

Dallas Expressway Economic Impact Studies

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This study of the influence of an expressway on land values is an attempt to add to the body of factual information on the economic effects of urban limited-access roads. Central Expressway in Dallas, Texas, was chosen for the research endeavor because it had been completed for a sufficient length of time to allow meaningful "before-and-after" measurements.

The section of the expressway selected for study stretches from near downtown Dallas 5.4 miles north to Loop 12, a major circumferential route. Data from city tax records were available for most of this section for the full 1941-55 time period used in the study. Properties along the facility have been divided for analysis into the following bands:

1. Abutting properties, designated as A properties.
2. Properties adjacent to A properties and averaging about 2 blocks in width, designated B properties.
3. C properties, located still further from the facility, are adjacent to B properties and average about $2\frac{1}{2}$ blocks in width. Control areas (D properties) beyond the direct influence of the facility have been chosen for comparative purposes.

Sales and tax data were obtained for 100 percent of the abutting properties. In addition, a survey of businessmen and residents of A properties was conducted in the summer of 1956. This paper summarizes only the preliminary findings for abutting properties. Some of these findings are as follows:

1. The city tax valuation of abutting properties increased almost five-fold from 1947 when the facility was begun to 1955. Land tax valuation increased almost four-fold and improvement tax appraisals increased about 700 percent. (Tax appraisals are on the basis of 1941 values.)
2. Prices paid for unimproved abutting properties increased about 1,600 percent from 1947 to 1955. Deflated to allow for dollar-value change, this increase is about ten-fold.
3. About two-thirds of the 174 businesses from which information was obtained moved to the expressway from other parts of Dallas.
4. The businesses along the facility had almost 2,600 employees, most of whom traveled to work by automobile.
5. Residential property owners as a whole believed that the facility had increased the value of their properties, despite the fact that uses other than residential are precluded by zoning for many residences.

Although data collection is complete in the Dallas expressway study, final tabulations to compare A, B, C, and D properties and to test other variables have not been obtained.

● INFORMATION ON the impacts of expressways upon land values and land use broadens the base for predicting benefits of facilities to be planned in the future. Such economic information also may have important implications for the policies and practices of right-of-way acquisition and for the design and location of expressways.

The need for research in this field has become increasingly acute with the nation's expanding road building program. It is hoped that the study of the economic impacts of Dallas' Central Expressway will prove complementary to similar studies in other states in the building of a body of factual knowledge of the economic effects of limited-access roads.

Central Expressway was chosen for the research endeavor because it had been completed for a sufficient length of time to allow meaningful "before-and-after" measurements. Detailed planning for the studies was started in late 1955 and collection of data in the field began in February 1956. The research has been largely financed by the Automotive Safety Foundation. The major objectives of the studies are to determine: (a) changes in selling prices of properties in areas affected by Central and in non-affected areas, (b) changes in tax valuations in affected and non-affected areas, (c) changes in land use in affected and non-affected areas, and (d) attitudes of businessmen and residents along the facility. Each of these objectives, of course, has associated hypotheses.

This paper reports some preliminary findings of the expressway economic impact studies together with brief notes on methodology. More specifically, the paper presents: (a) introductory information on Central Expressway and Dallas; (b) a review of the determination of study areas and other method considerations; (c) preliminary tabulations of tax data for properties abutting the expressway and non-affected properties; (d) sales data for unimproved land along Central; (e) a summary of findings of a survey of business establishments and residents along Central; and (f) tentative conclusions.

Characteristics of Central Expressway

Central Expressway now extends almost 30 miles from near the North Dallas County line through Dallas to the South Dallas County line. It has four or more traffic lanes, but is not in fact of expressway type throughout its length. It is US 75. Construction of the facility was begun in 1947 and it was opened to traffic in its entirety in late 1956 with the completion of the southern part.

