that the before and after concept with the use of a control area was considered to be the most valid approach in highway impact studies. However, no suitable control area that approached the development pattern of the study area and that was not also affected by freeway construction could be found in or near the San Fernando Valley. Thus, the net effect of freeway construction could not be shown by this method.

Lack of Adequate Data

Land value theories suggest that increased accessibility produces increases in land values. Transportation improvement acts in combination with other factors to determine land value. Homer Hoyt considers the workings of one such system in two publications.²⁹ Accessibility throughout the Los

Angeles metropolitan area was decreasing before construction of the freeway system began in the early 1950's (Fig. 6). After construction of the freeway shown on the map, accessibility was greatly increased throughout the area. Lack of adequate data to properly analyze all dynamic factors in the complex land value determining system, however, prevents measurement of the overall impact of freeway construction upon land values in the San Fernando Valley.

**Two Measurable Patterns**

Two geographic patterns of land value were expected to be measurable in the study area. One pattern would be caused by accessibility to the freeway, and the other by the limitations and inconveniences of access due to freeway route location and aesthetic disadvantages such as noise, lights, fumes, and unsightliness associated with freeway use and location. An attempt will be made to determine if such patterns exist in the study area.

**Measurement of a Non-Dynamic Factor**

Most previous research in the field of highway impact concentrated on those elements of the affected community or areas that were changing, presumably as a result of highway improvement. By concentrating heavily upon more dynamic factors, the studies missed a valuable source of impact measurement. That source is the value of land on which the use and zoned use did not change for many years before and after freeway construction. This study will use this factor to determine whether the geographic patterns mentioned above exist in the southern San Fernando Valley.

**Time Period Covered**

The short time periods used in the before and after studies previously surveyed appear oriented to dynamic factor analysis. Non-dynamic
Los Angeles Metropolitan Area
MOTOR VEHICLE TRAVEL TIME

PREPARED BY THE
CALIFORNIA DIVISION OF HIGHWAYS
DISTRICT 7
JAN. 1, 1966

Figure 6
actors require longer time periods to adjust to changes, hence before and after periods of five years or more are used whenever possible in this study. The twenty-year period from 1946 to 1966 would allow at least five years before freeway route adoption and five years after its completion.

Use of the Appraised Values

To trace a large number of land values over the twenty year study period, records of the Los Angeles County Tax Assessor were used. The use of appraised values has been criticized by many authors because such valuation may be subject to many non-market influences, and often may lag behind changes in value in the open real estate market. Los Angeles County appraisals are based on sales prices of property within each neighborhood during the preceding year, and thus are only about one year behind any changes in open market value. Over a twenty-year period, all this lag in response to open market value changes could be allowed for in the analysis, so that the results would not be adversely affected. Another advantage of utilizing assessed values is that the value of land is entered separately from the value of improvements. Thus, assessed land value can be traced over time.

Specific Methodology Proposed

Sampling Procedure

The study area is covered by 25 map books of the Los Angeles County Tax Assessor (Fig. 7). Each map book lists from 300 to over 1,000 individual pieces of property. From each block along each major street throughout the study area, one property was chosen at random until one was found that was traceable year by year from a point in time at least three years before the freeway route was adopted. This original sample from each block on the
LOCATION OF PROPERTIES STUDIED

LEGEND

EACH DOT REPRESENTS ONE PROPERTY

2345 LOS ANGELES COUNTY TAX BOOK AREAS

TAX BOOK BOUNDARIES

Figure 7
major streets was augmented by ten additional properties, not located on the major streets, and chosen at random from within the 25 areas. These properties were not replaced if they could not be traced to three years prior to route adoption due to the extreme lengths of time involved. The zoned use of each property was checked to be sure no change had taken place over the entire study period. Properties affected by the major re-zoning of the 1950's were studied separately.

Value Tracing Procedure

The properties chosen were located in the assessment records for 1966 and the appraised value of the land recorded. Legal description and tract numbers for each property were also noted. Using these, the appraised values of each property were traced back over the years as far as possible, or until the year 1946 was reached. The appraised values were then recorded for each year.

