Economic Impact Study Along Interstate Highway 30 In Rockwall County, Texas

by

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Other members of the Economics Section of the Texas Transportation Institute made valuable contributions to the completion of this study. Mr. J. Nelson Slater guided the collection of data for the preliminary report and co-authored that report. Mr. Hugo G. Meuth gave valuable assistance in the collection of the final data used in this report.

Foreword

In November of 1957, the U. S. Bureau of Public Roads and the Texas Highway Department authorized the Texas Transportation Institute to conduct an economic impact study along sections of the Interstate Highway System in Texas. This authorization called for joint financial support by the Bureau of Public Roads and the Texas Highway Department.

The study was to include an analysis of the economic impact on local areas of the Interstate Highway System. The specific objectives were to measure the changes in land value, land use, business activity, travel habits, and general community development that could be associated with this new highway facility.

At the time the study was authorized, very little of the Interstate System had been constructed within the State. There were, however, several sections of expressway-type roadway that had already been constructed and which, with minimum alterations, would meet the Interstate construction standards. It was decided to select three sections of expressway-type roadway which had been completed for a minimum of two years as the starting point for this study. This would allow a "before-and-after" study to be conducted within these areas while basic data were being accumulated from other sites.

With the advice of the Project Advisory Committee, three such sites were selected: one each in or near the cities of Austin and Temple, and one in Rockwall County. Field work was initiated immediately in order to establish base period land value, land use, and business activity information as soon as possible.

At the time the study was authorized, it was requested that a preliminary report of findings be submitted to the Bureau of Public Roads by July 1, 1958. These findings were to be used by the Department of Commerce in its report to Congress on nonvehicular benefits as required under Section 210 of the Highway Revenue Act of 1956. This report includes much of the data included in the Rockwall section of that preliminary report.

Table of Contents

Summary of Findings

This report shows the results of an analysis of data collected in the Rockwall County study area in an effort to isolate and measure some of the economic effects that the construction of Interstate Highway 30 (U.S. 67) has had on the county. A 14.5 mile strip of I.H. 30 lies within the boundaries of the county, passing through a completely rural area.

To date, the new highway has produced a significantly measurable economic impact on the study area. The next five years should reveal even greater and more significant changes than have already occurred.

The area under study consisted of a strip of land approximately 1.5 miles on either side of the new highway. The effects of the highway on properties within this three mile wide strip were compared with the remainder of the county which served as the control. The study area was divided into two sections; Section 1 being the segment closest to Dallas, and section 2 being the farthest removed. All study area properties were further divided into abutting and nonabutting property groups for analytical purposes. All the various segments revealed, to some extent, some impact from the new facility. In some of these cases, other influences made it difficult to accurately measure this impact, such as the influence on land values caused by Forney Reservoir.

The volume of real estate sales increased significantly in the county, and especially in the three mile study strip along the new highway. Also, between the "before-and-after" periods, adjusted land values in the study area increased $269 per acre or 169 percent, while those of the control area increased only $65 per acre, or 73 percent. (These figures were taken from Table 9.) Distance from Dallas was also found to influence land values in the study area, with the section nearest Dallas experiencing a greater increase than the one farthest away. The value of land abutting the new facility increased more than the nonabutting land in the study strip. Differences in land values according to acreage size, repeat sales, and soil types between the study and control areas have had no significant influence on the changes in land values indicated by comparing before and after periods. In other words, the results were not biased by the above.

Significant changes in land use occurred in the study area during the land use study periods. Generally, land use in the control area remained agricultural, except for the Forney Reservoir area. Most of the land use changes in the study area occurred during the after period. Land use in Section 1 of the study area experienced more change than that of Section 2. As a whole, when comparing land value changes with land use changes, the land value increased as the land succeeded to more intensive uses. However, two factors hindered this relationship from being completely normal. The town of Rockwall sold some land for industrial development at a below normal price and the City of Dallas started purchasing land in the Forney Reservoir area at somewhat above normal prices.

Changes in business activity were evident along the old U. S. 67 and the new I. H. 30 between 1955 and 1961. Of traffic serving businesses, six old route businesses closed operations and as many new businesses were established along the same route. In addition, six new businesses were established along the new route. As a group, all traffic serving businesses on both routes showed a 60.9 percent increase in gross dollar sales between 1955 and 1961. Thus, the business volumes of the new route businesses more than offset the losses in volume experienced by the old route businesses. Grouped together, the nontraffic serving businesses experienced a 15 percent decrease in gross sales. But by deleting two automotive dealers, this group showed a 15 percent increase. Both traffic and nontraffic serving businesses combined show a 6.4 percent decline in sales. This compares favorably with the results of another source. Again, if the two automotive firms are deleted, the totals for all businesses would show approximately the same increase in gross sales as that of the state of Texas.

This analysis does not consider returns on investment, effects on property values, etc., of the business firms involved. Thus sales volumes do not tell the whole story, but they do give a good indication. The traffic serving businesses remaining open on the old route did suffer a severe loss in sales (42 percent). But, several of the original operators have already made adjustments by opening new businesses on the new route or by offering better services to the local residents and thereby compensating for the loss in transient trade.

As a result of the new facility, new manufacturing firms have located in Rockwall County. Thus, over-all employment has increased. Most of the other economic data about the county show increases in 1961 over 1955. Most of the key city and county officials interviewed are optimistic about the future growth prospects of their towns and county. Many of the local businessmen share this optimism.

Introduction

Rockwall County, the smallest county in the state, is in the Blackland Prairies of North Central Texas. It is adjacent to the northeast section of Dallas County and has an area of 147 square miles. The City of Dallas is the nearest metropolitan area. (See Figure 1.) From the courthouse in the town of Rockwall to the edge of the Dallas urban area (at the intersection of new Interstate Highway 30 and Loop 12) is a distance of 17.2 miles, 4.7 of which are in Rockwall County. The central business district of Dallas is about 24 miles from the town of Rockwall and 32 miles from Royse City, via I. H. 30.

In conformity with the trend of most of the agricultural areas throughout the state, Rockwall County experienced a decline in population between 1940 and 1950, dropping from 7,051 to 6,156, or 13 percent. Though not as much as in the prior period, it experienced a further decline of 4.5 percent to 5,878 during the last decade. In contrast, both the towns of Rockwall and Royse City have experienced population increases over the past two decades (see Table 1). Over the 20-year period, the population of Rockwall has increased 64 percent, most of it occurring during the last decade. The population of Royse City increased a modest 7.1 percent, most of which occurred during the first decade. Thus, when comparing the population changes of urban versus rural, it can be seen from Table 1 that the latter has experienced a steep decline (46 percent) and the former a sizeable increase (37 percent, both towns combined) between 1940 and 1960. Again, most of it occurred during the last decade.

The economy of the county is still based largely on cotton, grain, and livestock, supplemented by industry and commerce. An aluminum extrusion plant, established in 1953 and employing 248 persons in 1961, is the only large industrial enterprise located in the county. Table 2 indicates the agricultural situation in Rockwall County from 1940 through 1959. The farm population has steadily declined. Also, farms, while increasing in average size, have declined in number. The land in cropland harvested has declined about 22 percent over the last 20 years, with most of the decrease occurring