Construction was started near the downtown business district and was completed in sections averaging perhaps a mile in length. The 5.4-mile portion chosen for the economic impact studies was fully completed in April 1953. The study area starts at a grade intersection (Live Oak Street) near downtown Dallas and terminates at the Northwest Highway (Loop 12) to the north and is all within the corporate limits of Dallas and the cities of University Park and Highland Park which are encompassed by Dallas. The design of Central through the study area is as follows: for the first 3.6 miles to the north, a three-lane freeway in each direction separated by a mall; one-way frontage streets with two traffic lanes and a parallel parking lane are provided. The next 1.8 miles are similarly designed except that the freeway is four rather than six lanes.

About two-thirds of the portion being studied lies on the previous right-of-way of the Texas and New Orleans Railroad which was relocated to make way for Central. A rough description of the areas transversed by the expressway from Live Oak Street to the Northwest Highway are as follows: an area of old established business houses that quickly give way to a larger negro settlement within the first mile; the second and third miles pass through an area of old lower- and middle-class apartments and residences with some new multiple-unit apartments and motels and office buildings; another negro settlement, rather small, touches the last quarter of the third mile; the next 1.4 miles bordered on the west by the highly developed middle- and upper-class residences of University Park and Highland Park and on the east by an area undeveloped in part but with a number of impressive new commercial buildings; the last mile to the Northwest Highway is primarily an area of undeveloped property. Sectionalizing of the areas studied along Central was based partially on the characteristics reviewed.

In early 1956, the average daily traffic count at a station located in the first mile of the study area was 60,000 vehicles.

Characteristics of Dallas¹

The setting of the Central Expressway as far as urban expansion is concerned is a dynamic one. The population of the Dallas Metropolitan Area increased by about 23 percent from 1950 to 1955 and now exceeds 750,000. Bordering the Dallas area on the west, Ft. Worth counts an additional 490,000 in its metropolitan area. The City of Dallas had a population of 575,000 in 1956 and an area of 282 square miles. In 1950 the city's population was 434,000 and its area 122 square miles. For 1960 the estimated population of the Dallas Metropolitan Area is about 900,000 (medium projection).

In 1955, Dallas tax valuations totaled more than a billion dollars in terms of 1941 values, 57 percent over the 1950 level. Construction under 1955 building permits was valued at \$167,000,000 in 1955 and has exceeded \$100,000,000 annually since 1950. On a per capita basis, this rate of construction has ranked Dallas among the nation's leaders in recent years.

Dallas is located on five federal-state highways and as many important state roads. It is served by seven railroads and excellent air facilities. It leads Texas cities in banking, insurance, and wholesale distribution. In 1955, almost 300,000 motor vehicles were registered in Dallas County. Adjoining counties accounted for another 220,000 registrations.

Such characteristics of change and growth remove the need for conjecture as to the Expressway's effects in a static area. For a long period, however, Dallas has had a closely administered zoning ordinance. Thus the potential for value change along Central Expressway likely is influenced by permissive uses despite intention by the city to keep zoning in harmony with desirable land use change. The zoning factor is receiving due consideration in the Central Expressway study and is given further attention later in this report.

Choosing the Areas for Study

One of the problems that requires much further attention in the study of the economic impacts of public roads is that of delimiting the areas of influence of such facilities. This need was recognized early in the Dallas study and more than a little effort was given in searching for an objective and precise method of outlining areas in which Central Expressway likely had affected to a measurable degree uses and values of land.

The first step taken to fix the scope of the Dallas investigation was the decision to study only a 5.4-mile stretch of the northern portion of the expressway from downtown Dallas to the Northwest Highway, a major circumferential route. Two facts give the justification for this determination: (1) the southern portion of the facility was still under construction, its influence then likely being in early stages and (2) beyond the 5.4-mile stretch to the north source information on land values was extremely limited and comparatively little land-use change had occurred.

An attempt then was made to delimit the area of primary influence of the facility along the selected 5.4-mile portion. This step involved a study of expressway usage in relation to travel-time differential. The study involved the computation of times required to travel to the Central Business District from intersections of major thoroughfares in broad areas to each side of the expressway. Travel time assignments were obtained from the Traffic Control Section of the Dallas Traffic Department. The fastest route from each intersection to downtown Dallas was calculated via Central Expressway as was the fastest alternative route not using the facility. Time differentials were converted into usage percentages by use of an empirical curve of the relationship. (The curve used was from "Effect of Travel Time and Distance on Freeway Usage" by Darel L. Trueblood; page 18, Highway Research Board Bulletin 61, "Traffic Assignment".)