Two Measurements of Distance to Freeway

Each property that qualified for study was plotted on a map. Two measurements of distance to the freeway were then taken: (1) the direct of straight line distance to the freeway, to be used later to ascertain if aesthetic disadvantage and locational and accessibility inconveniences were important and, (2) the distance to the nearest on-and-off ramps, to seek any pattern based on accessibility to the freeway.

Comparison of Average Annual Percentage Increases

Since the properties studied varied in total value and in number of traceable years before freeway route adoption, it was necessary to use
average annual percentage increases to make property comparisons. Four periods of time, representing four stages of freeway impact, were used for comparison:

1. Earliest traceable year to the year the freeway route was adopted.
2. Freeway route adoption year to the right of way procurement year.
3. Freeway completion year to 1966.
4. Route adoption year to 1966.

The first period represents the land values before the freeway route was adopted, the second the anticipatory impact of route adoption, the third the impact of freeway completion, and the last period the total impact of freeway construction.

Two Methods of Graphic Analysis

Two methods of graphic analysis were used. First to seek linear patterns based on distance to the freeway, property values along each major street were graphed against distance and then compared to (1) determine any differences between streets served by on-and-off ramps and those streets which were not so served, and (2) to determine the effect of on-and-off ramps on the streets paralleling the freeway. Second, separate isoline maps were drawn showing the average annual percentage increases for each property for each of the comparison periods. The total sample, made up of both major street and random samples, was used for making these maps.

Qualification of Results

The validity of any conclusions from analysis of statistical data depends upon interpretation based on qualitative knowledge. The two factors,
statistical data and qualitative information, act as a check and balance upon one another. Therefore, in this study the results obtained by the methodology set forth above will be supplemented with qualitative information whenever practical and possible. The results will also be evaluated with respect to factors beside the freeway that might have caused patterns of land value change.

Measurement Limitations

When the measurements set forth were undertaken, the disadvantages of using assessed valuations became increasingly evident. Limitations were severe enough to cause the elimination of the measurement of two stages of freeway impact, and to prevent the use of the isoline map technique of analysis.

Elimination of Two Stages of Freeway Impact

When assessed valuations were traced back over the years, it was apparent that they were not in fact determined by the previous year's sales prices every year. Rather, they were brought up to date at various intervals using that principle. Within the study area, sections were re-assessed at various time periods, and since this study uses average annual percentage increases of land value as a basis for comparison, the sections that were re-assessed were not comparable with the rest of the sample. Two stages of freeway impact were affected by this reassessment procedure. They were the anticipatory impact period (freeway route adoption year to right of way procurement), and the impact of freeway completion period (freeway completion year to 1966). The anticipatory period was unmeasurable because less than one-fourth of the total properties were re-assessed based on the right of
way procurement year. The freeway opening impact stage was not measurable because only two-thirds of the properties were re-assessed during 1960, the freeway opening year.

Isoline Map Technique Eliminated

The effects of all aforementioned limitations plus the assessor's policy of evaluating properties along the major streets separately from residential areas surrounding them resulted in the elimination of the isoline map analysis technique. The isoline maps were constructed, but no continuity of values appeared. The results were so negative that the maps were abandoned.

Two Stages of Freeway Impact

Two stages of freeway impact were measurable and were of significance. The before stage (1946 or the earliest traceable year to 1954) was measurable since all properties were re-assessed in 1954. This period was used to determine if any pattern of land values existed before the freeway route was adopted. Total impact of freeway construction (1955 to 1966) was also useable as all properties were re-assessed by 1961, following the freeway opening. An analysis of the patterns shown along and surrounding the major streets throughout the area, both before and after the freeway route was thus adopted, and is the subject of the next chapter.
CHAPTER V
LINEAR PATTERN OF VALUES