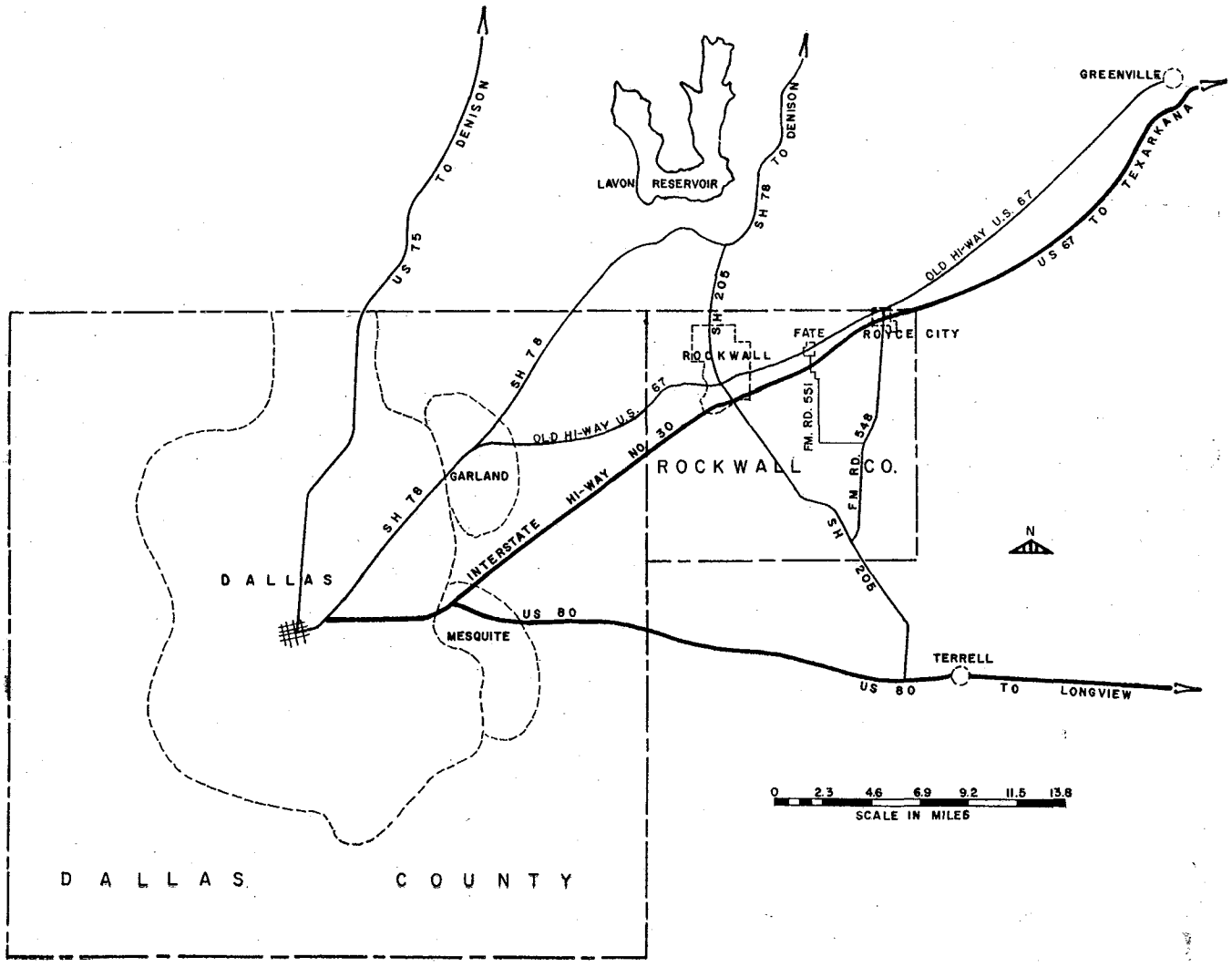


Figure 1. Outline map of the Rockwall area showing Dallas and other surrounding towns.

after 1950. In contrast, the number of livestock has increased almost threefold during this same period, with the most substantial changes coming during the last decade. The total dollar value of products sold, traded, and used on farms increased by 100 percent between 1940 and 1950, declined slightly between 1950 and 1954, and then again increased in the 1955-59 period by enough to insure a total increase for the last decade. Prior to construction of the new facility, Rockwall County was serviced by only one major traffic artery, Old U. S. Highway 67. This old facility, passing east and west through the county, continued to serve completely in this capacity until 1951.

New Interstate Highway 30

Old U. S. Highway 67 passing through Rockwall County was inadequate by modern standards from the standpoint of both roadway and route. Like most other old highways, it was narrow and crooked. It also had the additional disadvantage of passing through the center of small towns like Rockwall, Fate, and Royse City which slowed down the through traffic. As a part of an over-all improvement program, new right of way was purchased well to the south of the old highway. This route by-passed the towns of Rockwall and Fate about 1.9 and .25 miles, respectively, and passed through the most southern part of Royse City. Practically all of the land purchased was being used for agricultural purposes at the time of acquisition. The county voted a $65,000 bond issue and used the revenue to purchase most of the right of way. The total cost of the right of way, including that part purchased by the state, amounted to $89,-046. The right of way and construction costs incurred by the state to build the 14.5 miles of divided highway with frontage roads through the county were as follows:

Right of Way	**$ 47,000**
Base and Surfacing	**4,285,000**
Bridges and Grade Separations	**1,165,000**
Engineering	**395,000**
Total Costs	**$5,892,000**

The last section of the highway to be completed within the county was officially opened for traffic in December, 1959. In its completed form, the new highway has been provided with continuous frontage roads on both sides of the main lanes through the county, except for a short section in the Trinity (East Fork) River bottom. There are four intersections (grade separations) where Farm to Market roads cross over or under the main lanes of the new highway. Each of the towns of Rockwall, Fate, and Royse City has one access interchange at the intersection of Farm Roads 205, 551, and 548, respectively.

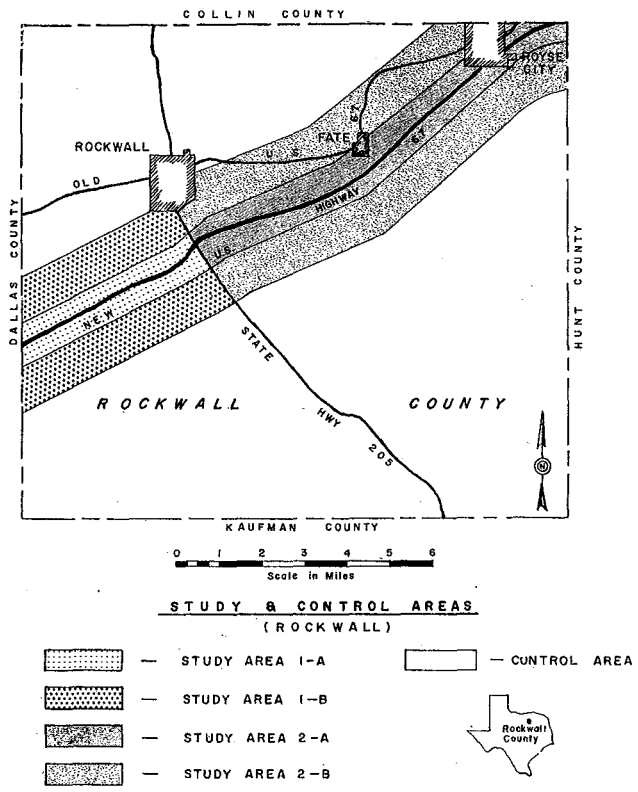


Figure 2.

Study and Control Areas

The area selected for primary analysis was a band about 1.5 miles wide along each side of the new facility from the Dallas County line to the Hunt County line just east of Royse City. (See Figure 2.) This gives a strip some 14.5 miles long and three miles wide, or an area of about 27,500 acres, consisting largely of agricultural and overflow bottom land. Urban properties in the city limits (as of 1951) of the towns within the three-mile-wide strip were excluded from consideration in the land value and land use phases of the study. Although the town of Rockwall expanded its city limits

Table 1
CHANGES IN THE POPULATION OF URBAN AND RURAL PLACES IN ROCKWALL COUNTY, 1940-1960

Year	City of Rockwall		Royse City		Rural[1]	
	Population	Percent Change	Population	Percent Change	Population	Percent Change
1940	1,318		1,190		4,543	
		+14%		+6%		—25%
1950	1,501		1,266		3,389	
		+44%		+0.01%		—28%
1960	2,166		1,274		2,438	
Changes Between 1940-60	+848	+64%	+84	+7%	2,105	—46%

[1]Excludes only Rockwall and Royse City from total population of the county.
Source: Texas Almanac.

Table 2
CHANGES IN THE AGRICULTURAL SITUATION IN ROCKWALL COUNTY 1940-1959

Item	Years				
	1940	1945	1950	1954	1959
Farm Population	4,270	3,079	2,929		2,559[1]
Number of Farms	667	730	573	425	320
Land in Farms (Acres, 000)	88	84	84	81	87
Average Sized Farms (Acres)	132	115	146	190	271
Land in Cropland Harvested (000)	55	54	53	46	43
Total Dollar Value of Products Sold, Traded and Used on Farm (000)	$1,034	$1,874	$2,257	$2,029	$2,644
Number of Tractors	148	389	527	551	595
Farms with Telephones	81	108	217	258	252
Number of Farm Automobiles	567	511	475	377	331
Number of Farm Trucks	130	148	173	249	291
Number of Cattle & Calves	3,262	4,467	4,794	7,710	9,217

[1]Based on 1960 Census and includes only those persons residing on a farm.
Source: United States Census of Agriculture—Texas Counties—Texas Almanac.

late in the study period to cover a part of the study strip, the area studied was not reduced so to keep it constant over the whole period.

There was a five-year time lag between the opening of the two major sections of the new highway. The first section which extends from the Dallas County line to the Rockwall interchange (at S.H. 205) was opened in July, 1951. (Incidentally, the new highway was completed all the way from its junction with U. S. 80 and Loop 12 in Dallas to the Rockwall interchange by this date.) This section has been designated as Section 1 of the study area. It is nearest to Dallas, about 4.7 miles long, and passes through the bottom land area of the Trinity River, (East Fork) most of which will become known as Forney Reservoir in a few years.