¹Population and area data were obtained from the Department of City Planning, Dallas; tax data from the Dallas Tax Department; building permit figures from Dallas Building Inspection Department; and vehicle registration from 1955 Texas Almanac.

Interpolations of usage then were made in order that 50, 60, 70, 80, and 90 percent lines of usage could be plotted. Figure 1 shows only the 50, 70 and 90 percent lines. The 50-percent line marks an irregular triangle about nine miles high with a base of about 14 miles at its terminals which were the limits of the data available for the study. It is concluded that within this triangle of about 60 square miles the vast majority of drivers to downtown Dallas would prefer to use the expressway on the basis of time saving and travel convenience. Using the Northwest Highway as the base of the triangle outlined by the 50-percent line, an area of about 14 square miles results.

It was felt that the areas of influence delimited by the 50-percent usage line and by the lines showing a higher propensity to use the expressway were either too large or too indeterminate to encourage a detailed study of land value changes. Other attempts were made to employ travel time to determine the area to be studied but more promising results were not obtained.

One useful guide was set up by the study of propensity to use the expressway: the bands of properties chosen for study along the facility are located well within the 50-percent usage lines and the control areas studied are located outside of these lines.

The determination of "affected" areas to be studied finally was made on the basis of distance from the expressway and natural barriers. Space does not allow for more than a summary of the selection scheme. Three bands of properties on each side of the facility were chosen for study. The first band, designated "A" properties, consists of properties abutting the expressway right-of-way. Properties that are similar to "A" properties but do not touch the right-of-way make up the second band or "B" properties. The third band, "C" properties, is immediately adjacent to second-band properties and was chosen to increase the possibilities for comparison. Types of properties and the existence of barriers such as a railroad, creeks and other traffic obstacles were considered in selecting the third band. Abutting properties range from 60 to about 1,000 feet in depth; the bands of "B" and "C" properties are typically about two blocks or 600 ft in depth but range but range up to six blocks.

Another important requirement in the studies was the selection of "non-affected" areas to compare with "affected" areas. Sixteen control areas were chosen for study. In addition to the 50-percent usage line, the selection was made keeping in mind characteristics of the study areas along Central Expressway. The following factors were considered: (a) the existence of a railroad, (b) zoning, (c) type of development, (d) racial influences and (e) distance from and accessibility to the downtown business district. Many persons well-acquainted with Dallas were contacted and independent opinions were obtained to aid in the selection of control areas. Exact comparability for areas chosen is, of course, not claimed but a fair yardstick for comparative purposes should result.

Other Decisions as to Scope and Method

The time period being used in the studies in 1941 to 1955. Although an expressway or other type of major thoroughfare had long been contemplated for the route taken by Central, definite steps were not made until the early 1940's. Construction of Central did not begin until 1947. The base period for values for affected and control areas is tentatively set as 1941-45. Preliminary analysis seems to validate this decision. Flexibility in the determination of later time periods to be used in the analysis has been retained in machine tabulations.

The problem of sampling is perhaps never a simple one. In the Dallas studies, an effort was made to take a very large proportionate sample. In fact, abutting properties were sampled 100 percent because of their fairly small number and the extreme variations in their characteristics. For the second and third bands from 20 to 100 percent samples were taken depending upon apparent homogeneity of various areas. Sample control was made difficult by ownership patterns through the influence on sales and tax records. Also, because of differential sampling, sample expansions must be made in order to combine data on properties from different sample strata.