Linear Pattern Along Major Streets

Linear patterns of land values based on average annual percentage increases along each of the major streets perpendicular to the Ventura Freeway are shown in Figures 8 through 11. The patterns illustrate what was expected for the two stages of freeway impact studied here. In the before stage, 1946 to 1954, there existed no patterns based upon distance to the freeway area along the access streets (Fig. 8). Along the non-access streets a value crest was shown at the freeway zone for the before period (Fig. 9). There were patterns based upon distance to Ventura Boulevard, the major east-west traffic artery before the freeway, and Chandler Boulevard, the Pacific Electric Railroad route until the early 1950's. In the total impact stage, 1955 to 1966, linear patterns based on distance to the freeway along all seven streets were evident. A street by street description of these patterns follows.

Access Streets

Van Nuys Boulevard. - Linear patterns along Van Nuys Boulevard exhibited expected results for a commercial street, and are illustrated in figure 10. Land value growth for properties north of the freeway during the before stage show an irregular pattern that peaked at a distance of about 6,000 feet north of the freeway or just north of Chandler Boulevard. These values taper off
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES
ALONG ACCESS STREETS
"ALL PROPERTIES"

1946 to 1954

--- TRACEABLE PROPERTIES

1955 to 1966

--- REZONED PROPERTIES

Figure 8
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES ALONG NON-ACCESS STREETS

1946 to 1954

1955 to 1966

TRACEABLE PROPERTIES

REZONED PROPERTIES

Figure 9
both north and south of this point. At a distance of 600 feet north of the freeway at Riverside Drive and a 9,000 feet north of the freeway at Oxnard Street low values were shown for the before stage. In the total impact stage, values north of the freeway demonstrate the expected peak, 17 per cent, close to the freeway at a distance of about 600 feet. Then a point at which the rate of growth of land values was the same during both stages is demonstrated at a distance of about 900 feet north of the freeway. Values then taper downward from about fourteen per cent to ten per cent in the zone from 1200 to 3600 feet north of the freeway. North of this point the land values appear to lose their dependence upon distance to the freeway.

South of the freeway land values from 1946 to 1954 exhibit a pattern based on distance to Ventura Boulevard, located 2500 feet south of the freeway. The broken lines indicate properties re-zoned and show a higher value than properties not re-zoned during the period. They also demonstrate a pattern based on distance to Ventura Boulevard. In the 1955 to 1966 period values south of the freeway depict the expected pattern for values dependent upon aesthetic disadvantages of a quick rise then a peak, and a tapering off. This pattern is developed in a zone from 600 to 3,000 feet south of the freeway. South of this point values appear to be no longer affected by distance to the freeway. Thus, for Van Nuys Boulevard a pattern based upon accessibility is indicated north of the freeway while one of aesthetic disadvantage is demonstrated south of the freeway.

Woodman Avenue. - Before stage values along Woodman Avenue indicate patterns based on accessibility to Chandler and Ventura Boulevards (Fig. 10). Values in the total impact stage illustrate a slight pattern of accessibility north of the freeway for a distance of about 2,500 feet, and a pattern of aesthetic
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES ALONG ACCESS STREETS

1946 to 1954

--- TRACEABLE PROPERTIES

--- REZONED PROPERTIES

1955 to 1966

Figure 10
disadvantage south of the freeway for the same distance. Beyond this distance no patterns dependent on distance are exhibited in either direction. It could not be determined which is the more important factor, accessibility or aesthetic disadvantage.

Coldwater Canyon Avenue. — Freeway influence on land value patterns along Coldwater Canyon Avenue show up for a distance of about 2,000 feet both north and south of the freeway during the after period, 1955 to 1966. A pattern based on aesthetic disadvantage is shown in the first 1,000 feet and one of accessibility in the next 1,000 feet. Before period values were irregular but illustrated patterns of accessibility to Ventura and Chandler Boulevards. Again the significant factor, aesthetic disadvantage or accessibility, could not be determined (Fig. 10).