The second section of the study area begins at the Rockwall interchange (at S. H. 205) and extends to the Hunt County line. All of this section was opened for traffic by December, 1959. This section was designated as Section 2. Actually, construction of the new highway in Section 2 was divided into two parts with different completion dates. An 8.2 mile strip between the Rockwall and Royse City interchanges was opened in December, 1956, after a shorter strip (1.6 miles from Royse City to the Hunt County line) was completed on a prior date. But, due to the fact that a portion of the new highway was still under construction in Hunt County, the short section was not opened to traffic and the whole route connected until two years later.

The most important road which leads generally north and south across the county traversing the study area is S. H. 205. It extends from Terrell to the south, passes through the town of Rockwall, and continues north into Collin County where it connects with S. H. 78 which leads to Denison. Its path through the County is shown in Figure 1. State Highway 205 was also improved in about 1954, making it more desirable to accommodate through traffic. This highway also serves as the major connecting link between the new highway and the town of Rockwall.

After the completion of the new Interregional Highway, Old U. S. 67 was designated as Farm Road 7 from Garland to Royse City. It passes through only Section 2 of the study area; however, there are several other hard-surfaced Farm Roads traversing each section of the study area. Most of them pass through either Rockwall or Royse City.

For the land value analysis, each section of the study area is further divided into two sub-areas: Referring to Figure 2 again, the sub-areas are identified as study areas 1-A, 1-B, 2-A, and 2-B. Areas 1-A and 2-A represent all properties abutting the new highway in their respective sections. Areas 1-B and 2-B represent all properties which do not abut the new highway but are within approximately 1.5 miles of the facility.

The comparative or control area includes all the remaining agricultural bottom land within Rockwall County outside the three-mile-wide study area strip. Properties located in the small villages in the control area were excluded from consideration, to maintain comparability with procedures in the study area. The control area is traversed by hard surface farm roads to about the same degree as the study area. Part of the old highway is also located in this area. Both the study and control areas are cut by the Trinity River.

For some purposes, both the study and control areas may be considered to be further subdivided according to the soil types as shown in Figure 3. An analysis of the land sales has been made to determine the extent to which differences in land values may be attributed to differences in soil type. There are six distinct soil types within both the control and study areas.

Methods Used

The collection of field data for the Rockwall project followed closely the procedures set forth in Appendix A of this report. Information relative to land sales was obtained from county deed records. The tracing of ownership and the locating of properties depended upon the use of these records in conjunction with ownership maps obtained from the Soil Conservation Office of the U. S. Department of Agriculture in Rockwall. Land use changes were determined from aerial photographs obtained from the U. S. D. A. and by field inspections. The soil type of each property which sold was determined from a soil survey map of the county that was made by the U. S. D. A. in cooperation with the Texas Agricultural Experiment Station.

In determining the effects of diverting through traffic from Rockwall, Fate, and Royse City (business districts), personal interviews were made with the local merchants, city and school officials, utility officials, and bankers. All merchants who had businesses located along the Old U. S. 67 and the major access routes to the new highway were interviewed.

Employment figures were obtained from the manufacturing concerns in the county. Other general economic data, such as motor vehicle registrations, build-

ing permit values, assessed valuations, and bank deposits and loans, were collected from various local sources. Also, the retail sales data for Rockwall and Dallas Counties and the state of Texas, as reported by Sale Management Magazine, were collected for purposes of comparison.

The organization of data for purposes of analysis is similar to the procedures used in the Austin and Temple reports.[1] The principal differences were in the analysis of changes in land value. Tests of significance of differences between simple averages of the array of price per acre of land which sold during each period serves to augment the basic analysis. Some simple regression analyses were run to determine the relationship between time and price per acre. As an additional part of the sectional analysis, it was necessary to use completely different periods for each section of the study area because of the time lapse between completion of each section. The Rockwall study also yielded more repeat sales of identical properties. Thus, some consideration has been given to presenting this type of land value analysis. Also, an analysis was made to determine if differences in soil type had any appreciable effects on land values. Last, tabulations regarding acreage size groups of the property sales have been presented.

Definition of Terms

So far as this report is concerned, the terms listed below will carry the following definitions:

1. Before and after—a technique used for comparative purposes to measure changes in land values, land uses, gross dollar sales, etc. One time period is designated as the before period and another the after period.

2. Area weighted figure—a figure derived by summing all purchase prices for a particular number of land sales and dividing by the sum of all acres represented by those sales. Thus, the figure is an area weighted figure.

[1]The land value, land use, business activity, and other economic data were organized on a "before-and-after" basis. The land value comparisons are shown in actual and constant dollars. The same land use designations were used. The same type of data were collected from the businesses.

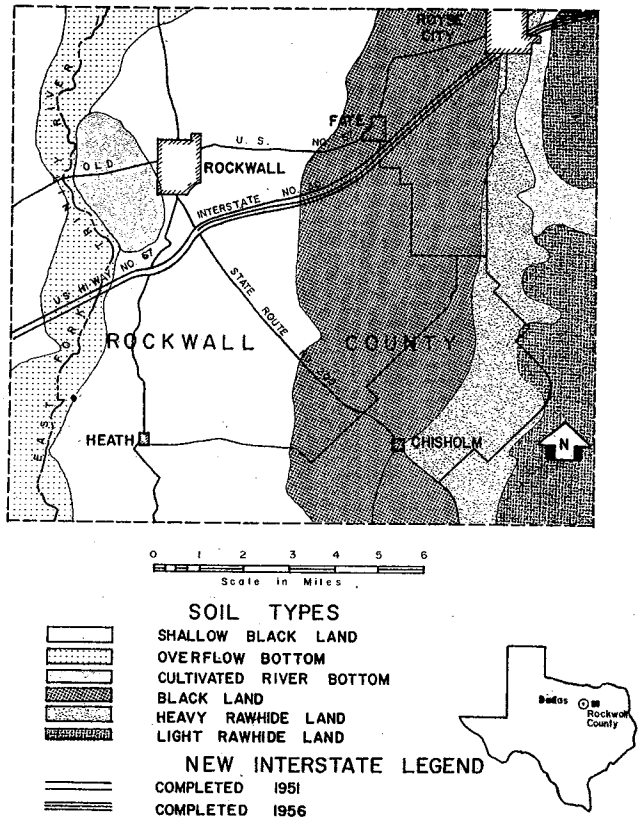


Figure 3.

3. Figure not area weighted—a figure derived by summing the price per acre paid for each of a particular number of land sales and dividing by the total number of sales transactions represented by those sales.

4. Adjusted land values—values which are deflated to common dollars by using the consumer's price index. (See explanation and schedule in Appendix A.)

5. Abutting and nonabutting land—refers to only land in the study area with the abutting land being that fronting on the new I. H. 30 and the nonabutting land being all other land in the study area.

Changes In Land Value

The land value changes presented here are derived from land sales transactions of properties located throughout Rockwall County, an area primarily agricultural in nature which is near the fringes of metropolitan Dallas. All land sales where the total price could be determined from the deed records were considered for use in this analysis. (See Appendix A for details of methods used.) Then, all sales involving improvements of any consequences were removed, except in the case of some large acerage tracts which may have had incidental improvements such as farm houses and barns. The bias induced in such cases was not considered to be great enough to warrant an investigation of all the transactions involved. This is particularly true since no subdivision sales were used in the analysis. Finally, the primary analysis is based on adjusted land values where the price changes are placed upon a common-dollar base. This adjustment has the effect of weighting each year's sales. The weight used is the Consumer Price Index of the United States (see Appendix A for schedule).

Since the comparative method of analysis was used to show changes in land prices with respect to influence of the new facility, the land sales were separated into study and control area transactions. Next, the sales of each area were divided according to periods. Then they were separated into before (1944-48) and several after (1949-52, 1953-56, and 1957-61) periods to show the over-all changes in land prices from before construction of the new highway to these various after periods. The after periods include the construction periods for all sections of the new highway, but do not conform completely to such periods.

Another breakdown was the separation of the study area sales according to the two sections (Sections 1 and 2), as mentioned earlier, so that sectional analyses could be made which might reflect differences in land values due to nearness to Dallas. For the over-all comparison between sections, the above before and after periods were used. Then, the sales of each section were analyzed according to before, during and after construction periods, conforming to the specific construction dates. The first section (nearest to Dallas) was given the following time periods: Before, 1944-48; Construction, 1949-51; and After, 1952-61. The second section (second and third combined) was given the following time periods: Before, 1944-51; Construction, 1953-56; and After, 1957-61.

The final breakdown was the separation of the study area sales according to abutting and nonabutting property; that is, with respect to the new highway. This was done to analyze the new highway's influence on land prices of abutting versus nonabutting property of first the whole study area, and then within the two major sections of the study area. For the whole area analysis, the before and after periods were used. But, for the analysis within sections, the before, during, and after construction periods were used.

Tables reflecting the above divisions of property sales will serve as a basis for further discussion under several headings following an elaboration on the volume of sales in Rockwall County versus that of the state of Texas.