The various types of information gathered in the Dallas studies and the sources are listed:

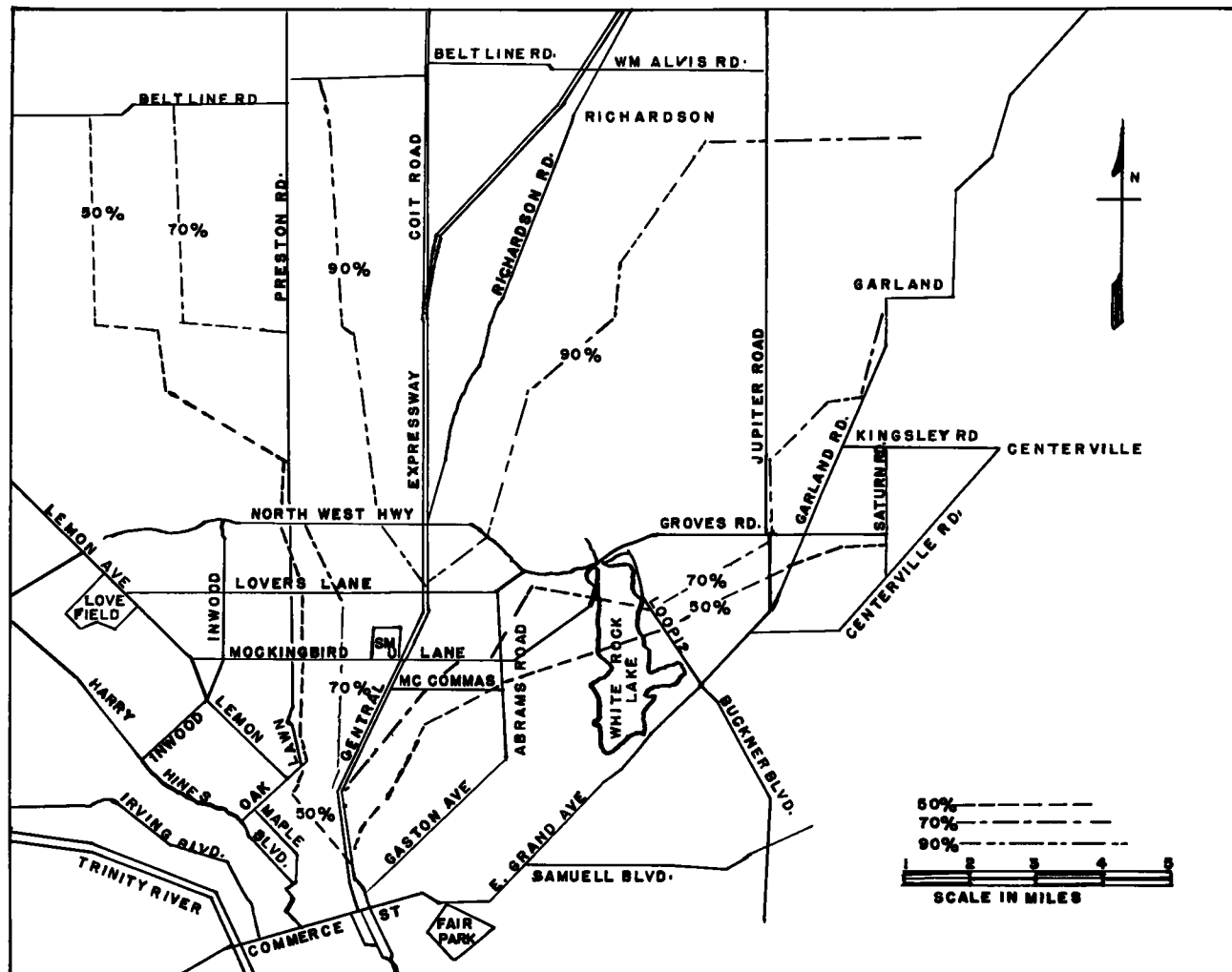


Figure 1. Traffic preferring use of North Central Expressway to downtown Dallas on basis of time differential.

1. Real estate sales data from Dallas County plat books, "take-off" cards and warranty deed records. Upper limits of prices were calculated from Internal Revenue stamps on deeds not giving sales prices.

2. Tax appraisal data (true values) derived from assessed valuations from city tax records. (Tax data were obtained only for selected odd years that had special significance in relation to the planning and construction of the expressway.)