Laurel Canyon Boulevard. — Freeway influence on land values along Laurel Canyon Boulevard was slight, affecting only a distance of about 2,500 feet north and south of the freeway. Properties south of the freeway in this stretch are zoned for apartments primarily and indicate a small reduction in value as distance from the freeway increases. North of the freeway value patterns indicate that aesthetic disadvantage probably was the significant factor (Fig. 10).

Non-Access Streets

Hazeltine Avenue. — Land value patterns along Hazeltine Avenue were of questionable value (Fig. 11). Properties were not traceable north of the freeway until a distance over 4,000 feet was reached because of re-subdivision. No effect of distance to the freeway was clearly indicated in these values. South of the freeway, values did not develop any pattern that could be identified
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES ALONG NON-ACCESS STREETS

1946 to 1954

TRACEABLE PROPERTIES

REZONED PROPERTIES

1955 to 1966

HAZELTINE AVE

FULTON AVE

WHITSETT AVE

Figure 11
as a product of distance to the freeway. About 1,200 feet south of the freeway, a pattern based on distance to Ventura Boulevard is demonstrated for both stages of impact. Because of lack of data no conclusions can be drawn about the freeway's effect on land value along Hazeltine Avenue.

Fulton Avenue. - Between 1955 and 1966, Fulton Avenue value patterns show a slight dependence upon accessibility to the freeway both to the north and south of the freeway area. The start of an aesthetic disadvantage pattern is reflected in the two properties closest to the freeway. Since Fulton Avenue is not served by on-and-off ramps from the Ventura Freeway, accessibility did not appear to be as important a causative factor as aesthetic disadvantage. The presence of both factors again prevented a determination of which one produced the value pattern (Fig. 11).

Whitsett Avenue. - Land values along Whitsett Avenue indicated that the freeway exerted an influence for a distance of only about 1,200 feet (Fig. 11). Like Fulton Avenue, Whitsett Avenue residents do not have straight line access to the freeway but have to use on-and-off ramps on Coldwater Canyon Avenue to the west and Laurel Canyon Boulevard to the east. When averaged, the distances to the on-and-off ramps are equal, so the cause of the pattern could not be determined.

Access Streets Compared With Non-Access Streets

The areas affected by the freeway along both the streets with direct access and those without such access were, for the most part, the same. Two of the streets with less accessibility, Hazeltine Avenue and Whitsett Avenue, demonstrated smaller freeway effects than the streets with direct accessibility. Both of these avenues, however, have multiple dwelling usage in the areas
affected, and since these two areas were affected by direct distance to the freeway and not to the on-and-off ramps, it may be stated that land values along these two streets are determined by aesthetic disadvantages and not accessibility. Along Fulton Avenue, which bisects the study area, freeway effect on land values was the same as for streets possessing direct access to the freeway. Since no significant differences were depicted by land value patterns along major streets with less accessibility when compared with major streets with greater accessibility, it was necessary to further check the results by examining value patterns of properties in the areas surrounding major streets.

Grouping of Properties. - To facilitate examination, properties chosen at random, ten to a tax book area, were grouped according to the major streets served by on-and-off ramps which would provide the residents shortest access distance to the freeway. The groups were arranged in the following manner: residents of the properties east of Van Nuys Boulevard but west of Hazeltine Avenue would be most likely to use the on-and-off ramps serving Van Nuys Boulevard; residents of the properties west of Woodman Avenue and east of Hazeltine would use Woodman Avenue on-and-off ramps and were studied as a group with residents of properties east of Woodman Avenue but west of Fulton Avenue who would also use the same ramps; residents of properties west of Coldwater Canyon Avenue but east of Fulton Avenue and east of Coldwater Canyon Avenue but west of Whitsett would use the Coldwater Canyon Avenue ramps; residents of properties west of Laurel Canyon Boulevard and east of Whitsett Avenue made up the final group which used the Laurel Canyon Boulevard ramps. The groupings extended both north and south of the freeway.
Value Comparison of Property Groups. - Land values for properties in the various areas were then compared. Direct straight line distance to the freeway represented aesthetic disadvantages, and locational and accessibility inconveniences. Distance to on-and-off ramps represented accessibility. Two graphs were constructed for each measurement, one illustrating the linear pattern of all properties near the access streets, and one depicting the linear patterns of properties near each of the four access streets. These graphs are presented in Figures 12 through 15.