Table 3
INDEX OF ACTUAL LAND PRICES AND VOLUME OF LAND SALES, TEXAS VERSUS ROCKWALL COUNTY, 1944-61.[1]
(1947-49 = 100)

Year	Index of Land Prices[2]		Index of Land Sales Volumes	
	Texas[3]	Rockwall County	Texas	Rockwall County
1944	62	75	119	101
1945	75	75	107	150
1946	77	84	162	170
1947	98	101	88	114
1948	97	97	112	114
1949	105	103	100	72
1950	117	111	119	167
1951	146	110	87	121
1952	158	111	79	167
1953	166	157	67	85
1954	170	173	63	105
1955		181		118
1956		267		65
1957		294		56
1958		232		46
1959		268		98
1960	201	280	44	88
1961		355		118

[1]This only involves transactions of tracts 20 acres or larger in size.

[2]Based on the area weighted price per acre of all sales each year.

[3]The data on land sales in Texas are from "The Texas Farm and Ranch Land Market—1960," Alvin B. Wooten and Alton Marwitz, a Reprint from the May-June, 1962, Texas Agricultural Progress, Vol. 8, No. 3, pp. 19-23.

Volume of Land Sales in Rockwall County and Texas

A total of 811 useable land sales transactions were recorded in Rockwall County, over the 18-year period under study. The availability of data from another study allows a comparison to be made of the volume of land sales in Rockwall County versus that of the State of Texas during the same period.[2] Actually, the state data represent a sample group of 26 counties of which Rockwall County was included. Unfortunately, no data were collected for the years 1955-59 and 1961 for that study.

Table 3 shows the index of changes in land sales volumes of tracts 20 acres or larger in size. It is interesting to notice that until 1950, the volume of sales for Texas and Rockwall County reflects about the same percent changes. From 1950 on, however, the volume for the state decreased rapidly from 119 to only 44 in 1960. On the other hand, the volume for Rockwall County continued to hold fairly high through 1955, after which it declined to the level that the state attained five years earlier. The volume hit a low of 46 in 1958 and then

[2]A study conducted in part by Dr. A. B. Wooten, Associate Professor, Department of Agricultural Economics & Sociology, Texas A&M University. See footnote 2 under Table 3.

Table 4
THE NUMBER OF SALES OCCURRING IN THE STUDY AND CONTROL AREAS, 1944-61[1]

Area	Number of Sales	Percent of Total
Study Area	275	30.4%
Control Area	536	59.3%
R-O-W of New U.S. 67	93	10.3%
Total	904	100.0%

[1]Includes only those transactions in which the sales price could be ascertained from the deed records, and does not include right-of-way sales in other parts of the county.

rebounded to 118 by 1961. From the 1947-49 base, the volume of sales for the state as a whole had declined by 56 percent by 1960, whereas that of Rockwall County declined only 12 percent. Then, in 1961, the county's volume showed a net gain of 18 percent over the 1947-49 base.

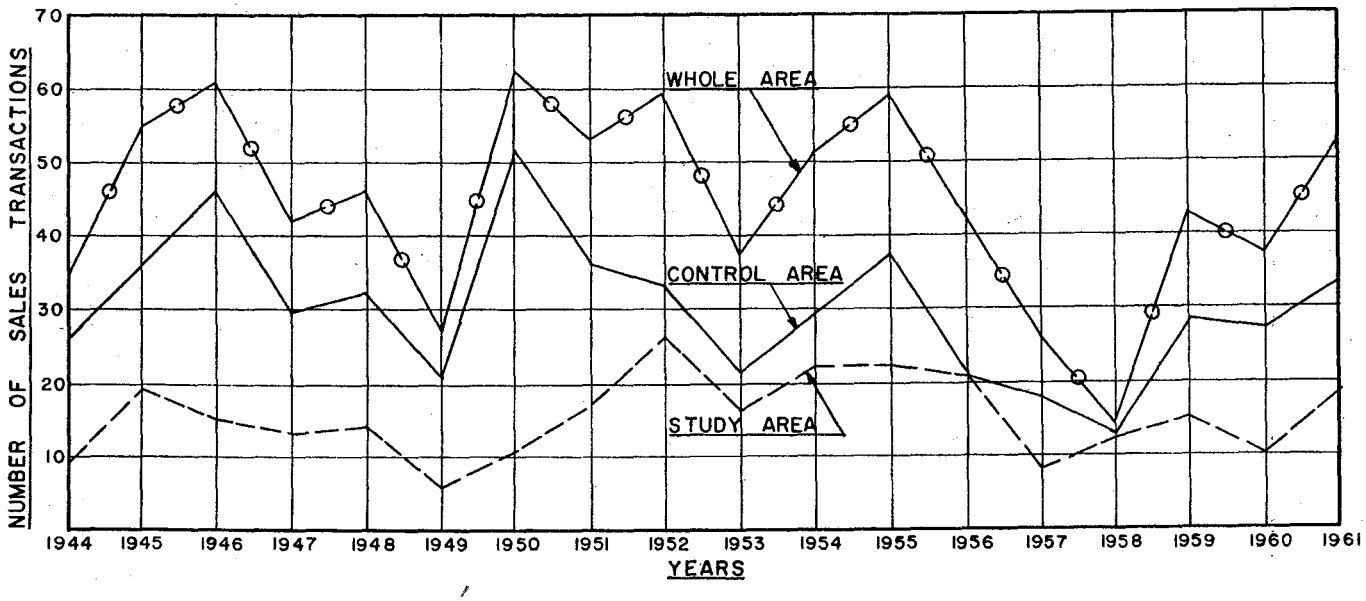
It is of interest to recall that in 1951 the first section of the new highway was completed. During this year, the state's volume declined rather sharply, but the county's volume remained fairly steady. This seems to indicate that the new highway may have helped maintain the volume of sales within the county during the early 1950's. However, it is hard to explain the drop in sales in 1956, the year in which the second section of the highway was completed.

Since the study and control areas make up the entire county, an adequate number of useable sales was found in most of the various groupings covered by the analysis. Table 4 shows the total number of sales occurring in the study and control areas. The study area had 275 or 30.4 percent of all sales recorded, and the control area had 536 or 59.3 percent. Excluding right-of-way sales, the study area had 33.9 percent versus 66.1 percent for the control area of all useable sales in the county. Since the study area represents 29.2 percent and the control area 70.8 percent of the total land area in the county, this indicates a much higher degree of sales activity occurred in this area than was experienced in the control area. In the absence of other justification, the added sales activity is assumed to have been caused by the new highway. A total of 93 right-of-way sales were recorded but were not used in the analysis. They represent 10.3 percent of a total of 904 recorded sales. Figure 4 shows the annual fluctuations in the number of sales which occurred in the study and control areas during the entire length of the study.

Table 5
THE NUMBER OF SALES OCCURRING IN SECTIONS 1 AND 2 OF THE STUDY AREA VERSUS THE CONTROL AREA OF ROCKWALL COUNTY BY THE TIME PERIODS

Area	Number of Sales by Periods		
	Before Construction	During and After Construction	Total Whole Period
	(1944-48)	(1949-61)	(1944-61)
Study Area			
Section 1	29	106	135
Section 2	41	99	140
Total	70	205	275
Control Area	169	367	536

Table 5 shows the number of sales in the study and control areas grouped by sections and time periods. As was indicated earlier, Section 1 is much smaller (about one-half) in land area than is Section 2 of the study area. (Refer back to Figure 2). Yet for the whole 18-year period, there were only five fewer sales in Section 1 than in Section 2. This indicates that the former



THE ANNUAL FLUCTUATIONS IN THE NUMBER OF SALES TRANSACTIONS WHICH OCCURRED IN THE STUDY AND CONTROL AREAS, 1944—1961.

Figure 4.

group experienced a much greater amount of land sales activity than the latter. Evidently, part of this activity was due to the presence of the new highway in Section 1 for a longer period than in Section 2, since it was only in the during and after construction periods that land sales activity in Section 1 was greater than in Section 2.