3. Land area from county plat books and verified in city tax records.

4. Land use from interviews, tax records and by inspection.

5. Permissive use from city zoning maps.

6. Information on incentives for location and attitudes toward the facility (for abutting properties only) by interview.

7. Traffic data as needed from Dallas Traffic Department and Texas Highway Department's Dallas Expressway Office.

8. Dollar value index from consumer price index for Dallas as published by the National Industrial Conference Board. (The index of wholesale prices, United States, is used in this report.)

9. Construction cost factor for Dallas (to be used with sales data to isolate land values from improvement values) from E. H. Boekh's published reports.

The use of tax valuations in addition to real estate sales requires explanation. First, such data if dependable may be used as an index of value change. Secondly, whereas market prices reflect the movement of tax ratables, tax valuations indicate the extent to which changes in ratables have been recognized for tax revenue purposes. Another use for tax data is that it may be employed in a statistical test of the comparability of properties for which sales occurred with properties as a whole. Also, tax valuations may be used to reflect and measure land-use change through changes in values of improvements and in addition may be used to estimate that portion of purchase prices which might be assigned to land only.

Tax Valuations along Central Expressway and for Non-Affected Areas

Changes in tax valuations of real estate usually lag behind and are smaller than changes in market values to a marked degree. It would be expected, therefore, that tax data at best would serve as a conservative indicator of the movement of real estate values. The accuracy of tax data as such an indicator depends, of course, upon the frequency and method of tax reappraisals. Fortunately, the tax appraisal policies of Dallas, Highland Park and University Park have been consistent through the study period. These cities use very similar tax manuals and have programs of frequent reappraisals in addition to immediate appraisals of new improvements. Each city uses 1941 construction costs for improvements and "normal day" (1940-41) land values for appraisal purposes. Thus, the tax valuations obtained in the Dallas studies already are deflated to an appropriate level of dollar value.

Special hand tabulations for use in this paper were made for properties abutting Central and for control or non-affected properties. The tax valuations of abutting properties increased sharply after the construction of the expressway began in 1947 (Table 1).

Based on 5,746,620 sq ft in corporate limits in 1941, total tax valuations rose from \$1,138,040 in 1947 to \$5,886,220 in 1955, an increase of 417 (517-100) percent. Land valuations increased 250 (350-100) percent during the period with increases coming in the early years. This quick upward movement of land valuations reflects perhaps the quality of work of the tax assessors. It is to be expected that some delay would be experienced in the construction of new improvements on abutting properties. Tax valuations of improvements rose 632 (732-100) percent with the major absolute increase occurring in the later years of the 1947-55 period.

Table 2 shows the increase in tax valuations of abutting properties annexed by the City of Dallas in 1946. This property came into the city at a rather low tax value. The expressway was not complete in the area until 1952. Tax valuations in 1949 may be more comparable to those in other areas than the 1947 data; therefore, 1949 is used as the base for value changes for these properties. The increase in total

TABLE 1

**TAX VALUATION OF ABUTTING PROPERTIES (IN CITY PRIOR TO 1941),
CENTRAL EXPRESSWAY, DALLAS, TEXAS, 1941 TO 1955^a**

Year	Tax Valuation of Land		Tax Valuation of Improvements		Total Tax Valuation	
	Actual	Percent of 1947	Actual	Percent of 1947	Actual	Percent of 1947
1941	\$ 466,970	73	\$ 447,200	90	\$ 914,170	80
1945	480,440	75	488,880	98	969,320	85
1947	639,060	100	498,970	100	1,138,040	100
1949	778,400	122	753,650	151	1,532,050	135
1951	2,284,100	357	1,333,970	267	3,618,070	319
1955	2,235,050	350	3,651,170	732	5,886,220	517

^aBased on 303 properties and an area of 5,746,620 square feet. Tax valuations are in terms of 1941 land and improvement values.

valuations was 424 (524-100) percent and there is little doubt that land tax appraisals lag far behind market values. Improvements were valued 1,344 (1,444-100) percent higher in 1955 than in 1949. Properties in this area are held in large, mostly undeveloped ownerships. Over nine million sq ft are held in 34 properties but multiple ownership makes the number of owners still smaller. Construction continues on some properties at a rapid rate but many properties are being withheld from immediate development.