**Linear Patterns Near Access Streets**

When value patterns of properties near access streets were studied, no significant patterns could be found in either the before stage of the total impact stage (Figures 12 and 13). It was hoped that a street-by-street analysis would produce some recognizable patterns. The results of that analysis follow.

**Properties Near Van Nuys Boulevard.** - Land value patterns of properties located near Van Nuys Boulevard were similar to the patterns produced by properties along Van Nuys Boulevard (Figures 14 and 15). During the period 1946 to 1954, peak values north of the freeway area concentrated near Chandler Boulevard, while south of the freeway a pattern appeared based upon distance to Ventura Boulevard. During the 1955 to 1966 period, patterns were dependent upon accessibility to the on-and-off ramps north of the Ventura Freeway, while aesthetic disadvantage was indicated south of the freeway.

**Properties Near Woodman Avenue.** - Properties located near Woodman Avenue illustrated very little if any value patterns. West of Woodman the freeway's
effect on land value was probably altered by the presence of a large shopping center located just north of the freeway, Bullocks Fashion Square, which absorbs much aesthetic disadvantage while adding locational conveniences to the area. The area south of the freeway and west of Woodman Avenue is in transition from R-1 usage to R-3 usage and this factor undoubtedly altered the freeway's effect on land values. East of Woodman, both north and south of the freeway, the properties surveyed were R-1 and indicate aesthetic disadvantage to be of greater importance for this grouping (Figs. 14 and 15).

Properties Surrounding Coldwater Canyon Avenue. - Land value patterns surrounding Coldwater Canyon Avenue indicate aesthetic disadvantage and accessibility to be of equal importance. Aesthetic disadvantage patterns are depicted south of the freeway while accessibility patterns are indicated to the north (Figs. 14 and 15).

Properties Near Laurel Canyon Boulevard. - Properties near Laurel Canyon Boulevard also demonstrate that accessibility and aesthetic disadvantage have exerted pressures after freeway construction. South of the freeway aesthetic disadvantage is definitely shown, while north of the freeway accessibility appears to be of some influence (Figs. 14 and 15).

Expected Results

Certain results were expected before measurements were made of land values along major streets perpendicular to the Ventura Freeway. Based on accessibility to the freeway, it was expected the different zoned uses of the properties studied would be affected in the following manner. Commercial properties benefit from locations close to the freeway, and values would be highest very close to the freeway but would taper off with distance from the
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES NEAR ACCESS STREETS FOR AESTHETIC DISADVANTAGE "ALL PROPERTIES"

1946 to 1954

--- TRACEABLE PROPERTIES

--- REZONED PROPERTIES

1955 to 1966

Figure 12
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES NEAR ACCESS STREETS FOR ACCESSIBILITY "ALL PROPERTIES"

1946 to 1954

TRACEABLE PROPERTIES

REZONED PROPERTIES

1955 to 1966

Figure 13
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES NEAR ACCESS STREETS FOR AESTHETIC DISADVANTAGE

1946 to 1954
--- Traceable Properties
--- Rezoned Properties

1955 to 1966

VAN NUYS BLVD

WOODMAN AVE

Each Block Equals 1200 Feet

COLDWATER AVE

CANYON

LAUREL CANYON BLVD

Distance From Freeway (In Blocks) N

Figure 14
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES NEAR ACCESS STREETS FOR ACCESSIBILITY

Figure 15
freeway. Multiple dwelling and residential properties should also show a pattern based on accessibility, with the highest values being determined by the closest distance to the on-and-off ramps after the annoyance factors such as noise, fumes, lights were overcome. If the expected value pattern were based upon aesthetic disadvantages, location, and accessibility inconveniences, the patterns would basically be the same with no effects of additional distance to on-and-off ramps apparent. Land value changes of the properties studied revealed linear patterns based upon distance to the freeway along major streets perpendicular to the freeway throughout the study area. Further analysis of properties chosen at random within each tax book area did not clearly indicate whether or not the linear patterns were dependent upon aesthetic disadvantages, locational or accessibility inconvenience represented by direct distance, or upon accessibility represented by the shortest distance to on-and-off ramps.