Changes in Land Values in Rockwall County and Texas

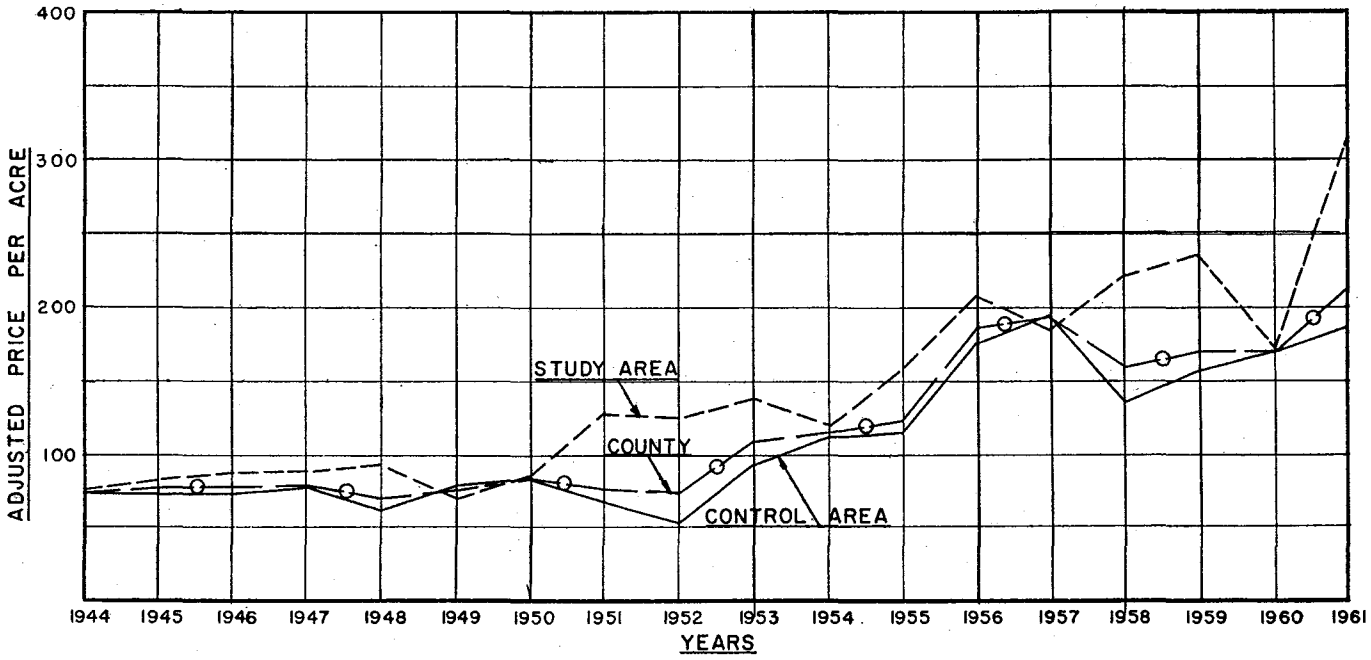
Changes in land values in Rockwall County do not approach the magnitude of those generally observed in the land-value phases of urban and suburban highway-impact studies. This is not surprising since the subject area is rural in nature and begins about 11 miles from the eastern rim of the City of Dallas. Nevertheless, the changes in farm real estate prices appear to be significant, particularly in relation to changes in values of farm and ranch properties over the state of Texas as well as the changes in relation to the distance of the land from the new facility.

The statewide study of rural land prices mentioned earlier, allows a comparison of the changes in the prices of rural land in Rockwall County with the remainder of the state. Referring to Table 3 again, the index of actual land prices (tracts of 20 acres or larger in size) shows that land prices in the state increased at a gradual rate throughout the whole period of 1944-54 and at an even slower rate from 1954 through 1960. On the other hand, those of Rockwall County increased less than the state average between the 1944-54 period, and then increased at a considerably greater rate than the state between 1954-60. This contrast can be more easily seen if the data are converted to index numbers. By using the base, 1947-49 = 100, it is seen that Texas land prices increased 101 percent by 1960, while the Rockwall County prices increased 180 percent during the same period. Such differences as revealed above are probably due at least in part to the new concentrated influence of constructing a new highway through a relatively small rural area.

Changes in Land Values in the Study and Control Areas

Summary data of land sales occurring in the study and control areas are presented in Table 6. It is of interest to note that the study area sales represent only 26 percent of the total area sold in the county compared to 32 percent of the total value of all sales prices. In other words, buyers paid $33 more per acre for study area land than that of the control area. Due to the fact that the average number of acres per sale for the control area was 28 acres more than that of the study area, an average price per sale of $826 more was paid for control area land. It is shown that the range of tract size of study area sales was about half that of the control area. But the range of price per acre for the control area was only one-fourth that of the study area. Since the study area sales were abutting or very near the new highway, one could logically expect smaller tracts to sell at much higher prices in that area as opposed to the control area.

Figure 5 shows the annual fluctuations in the adjusted price per acre paid for land in the study and control areas. It indicates that study and control area land prices moved within a very narrow range from 1944 through 1950. Then, with the completion of the first section of the new highway in 1951, they diverged



THE ANNUAL FLUCTUATIONS IN THE ADJUSTED PRICE PER ACRE PAID FOR LAND IN THE STUDY AND CONTROL AREAS, 1944 – 1961.

Figure 5.

Table 6
SUMMARY DATA OF LAND SALES OCCURRING IN THE STUDY AND CONTROL AREAS, ROCKWALL COUNTY, 1944-61

Item	Amounts		
	Study Area	Control Area	County Total
Number of Sales Recorded	275	536	811
Number of Tracts of Land Involved	235	457	692
Number of Acres Sold	16,490	47,005	63,495
Price Paid[1]	$2,210,040	$4,750,635	$6,960,675
Price Per Acre[2]	134	101	110
Average Price Per Sale	8,037	8,863	8,583
Average Number Acres Per Sale	60	88	78
Range of Tract Size (Acres)	.1-524	.1-1062	.1-1062
Range of Price Per Acre	$14-$4,520	$8-$1,205	$8-$4,520

[1]The prices were adjusted to real dollars.
[2]The area weighted adjusted price per acre is presented here.

rapidly to a $71 per acre difference by 1952. From 1951-54, study area prices were on a plateau, while those in the control area were recovering from a 1950-52 decline and catching up with the study area.

From 1954-56, prices in the study area increased at a rapid rate. At the same time, control area prices paused a year and then followed suit. It was during this period that the construction of the second section of the highway was completed. Between 1956 and 1957, study area prices declined while control area prices increased to their highest point during the 18-year period. From 1957, after completion of the second section, prices in the two areas began diverging rapidly and continued to diverge through 1961, except for 1960 when study area prices dropped sharply. But in 1961, following completion of the last section of the highway in late 1959, study prices increased sharply to allow a spread of $127 per acre between study and control area prices compared to virtually no difference between them in 1944. The opening of this last section apparently triggered the sharpest increase in study area prices that occurred during the whole period.

Table 6 shows the area weighted adjusted price per acre for study and control areas. The area weighted price for the study and control areas was $134 and $101, respectively, during the 18-year period. Viewed by this measurement, the study area land sold for $33 more than that of the control area. However, the difference is even greater when the adjusted price per acre of each individual transaction is not area weighted and has an equal opportunity to determine the simple average price per acre for the area it represents. This measurement gives a simple mean average price per acre of $338 and $134 for the study and control areas, respectively. The difference between these two means is $204 per acre. A statistical test was made to determine if these means were significantly different. The standard error of the difference was $35. The difference was highly significant.

In addition, a simple correlation analysis was run separately on the study and control sales data to determine the relationship between time (years) and adjusted price per acre. It revealed that the independent variable, time, explained only 7.73 percent of the variation in the price per acre of study area land. It explained 14.78 percent, or almost twice that amount, of the variation in the price per acre of control area land. In this respect, the standard error of estimate for the study and control area data was $546 and $123, respectively, indicating a great deal more unexplained variation in the former than the latter. As was expected, time was more

Table 7
CHANGES IN ACTUAL PRICE OF PROPERTIES IN THE STUDY AND CONTROL AREAS OF ROCKWALL COUNTY, WEIGHTED BY AREA SOLD

Periods[1]	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		STUDY AREA			
Before Period					
(1) 1944-48	70	4,891	$ 74		
After Periods					
(2) 1949-52	60	4,366	114	$ 40	54%
(3) 1953-56	81	4,041	172	58	51
(4) 1957-61[2]	64	3,192	288	116	67
Total After Periods	205	11,599	$182	$108	146%
		CONTROL AREA			
Before Period					
(1) 1944-48	169	13,532	$ 63		
After Periods					
(2) 1949-52	141	15,505	75	$ 12	19%
(3) 1953-56	108	8,268	143	68	91
(4) 1957-61[2]	118	9,800	215	72	50
Total After Periods	367	33,473	$133	$ 70	111%

[1]The after periods include the time when the new highway was under construction as well as after completion.
[2]The increase in the price per acre between Periods 1 and 4 was $214 or 289 percent for the study area and $152 or 241 percent for the control area.