Table 3 is based upon total tax valuations obtained for areas presumably not influenced by Central Expressway. (The resulting yardstock is not the one which will eventually be used because the tax data for the 15 control areas must be manipulated to adjust for differentials in size of control areas and sampling.)

The tax data indicate that valuations in control areas increased by only 55 (155-100) percent from 1947 to 1955. Land and improvement evaluations moved upward simi-

TABLE 2

**TAX VALUATION OF ABUTTING PROPERTIES ANNEXED BY CITY IN 1946,
CENTRAL EXPRESSWAY, DALLAS, TEXAS, 1947-1955^a**

Year	Tax Valuation of Land		Tax Valuation of Improvements		Total Tax Valuation	
	Actual	Percent of 1949	Actual	Percent of 1949	Actual	Percent of 1949
1947	\$ 97,200	34	\$ 51,270	54	\$ 148,470	39
1949	286,740	100	94,660	100	381,400	100
1951	286,880	100	108,360	114	395,240	104
1955	631,840	220	1,366,670	1,444	1,998,510	524

^aBased on 34 properties and an area of 9,053,670 sq. ft. Tax valuations are in terms of 1941 land and improvement values.

TABLE 3
TAX VALUATIONS OF AREAS PRESUMABLY NOT INFLUENCED BY CENTRAL EXPRESSWAY, DALLAS, TEXAS, 1941-1955^a

Year	Tax Valuations of Land	Tax Valuations of Improvements	Total Tax Valuations
	Percent of 1947	Percent of 1947	Percent of 1947
1941	106	101	102
1945	102	103	102
1947	100	100	100
1949	131	117	121
1951	146	149	148
1955	150	157	155

^aOn basis of 404 properties and 7,211,870 sq ft in fifteen different areas. Tax valuations are in terms of 1941 land and improvement values.

TABLE 4
SALES OF UNIMPROVED ABUTTING PROPERTIES, CENTRAL EXPRESSWAY DALLAS, TEXAS, 1941-1955

Year	Number of Sales	Actual Sales Price per sq ft	Sales Price per Sq Ft Deflated to 1941-45 Dollar Value ^a	Actual Sale Price as Percent of 1947	Sale Price Deflated as Percent of 1947
1941-45	22	\$.1412	\$.1412	86	129
1946	15	.1940	.1591	119	145
1947	11	.1634	.1095	100	100
1948	3	.1899	.1177	116	107
1949	11	.4333	.2816	265	257
1950	19	.3684	.2321	225	212
1951	15	.7174	.4017	439	367
1952	20	1.2380	.7180	758	656
1953	18	1.5162	.8794	928	803
1954	10	1.9444	1.1278	1190	1030
1955	13	2.4747	1.4353	1514	1311

^aActual sales price per square foot multiplied by deflation factor. Deflation factors are: 1941-45 = 1.00; 1946 = .82; 1947 = .67; 1948 = .62; 1949 = .65; 1950 = .63; 1951 = .56; 1952 = .58; 1953-55 = .59. Wholesale prices for United States are basis of deflation factors.

larly in manner and degree.

Total tax valuations for abutting properties in corporate limits before 1941 and for control properties are brought together in Figure 2 to allow a more direct comparison. Both types of properties experienced increases in value after 1947 but the rise in tax valuations along the expressway was strikingly greater. (The tops of the bars in Figure 2 should not be considered points on trend lines since the time intervals are not of equal length.) Note that there is an indication that values of abutting properties were rising prior to 1947. That this early increase may be attributable to the expressway requires further testing.