**Measurement of the Effects of Accessibility Along Streets Paralleling the Freeway**

To determine whether accessibility was the more important factor, properties along the major streets paralleling the freeway were studied and graphed using the same periods previously utilized. A different grid was set up for this analysis. The major streets perpendicular to the freeway were used as vertical axes and distance from Laurel Canyon Boulevard to Van Nuys Boulevard as the horizontal axis. Average annual percentage increases in land values were then plotted along this grid and examined to determine whether or not streets with accessibility to the freeway caused any differences in land value patterns along streets paralleling the freeway. Streets analyzed were Ventura Boulevard, Moorpark Street, Riverside Drive, Magnolia Boulevard, Chandler Boulevard, Burbank Boulevard, and Oxnard Street.
AVERAGE ANNUAL PERCENTAGE INCREASE OF LAND VALUES ALONG STREETS PARALLEL TO THE FREeway "ALL PROPERTIES"

1946 to 1954

TRACEABLE PROPERTIES

1955 to 1966

REZONED PROPERTIES

Figure 16
Linear Patterns of Land Values Along Streets Parallel to Freeway

Properties along major streets paralleling the Ventura Freeway were analyzed collectively and by individual streets for any land value patterns based on accessibility to the freeway. No pattern was found in the collective analysis and no consistent patterns based on either accessibility or aesthetic disadvantage were indicated in a street-by-street survey. The results of this analysis are shown in figure 16.

Expected Results

Land values of the various zoned uses of properties were expected to react in different ways if accessibility to the freeway was of importance. Commercially zoned properties were expected to have peaks of value near the streets with greater access to the freeway and lower peaks close to the major streets not having direct access to the freeway. Multiple dwelling residential properties should also react in much the same manner showing larger peaks close to access streets and small peaks close to non-direct access streets. Properties zoned single family residential were expected to demonstrate some aesthetic disadvantage influence on the value patterns, tapering off close to the major streets, with higher values based upon location to access streets, and lesser peak values with location near non-access streets.

Conclusions

On the basis of linear patterns derived from properties studied on the basis of perpendicular distance to the Ventura Freeway, it may be stated that both aesthetic disadvantage and accessibility to the freeway operated as causative factors in determining land values of properties in the study area during the period following construction of the Ventura Freeway. Aesthetic
disadvantages appear to be the more important factor for an average distance of 1,500 feet, or one and one-half blocks, north and south of the freeway. Once past this point, accessibility appears to take over as the more important causative factor in land value patterns. Accessibility exerted its pressure for only a short distance, 2,000 feet or about two blocks, beyond the zone affected by aesthetic disadvantage both north and south of the Ventura Freeway.

Property values along the major streets paralleling the Ventura Freeway were not affected by the freeway or accessibility to it and indicate that the effect of freeways on surrounding properties might be based only upon perpendicular distance. A summary and critique of the methodology and results obtained is the subject of the next chapter.
CHAPTER VI
SUMMARY AND CRITIQUE

This study was an attempt to determine whether any land value patterns were produced based upon distance to the Ventura Freeway. A second objective was to ascertain whether the land value patterns found were caused by aesthetic disadvantages, such as noise, lights, and fumes, or by accessibility restrictions and locational limitations; or by accessibility to the freeway. Assessed land values for 680 properties were obtained for the period from 1946 to 1966, recorded and graphed. Perpendicular distance to the Ventura Freeway represented aesthetic disadvantage, and shortest distance to on-and-off ramps represented accessibility. Distance value patterns were studied during a before period from 1946, or the earliest traceable year, to 1954 and an after period of 1955 to 1966. These value patterns were first analyzed along seven major streets perpendicular to the Ventura Freeway. Of the seven streets, four major streets possessed direct access to the freeway; three did not. These streets were compared for accessibility differences. This analysis was augmented by a survey of properties chosen at random from the areas surrounding the major streets and a survey of properties along streets running parallel to the Ventura Freeway.