Table 8

CHANGES IN ADJUSTED PRICES OF PROPERTIES IN THE STUDY AND CONTROL AREAS OF ROCKWALL COUNTY, WEIGHTED BY AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods[1]	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		STUDY AREA			
Before Period					
(1) 1944-48	70	4,891	$ 86		
After Periods					
(2) 1949-52	60	4,366	105	$19	22%
(3) 1953-56	81	4,041	149	44	42
(4) 1957-61[2]	64	3,192	229	80	54
Total After Periods	205	11,599	$154	$68	79%
		CONTROL AREA			
Before Period					
(1) 1944-48	169	13,532	$ 72		
After Periods					
(2) 1949-52	141	15,505	70	$—2	—3%
(3) 1953-56	108	8,268	124	54	77
(4) 1957-61[2]	118	9,800	171	47	38
Total After Periods	367	33,473	$113	$41	57%

[1]The after periods include the time when the new highway was under construction as well as after construction.
[2]The increase in the price per acre between Periods 1 and 4 was $143 or 166 percent for the study area and $99 or 138 percent for the control area.

highly correlated to price per acre in the control area sales than in the study area sales. The correlation coefficient was .30 for the latter and .38 for the former. The slope of the regression line for the study area was much greater than that of the control area. The regression coefficients were 29.27 and 9.17 for the former and latter, respectively. This shows that over time, land prices in the study area increased more rapidly (per year rate) than those in the control area.

Changes in Land Values in the Study and Control Areas by Time Periods

The before and after measurement technique is both a popular and realistic method of determining the effect that a new highway has on the land values of an area it traverses. As stated previously, 1944-48 was selected as the period to show the land values before any highway construction had begun in the county. The period 1949-61 represents the during and after construction periods. Unless otherwise indicated, this period will be called the after period.

In order to permit more detailed comparisons, the after period was broken down into periods involving about the same number of years as the before period. The before period is five years in length. The after period is broken into two four-year periods, 1949-52 and 1953-56, and one five-year period, 1957-61. The last five-year period represents the true after construction period for the whole study area; for some highway construction was taking place within the other two periods. Generally, Section 1 of the new highway was constructed during the 1949-52 period, and Section 2 was constructed during the 1953-56 period.

Table 7 shows the changes in the actual price per acre of properties in the study and control areas on an area weighted basis. Table 8 presents the same changes as does Table 7, except that the price per acre is in constant dollars. Both these comparisons are made in order to show both the actual and relative price changes that have occurred over time. Unless otherwise stated, only data expressed in constant dollars will be discussed in the report. When applicable, however, the changes in the actual prices for the various periods discussed will be presented in tabular form along with the adjusted price data.

Table 8 shows that the adjusted price per acre of study area land for the total after period increased by $68 or 79 percent over the before period, compared to an increase of $41 or 57 percent in the control area. The changes between periods 1 and 4 (the final after period) were even greater. In this case, the increase was 166 percent for the study area and 138 percent for the control area. Of course, it should be pointed out that the average price per acre of study area land was higher for every period than for like periods in the control area. Since changes are being made from a higher base in the study area, this dampens the effect of the magnitude of the changes when shown on a percentage basis.

Table 9 shows the changes in adjusted land prices for the study and control areas which are not area weighted. In this case, only two periods are compared, the before period and the combined after period. It was found that the difference between the mean average prices in the before period of $137 for the study area and $89 for the control area, was not highly significant. This indicates that the two areas were fairly comparable during the before period. In the after period, the difference between the means was highly significant, indicating that the new highway caused most of the difference. As indicated in Table 9, the probable highway influence was $188 or 137 percent. These figures represent the combination of two different measurements which are explained in the footnotes of Table 9.

Table 9

CHANGES IN ADJUSTED LAND PRICES IN THE STUDY AND CONTROL AREAS OF ROCKWALL COUNTY, NOT AREA WEIGHTED IN CONSTANT DOLLARS (1947-49)=100)

Item	Price Per Acre[1]		Difference Between Areas	Percent of Study Area Before Period Price
	Study Area	Control Area		
Before Period (1944-48)	$137(70)	$ 89(169)	$ 48[2]	
After Period (1949-61)	406(205)	154(367)	252[3]	
Increase Between Periods				
Dollars	$269	$ 65	$204	150%[4]
Percent	196%	73%	123%[5]	
Probable Highway Influence				
Percent[6]	137%			
Dollars[7]	$188			

[1]Number of transactions is shown in parentheses.
[2]The standard error (S.E.) of this difference between the means is $21. The difference is not highly significant.
[3]The S.E. of this difference between the means is $45. The difference is highly significant.
[4]This is one way of measuring the amount of highway influence. It is assumed that the study and control areas would have increased in value by the same dollar amount in the absence of the new road improvement. That is, both would have increased in value by $65 per acre. Following this assumption, if the control area had had a new highway, its gain would have been greater percentage-wise by this type of measurement than that of the study area.
[5]This is another way of measuring the amount of highway influence. It assumes that such percentage increases would have been the same in the absence of a new highway. That is, both would have increased in value by 73%. Dollar-wise this would have resulted in a smaller increase for the control area than for the study area.
[6]This is the average of the above percentages, 150 percent (based on dollar increases) and 123 percent (based on percentage increases.)
[7]The average percentage increase due to the new highway times the before period study area price per acre.

Changes in Land Values in Sections 1 and 2 of the Study Area

Other studies have indicated that nearness of the study area to the central business district of a city like Dallas would have a marked influence on land values. This is especially true of that portion of the study area closest to such a city. This is one of the reasons why this study area is divided into two sections, with Section 1 being the closest to Dallas. It has already been determined that Section 1 experienced a higher turnover rate of sales than did Section 2. Let's now look at the differences in land prices between the two sections.

Tables 10 and 11 present the changes in actual and adjusted land prices in the two sections on an area weighted basis. Table 11 shows that Section 1 land prices increased 187 percent and Section 2 increased only 17 percent between the before and after periods. The difference between Periods 1 and 4 was markedly greater than this, where the increase was 351 percent for Section 1 and 46 percent for Section 2. Comparing the

Table 10

CHANGES IN ACTUAL LAND PRICES IN SECTIONS 1 AND 2 OF THE STUDY AREA IN ROCKWALL COUNTY, WEIGHTED BY AREA SOLD

Periods[1]	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Section 1			
Before Period					
(1) 1944-48	29	2,644	$ 55		
After Periods					
(2) 1949-52	27	1,595	114	$ 59	107%
(3) 1953-56	47	2,078	177	63	55
(4) 1957-61[2]	32	1,738	361	184	104
Total After Periods	106	5,411	$218	$163	296%
		Section 2			
Before Period					
(1) 1944-48	41	2,247	$ 97		
After Periods					
(2) 1949-52	3	2,771	115	$ 18	19%
(3) 1953-56	34	1,963	166	51	44
(4) 1957-61[2]	32	1,454	202	36	22
Total After Periods	99	6,188	$151	$ 54	56%

[1]The after periods include the time when the new highway was under construction as well as after completion. The data for each of these periods can be compared with like periods in the control area by referring to Table 7.
[2]The increase in the price per acre between periods 1 and 4 was $306, or 556% for Section 1 and $105 or 108 percent for Section 2.

Table 11

CHANGES IN ADJUSTED LAND PRICES IN SECTIONS 1 AND 2 OF THE STUDY AREA IN ROCKWALL COUNTY, WEIGHTED BY AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods[1]	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Section 1			
Before Period					
(1) 1944-48	29	2,644	$ 63		
After Periods					
(2) 1949-52	27	1,595	104	$ 41	65%
(3) 1953-56	47	2,078	154	50	48
(4) 1957-61[2]	32	1,738	284	130	84
Total After Periods	106	5,411	$181	$118	187%
		Section 2			
Before Period					
(1) 1944-48	41	2,247	$112		
After Periods					
(2) 1949-52	33	2,771	105	$—7	—6%
(3) 1953-56	34	1,963	144	39	37
(4) 1957-61[2]	32	1,454	163	19	13
Total After Periods	99	6,188	$131	$ 19	17%

[1]The after periods include the time when the new highway was under construction as well as after completion. The data for each of these periods can be compared with like periods in the control area by referring to Table 8.
[2]The increase in the price per acre between periods 1 and 4 was $221 or 351 percent for Section 1 and $51 or 46 percent for Section 2.

sectional changes with control area changes for like periods (see Table 8), Section 1 land prices increased more than those of the control area. However, Section 2 failed to perform as well as the control area. Perhaps one reason for this was that Section 2 did not receive some of the same influences as Section 1 and the control area, such as nearness to Dallas and the presence of Forney Reservoir. Also, the Section 2 base price was considerably higher than that of Section 1 and the control area, affecting the differences in the percentage changes.