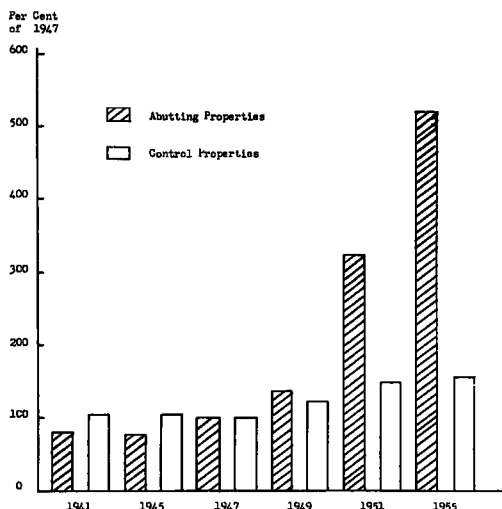


Figure 2. Comparison of total tax valuations for properties abutting Central Expressway with control properties, Dallas, Texas, 1941-1955, (percentages of 1947 valuations with area held constant).

yielded 147 sales of unimproved land from 1941 to 1955. By single years and with much variation in location and size, the properties sold are not numerous enough to assure representativeness of all unimproved abutting land. In spite of this qualification for the data, a definitely steep trend in land values is indicated in Table 4.

Undeclared sales prices of unimproved abutting lands averaged \$.16 per square foot in 1947, the year during which construction began on Central. In 1955, unimproved land sold for \$2.47 per sq ft, an increase of 1,414 percent (1,514-100) over the 1947 average price. Most of the increase occurred during 1951-55. Turnover of unimproved property was highest during the 1950-53 period.

Deflated in terms of the 1941-45 dollar, prices reflect a much smaller absolute increase from about \$.11 to \$1.44 from 1947 to 1955 but the percentage gain remains high at 1,211 percent (1,311-100).

Further combining of data for individual years and analysis of sales of unimproved control properties are planned for later in the studies.

Findings of the Survey of Residents and Business Establishments along Central Expressway

The major objectives of this survey were to determine (a) the numbers and characteristics of businesses and residences (b) the motivations for locating along the facility and (c) the attitudes and experiences of businessmen and residents. Only properties abutting Central Expressway were included in the survey. Field work was

Value Changes along Central Expressway Reflected in Sales of Unimproved Abutting Properties

Special attention has been given to identifying and analyzing sales of unimproved properties as one method of determining the influence of Central on values of land only.² The validity of this approach may be questionable, however, because of the relatively small number of sales. Abutting properties, the only area for which sales data have been tabulated,

² Another approach to be used in this regard is the subtraction of tax valuations of improvements multiplied by construction cost factors from sales prices to leave "prices paid for land." This method was employed by H. W. Elder in "A Study of Land Values and Land Use along the Gulf Freeway", Houston, Texas, 1951. Texas Highway Department.

conducted in the summer months of 1956.³

For the 211 businesses located along the expressway, 174 questionnaires were completed. Major findings for businesses were:

1. Types of business: services, 26 percent; wholesale trade, 24 percent; retail trade, 20 percent; finance, insurance and real estate, 20 percent; other, 10 percent.

2. Only 22 percent of the businesses owned their sites as many went beyond their own space requirements and provided extra space to be rented.

3. Sixty-six percent of the business establishments moved to the facility from other locations in Dallas, primarily from the downtown area. Newly established businesses with the expressway as their first location accounted for 22 percent. Business establishments located along the route before expressway construction comprised the remaining 12 percent.

4. The 174 business establishments employed 2,566 persons most of whom reportedly traveled to and from work by automobile.

5. None of the businesses that located prior to expressway construction reported a decrease in business volume. Fifty percent estimated the amount of increase, a few reported no change in business volume and the remainder indicated increases but without estimating the magnitude.

6. Fifty-nine percent of the businesses located after construction considered other locations. All of the 174 businesses studied expressed satisfaction with expressway locations.

7. Some of the major advantages given for business locations on the expressway were: accessibility for employees; parking facilities; escape from downtown traffic congestion; opportunity to expand business; prominent advertising; accessibility to more customers; association with a rapidly growing area.

8. Some of the major disadvantages of business locations on the expressway were: traffic congestion at peak hours; poor bus service; absence of post office, banking, and shopping facilities.