The results obtained indicated that the Ventura Freeway had an influence upon the land values of properties surrounding it based on perpendicular distance to the freeway, and that both aesthetic disadvantage and accessibility were causative factors. However, the quality of results obtained was such that only tentative conclusions could be drawn regarding the impact of the Ventura
Freeway upon the study area. This was because of a number of limitations placed upon the methodology by data insufficiencies, and qualitative factors that cushioned and absorbed some of the freeway's effect on land values.

Data Limitations

Data insufficiencies included different assessment procedures and policies, only periodic re-evaluation of the assessed values, and a major re-zoning throughout the study area which also caused value changes. Warnings concerning use of assessed valuations contained in the works surveyed in Chapter II should have been heeded. Specifically needed are data in which property values have all been determined by the same criteria. Such data are rarely available. If, however, assessed valuations are the only data available, as they were in this study, they might be further refined to eliminate some of the limitations. One such method might be to divide each assessed valuation by the square footage of the property. This would reduce the unit of measurement to assessed value per square foot of land. Another improvement might to be limit the study to only one specific type of zoned usage.

Qualitative Factors

Results obtained by comparing properties along the major streets did not clearly illustrate a separation of causative factors, and additional properties chosen at random had to be studied. When these randomly chosen properties were grouped for analysis, the importance of additional qualitative information was also apparent. These properties were grouped regarding which on-and-off ramps the residents were most likely to use on the basis of shortest distance. No allowance could be made for individual choice of travel routes. For example, it is doubtful that a person would drive more than two blocks
westward to on-and-off ramps when using the freeway in an easterly direction. More likely he would drive an additional four blocks in the easterly direction if he were eastbound on the freeway. Here the difference in driving time for the additional four blocks distance is about 30 seconds. A survey of the residents' approaches to the freeway would have been of value in grouping these properties.

An additional qualitative factor that could not be properly accounted for was the effect of restricted accessiblity throughout the study area produced by flood control channels. This was of particular importance since the Ventura Freeway followed approximately the same route as such channels across the study area, and thus its total effect upon accessiblity undoubtedly was cushioned or limited somewhat. Graphs for Hazeltine Avenue and Whitsett Avenue support this statement (Figs. 10 and 14). Since many freeway routes in metropolitan areas follow similar types of routes, freeway impact analysis might have been made more difficult because of the effects based upon accessiblity being more subtle and harder to ascertain.

The real test of any methodology is whether or not it produced the desired results, and if the results are of such quality that they are valid. As with most of the freeway impact studies surveyed, the results produced by this study were, at best, limited and of dubious value. Methodologically, this study has as much to offer as the methodologies of the works surveyed, as all are attempts to measure freeway impact by considering one or a few causative factors. What is needed in all cases are better quality data for analysis. This can be obtained only by measuring greater numbers of factors of freeway impact and by greater refinement of the data that are available. Once this level of quality is achieved, it has to be qualitatively analyzed to account for non-freeway induced factors. When this is done freeway impact
analysis will be more useful than at present. However, most researchers are limited by time and money, both of which will be required in large amounts to achieve data at the desired quality level. Beyond this, future research will require projects of a more comprehensive nature and scope using multi-factor analysis and combining quantitative and qualitative techniques. These will require development of the all-encompassing formulas or models that Garrison was seeking and which have yet to be found. However, if valid freeway impact knowledge is to be achieved, time, money and effort must be spent.
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