Table 12 presents the price changes which are not area weighted. It also shows that Section 1 prices increased more than Section 2 between the before and after periods. The differences between the before period means in all three area comparisons were not highly significant. The difference between the after period means of Sections 1 and 2 was still not highly significant. And finally, the differences between the means of each section in the after period compared to the mean of the control area were highly significant. The above test of differences between the means of the two sections

Table 12

CHANGES IN ADJUSTED LAND PRICES IN SECTIONS 1 AND 2 OF THE STUDY AREA AS COMPARED TO THE CONTROL AREA IN ROCKWALL COUNTY, NOT AREA WEIGHTED IN CONSTANT DOLLARS (1947-49=100)

Item	Price Per Acre[1]			Difference Between Areas			Percent of Study Area Section's Period Price	
	Study Area Section 1	Study Area Section 2	Control Area	Section 1 vs. Section 2	Section 1 vs. Control Area	Section 2 vs. Control Area	Section 1	Section 2
Before Period (1944-48)[2]	$ 98(29)	$164(41)	$ 89(169)	$ 66	$ 9	$ 75		
After Period (1949-61)[3]	396(106)	417(99)	154(367)	21	242	263		
Increase Between Periods								
Dollars	$298	$253	$ 65	$ 45	$233	$188	238%[4]	115%[5]
Percent	304%	154%	73%	150%	231%	81%		
Probable Highway Influence[6]								
Percent	235%	98%						
Dollars	$230	$161						

[1]Number of transactions is shown in parentheses.
[2]The S.E. of the difference between the means of Section 1 and 2 of the study area is $37; the S.E. of the difference between the means of Section 1 and the control area is $18. The S.E. of the difference between the means of Section 2 and the control area is $33. The differences between the means are not highly significant.
[3]The S.E. of the difference between the means of Section 1 and 2 of the study area is $89. The difference between the means is not highly significant. The S.E. of the difference between the means of Section 1 and the control area is $64; the S.E. of the difference between the means of Section 2 and the control area is $62. The differences between the means are highly significant.
[4]This figure is based on the differences between Section 1 of the study area and the control area prices. See footnote 4 of Table 9 for an explanation of this type of measurement.
[5]This figure is based on the difference between Section 2 of the study area and the control area prices. See footnote 4 of Table 9 also for an explanation of this type of measurement.
[6]See footnotes 6 and 7 of Table 9 for an explanation of these measurements.

being not highly significant was somewhat surprising. However, due to the much higher base price for Section 2, Section 1 prices had to increase at a greater rate between the periods to catch up and pass Section 2 prices. When the changes are viewed from the percentage increases of the two sections, it shows that Section 1 prices increased $45 or 150 percent more than those of Section 2 between the before and after periods. Also, this analysis shows that prices in Section 1 experienced a greater increase over control area prices than did those of Section 2. The probable highway influence on Section 1 land prices as compared to those of the control area is $230 or 235 percent. For Section 2, it is $161 or 98 percent.

When the land prices of each section were analyzed separately by its own before, during, and after construction periods, similar results were obtained as reflected by the preceding analyses. Table 13 indicates that land prices of Section 1 increased 242 percent and those of Section 2 increased only 38 percent between the before construction and combined during and after periods. Between the before and after construction periods, the increase was 268 percent for Section 1 versus 57 percent for Section 2. Data not area weighted (presented in Table 14) show that land prices in Section 2 gained 135 percent more than Section 1 between the before and construction periods. Between the construction and after periods, Section 1 gained 171 percent more than Section 2. Then between the before and after periods, the difference narrowed to 52 percent with Section 1 out-gaining Section 2. The switching which occurred between the sections was probably due partly to the long before period for Section 2 and the long after period for Section 1. However, it is interesting to note that the differences between the means of the two sections in the before and after periods were not highly significant. During the construction period, the difference was highly significant.

Table 14

CHANGES IN ADJUSTED LAND PRICES IN SECTIONS 1 AND 2 OF STUDY AREA IN ROCKWALL COUNTY FOR THE BEFORE, DURING, AND AFTER CONSTRUCTION PERIODS, NOT AREA WEIGHTED IN CONSTANT DOLLARS (1947-49=100)

Item	Price Per Acre[1]		Difference Between Sections
	Study Area Section 1	Study Area Section 2	
Before Period[2]	$ 97(29)	$147(58)	$ 50
Construction Period[3]	140(17)	410(50)	270
After Period[4]	444(89)	597(32)	153
Increase Between Periods			
Before and Construction			
Dollars	$ 43	$263	
Percent	44%	179%	
Construction & After			
Dollars	$304	$187	
Percent	217%	46%	
Before and After			
Dollars	$347	$450	
Percent	358%	306%	

[1]Number of transactions is shown in parentheses.
[2]The before period for Section 1 is 1944-48 and for Section 2 is 1944-51. A test for significant differences between the means was made even though the time periods for each section were somewhat different. The S.E. of the difference between the means is $29. The difference is not highly significant.
[3]The construction period for Section 1 is 1949-51, and for Section 2 is 1952-56. The S.E. of the difference between the means is $89. The difference is highly significant.
[4]The after period for Section 1 is 1952-61 and for Section 2 is 1957-61. The S.E. of the difference between the means is $149. The difference is not highly significant.

The above comparisons show that there were considerable differentials in the changes in land values between the two sections. Since distance from Dallas was the major definable external difference between the

Table 13

CHANGES IN ADJUSTED LAND PRICES IN SECTIONS 1 AND 2 OF THE ROCKWALL COUNTY STUDY AREA, FOR THE BEFORE, DURING, AND AFTER CONSTRUCTION PERIODS, WEIGHTED BY AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Section 1			
Before Period (1) 1944-48	29	2,644	$ 53		
Construction Period (2) 1949-51	17	1,134	81	$ 28	53%
After Period (3) 1952-61[1]	89	4,277	195	114	141
Construction and After Periods	106	5,411	$181	$128	242%
		Section 2			
Before Period (1) 1944-51	58	3,670	$104		
Construction Period (2) 1952-56	50	3,311	134	$ 30	29%
After Period (3) 1957-61[1]	32	1,454	163	29	22
Construction and After Periods	82	4,765	$143	$ 39	38%

[1]The increase in the price per acre between periods 1 and 3 was $142 or 268 percent for Section 1 and $59 or 57 percent for Section 2.

Table 15

CHANGES IN ACTUAL LAND PRICES OF ABUTTING AND NONABUTTING PROPERTY IN THE ROCKWALL COUNTY STUDY AREA, WEIGHTED BY AREA SOLD

Periods[1]	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Abutting Property			
Before Period					
(1) 1944-48	12[2]	749	$ 73		
After Periods					
(1) 1949-52	15	714	149	$ 76	104%
(2) 1953-56	23	1,116	157	8	5
(3) 1957-61[3]	19	549	405	248	158
Total After Periods	57	2,382	211	128	175
		Nonabutting Property			
Before Period					
(1) 1944-48	58	4,141	74		
After Periods					
(2) 1949-52	45	3,650	108	34	46
(3) 1953-56	58	2,925	178	70	65
(4) 1957-61[3]	45	2,643	264	86	48
Total After Periods	148	9,219	175	101	136

[1]The after periods include the time when the new highway was under construction as well as after completion. The data for each of these periods can be compared with like periods in the control area, by referring to Table 7.
[2]Since the new highway did not exist in this period, these sales were not truly abutting at that time.
[3]The increase in the price per acre between periods 1 and 4 was $332 or 455 percent for abutting and $190 or 257 percent for nonabutting land.

two areas, it can probably be said that the differential in values between the two sections was largely due to this nearness to Dallas.

Changes in Land Values of Abutting and Nonabutting Property

In this section changes in land prices of abutting and nonabutting property are presented. It is known that nonabutting property close to a new highway receives some desirable benefits from such a facility. The amount of benefit, measured in terms of an increase in land value, depends on a number of factors, including distance from the highway. In this study, no attempt was made to measure the changes in land values of nonabutting property in the study area according to distance from the highway. Such measurements were impossible due to the small number of sales representing various distances.

There were sufficient sales to measure the difference between the value of abutting and nonabutting land in the study area. Tables 15 and 16 present the data which are weighted by the area sold. In Table 16, it can be noted that the prices of abutting land increased 124 percent between the before and combined after periods where those of the nonabutting land increased only 70 percent. The difference is even greater between periods 1 and 4 with the prices of abutting land increasing 306 percent and the nonabutting land 139 percent.

Table 17 presents the changes in adjusted land prices which are not area weighted. In testing the differences between the means in the before period, it was found that there were no significant differences between the mean values of abutting land versus nonabutting land, abutting land versus control area land, or nonabutting land versus control area land. These results were expected. In the after period, the difference between the means of abutting versus nonabutting land still was not highly significant. Normally, these would have been significantly different, but other influences entered into the picture to equalize them somewhat. Land speculation in the area around the Forney Reservoir is one of the known reasons. The differences between the means of the abutting and nonabutting land versus control area land were highly significant. The table further shows that the abutting land prices increased $71 or 106 percent more than those of nonabutting land between the before and after periods. When compared to the control prices, the probable highway influence on abutting land was 218 percent, whereas it was 118 percent on nonabutting land. Thus, abutting land prices experienced a much greater highway influence over control area prices than did those of Section 2.