There were 145 occupied single-family dwellings on property abutting the expressway. Schedules were completed for 68 residents (47 percent). Thirty-three of the 68 owned their places of residence, 35 were renters. Principal findings were:

1. Of the 26 owner-residents that located before expressway construction, more than three-fourths stated that the facility had increased the general attractiveness of their properties. Eighty-eight percent said that the value of their properties increased.

2. Less than half of the residence owners expressed a willingness to sell their property. Several additional owners would sell provided their neighbors were willing to unite for greater bargaining power.

3. The major advantages accorded residence ownership on the expressway were convenience of transportation and reduction of time in travel. Persons who had lived along the railroad right-of-way before the facility was constructed named "more attractive area" and "paved street replaced dirt road" as "advantages" of the expressway.

4. The major disadvantages of residence ownership on the expressway were noise and severance of streets by the facility.

5. The listing of advantages and disadvantages of location for residence renters was similar in the uppermost rankings to that of the owners.

Twenty-two schedules were completed for residents of 250 occupied apartment units. Attitudes of apartment dwellers differed from those of other residents in one important respect. They rarely mentioned slum clearance and area improvement in their responses. Many of these renters were not familiar with such changes wrought by Central Expressway.

Tentative Conclusions

The point has not been reached in the Central Expressway studies where positive and final conclusions may be drawn. However, it is perhaps worthwhile to list some

³Interviewing and tabulations of findings were accomplished by Dan R. Davis, Department of Agricultural Economics and Sociology, A & M College of Texas.

of the impressions that have thus far been gathered:

1. Central Expressway has had a marked influence on values of adjacent lands and a definite although not complete recognition of this increment is reflected in tax valuations.

2. The imperfections of a land market are pointedly illustrated along Central Expressway. The facility cut through areas varying widely in types and intensity of land use. Few persons anticipated the changes the facility would induce. The spectacular rises in site values were far from uniform. Many owners cashed-in their windfalls early only to watch their erstwhile properties double in value in a short time. Other owners rejected early prices and have waited in vain for their ownerships to ripen for other uses.

3. Comparatively little (perhaps not more than 10 percent) of the land that appeared to be subject to immediate change in use has experienced that change. One implication of this conclusion involves generation of traffic by the facility. Many of the 2,566 employees of the businesses studied drove their automobiles to work. Realization of the potential for change along the expressway could bring this group of users to a very high number.

4. General factors conducive to land-use change have been present. Economic prosperity of the nation, the dynamic growth characteristics of Dallas and the pressure for building and parking space in downtown Dallas, should encourage further development along the expressway.

There are, however, some very real and powerful factors resisting change along the facility.

(a) An over-riding factor of land use is the zoning ordinances of Dallas and the cities of University Park and Highland Park. (Variations in permissive uses also are of importance, of course, in the land market imperfection mentioned.) Zoning restrictions act as a deterrent to land-use change over and above rightfully precluding undesirable uses. Changes in zoning to permit uses no longer undesirable take time and cooperative effort on the part of several and sometimes many individuals. The process of obtaining special permits becomes such a tortuous process in the minds of individual owners that they may be discouraged from action.

(b) Another over-riding factor that apparently has stymied land-use change to some extent is the over-pricing of properties together with prohibitive costs of supercession. The highest price paid for properties to the knowledge of owners has had a tendency to become the standard asking price. Effective demand may be well below the supply price for most properties.

(c) There are several areas in which a combination of factors operates to resist land-use change. One such area is the large residential area for negroes, traversed by the expressway near downtown Dallas. In addition to a stable business center, the old settlement's resistance to change is re-enforced by racial solidarity, its depth on either side of the facility, a major public housing project and public parks. Although present zoning for the area is favorable for change, attempts to alter land use in this section may have limited success.

(d) Much of the land in the last mile of the expressway portion being studied is undeveloped and is owned in large parcels. There are some indications not completely affirmed that the future use of these abutting properties may be acquired only by lease. This prospect of conditional land usage conceivably may constitute a major resistance to change for a large section of abutting properties.