For the study area as a whole, it can be seen that between the before and after periods, abutting land benefited, price-wise, slightly more than nonabutting land. This conclusion is based on the difference in the percentage changes between periods and not on the observed differences between the means.

Changes in Values of Abutting and Nonabutting Land in Sections 1 and 2

Under this heading a sectional analysis is made of abutting and nonabutting land values in order to reveal any differences which might be evident. The number of sales for each grouping is quite small in a few cases, but still gives a fairly good indication of the changes in land value over the period. Tables 18 and 19 present the changes based on area weighted data. Table 18 shows the Section 1 changes, and Table 19 shows those of Section 2.

Table 18 shows that abutting land prices in Section 1 increased 147 percent between the before and combined after periods as compared to 198 percent for nonabutting land. The reason for this occurrence is

Table 16

CHANGES IN ADJUSTED LAND PRICES OF ABUTTING AND NONABUTTING PROPERTY IN THE ROCKWALL COUNTY STUDY AREA, WEIGHTED BY AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods[1]	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Abutting Property			
Before Period					
(1) 1944-48	12[2]	749	$ 80		
After Periods					
(2) 1949-52	15	714	134	$ 54	68%
(3) 1953-56	23	1,116	136	2	1
(4) 1957-61[3]	19	549	325	189	139
Total After Periods	57	2,382	179	99	124
		Nonabutting Property			
Before Period					
(1) 1944-48	58	4,141	87		
After Periods					
(2) 1949-52	45	3,650	99	12	14
(3) 1953-56	58	2,925	154	55	63
(4) 1957-61[3]	45	2,643	208	54	35
Total After Periods	148	9,219	148	61	70

[1]The after periods include the time when the new highway was under construction as well as after completion. The data for each of these periods can be compared with like periods in the control area by referring to Table 8.
[2]Since the new highway did not exist in this period, these sales were not truly abutting at that time.
[3]The increase in the price per acre between periods 1 and 4 was $245 or 306 percent for abutting land and $121 or 139 percent for nonabutting land.

primarily due to the future building of the Forney Reservoir in this section. Much speculative buying of nonabutting land has occurred for the above reason. One rural subdivision has already been dedicated in the area.

In Section 2, where the new reservoir had no effect, the expected changes in values occurred. Table 19 shows that abutting land prices increased 63 percent between the before and combined after periods; whereas, those of nonabutting properties increased only 9 percent. The difference is even greater between periods 1 and 4, where the price of abutting land increased 286 percent and nonabutting land increased only 24 percent.

When the abutting and nonabutting land sales were divided by each section's own before, during and after

Table 17

CHANGES IN ADJUSTED LAND PRICES OF ABUTTING AND NONABUTTING PROPERTY IN THE ROCKWALL COUNTY STUDY AREA, NOT AREA WEIGHTED IN CONSTANT DOLLARS (1947-49=100)

Item	Price Per Acre[1]			Difference Between Areas			Percent of Respective Parts of Study Area's Before Period Price	
	Study Area Abutting	Study Area Nonabutting	Control Area	Abutting versus Nonabutting	Abutting versus Control Area	Nonabutting versus Control Area	Abutting	Nonabutting
Before Period (1944-48)[2]	$114(12)	$142(58)	$ 89(169)	$ 28	$ 25	$ 53		
After Period (1949-61)[3]	437(57)	394(148)	154(367)	43	283	240		
Increase Between Periods								
Dollars	$323	$252	$ 65	$ 71	$258	$187	226%[4]	132%[5]
Percent	283%	177%	73%	106%	210%	104%		
Probable Highway Influence[6]								
Percent	218%	118%						
Dollars	$249	$168						

[1]Number of transactions is shown in parentheses.
[2]The S.E. of the difference between the means of the abutting and nonabutting land is $34; the S.E. of the difference between the means of the abutting land and the control area land is $24; the S.E. of the difference between the means of the nonabutting land and the control area land is $25. The differences between the means are not highly significant.
[3]The S.E. of the difference between the means of the abutting and nonabutting land is $96. The difference between the means is not highly significant. The S.E. of the difference between the means of the abutting land and control area land is $81. The S.E. of the difference between the means of the nonabutting land and control area land is $54. The differences between the means are highly significant.
[4]This figure is based on the difference between abutting land and control area land prices. See footnote 4 of Table 9 for an explanation of this type of measurement.
[5]This figure is based on the difference between nonabutting land and control area land prices. Also see footnote 4 of Table 9 for an explanation of this type of measurement.
[6]See footnotes 6 and 7 of Table 9 for an explanation of these measurements.

Table 18

CHANGES IN ADJUSTED LAND PRICES OF ABUTTING AND NONABUTTING PROPERTY IN SECTION 1 OF THE ROCKWALL COUNTY STUDY AREA, WEIGHTED BY AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods[1]	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Abutting Property			
Before Period					
(1) 1944-48	7[2]	536	$ 72		
After Periods					
(2) 1949-52	8	404	134	$ 62	86%
(3) 1953-56	17	717	131	—3	—2
(4) 1957-61	10	414	304	173	57
Total After Periods	35	1,535	$178	$106	147%
		Nonabutting Property			
Before Period					
(1) 1944-48	22	2,107	$ 61		
After Periods					
(2) 1949-52	19	1,192	94	$ 33	54%
(3) 1953-56	30	1,361	166	72	77
(4) 1957-61	22	1,324	278	112	67
Total After Periods	71	3,877	$182	$121	198%

[1]The after periods include the time when the new highway was under construction as well as after completion.
[2]Since the new highway did not exist in this period, these sales were not truly abutting at that time.
[3]The increase in the price per acre between periods 1 and 4 was $232, or 322 percent for the abutting land and $217 or 356 percent for the nonabutting land.

construction periods, about the same results were obtained as above, except that the percentage increases were greater between periods. These data are presented in Tables 20 and 21 for Sections 1 and 2, respectively.

Abutting land prices in Section 1 increased more than those in Section 2 between the before and combined after periods. Also, nonabutting land prices in Section 1 increased more than those in Section 2 between the same periods. A comparison of either Tables 18 and 19, or 20 and 21 gives the specific percentage changes in each case.

Changes in Values of Study and Control Area Land by Size of Area Sold

This section explores relationships which may exist between land value and the size of tracts sold. The sales of the study and control areas were divided into four acreage size groups. (See footnote of Table 22 for

Table 19

CHANGES IN ADJUSTED LAND PRICES OF ABUTTING AND NONABUTTING PROPERTY IN SECTION 2 OF THE ROCKWALL COUNTY STUDY AREA, WEIGHTED BY AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods[1]	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Abutting Property			
Before Period					
(1) 1944-48	5[2]	213	$100		
After Periods					
(2) 1949-52	7	313	134	$ 34	34%
(3) 1953-56	6	399	146	12	9
(4) 1957-61[3]	9	135	386	240	164
Total After Periods	22	847	$163	$ 63	63%
		Nonabutting Property			
Before Period					
(1) 1944-48	36	2,034	$113		
After Periods					
(2) 1949-52	26	2,458	101	$—12	—11%
(3) 1953-56	28	1,564	144	43	43
(4) 1957-61[3]	23	1,319	140	4	3
Total After Periods	77	5,341	$123	$ 10	9%

[1]The after periods include the time when the new highway was under construction, as well as after completion.
[2]Since the new highway did not exist in this period, these sales were not truly abutting at that time.
[3]The increase in the price per acre between periods 1 and 4 was $286 or 286 percent for the abutting land and $27 or 24 percent for the nonabutting land.

Table 20

CHANGES IN ADJUSTED LAND PRICES OF ABUTTING AND NONABUTTING PROPERTY IN SECTION 1 OF THE ROCKWALL COUNTY STUDY AREA FOR THE BEFORE, DURING, AND AFTER CONSTRUCTION PERIODS, WEIGHTED BY AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Abutting Property			
Before Period					
(1) 1944-48	7[1]	536	$ 72		
Construction Period					
(2) 1949-51	5	126	88	$16	22%
After Period					
(3) 1952-61[2]	30	1,408	187	99	113
Construction and After Periods	35	1,534	179	107	149
		Nonabutting Property			
Before Period					
(1) 1944-48	22	2,107	51		
Construction Period					
(2) 1949-51	12	1,008	91	40	78
After Period					
(3) 1952-61[2]	59	2,868	204	113	124
Construction and After Periods	71	3,876	182	131	257

[1]Since the new highway did not exist during this period, these were not truly abutting sales at that time.
[2]The increase in the price per acre between periods 1 and 3 was $115, or 160 percent for abutting land and $153 or 300 percent for nonabutting land.

the size of each group.) Then, these sales were divided into two equal time periods, 1944-52 and 1953-61, to determine if the same relationship existed between the first half of the study period as opposed to the last. The area weighted adjusted price per acre was computed for each group within each period. The results are shown in Table 22.

During the first period (1944-52), the price per acre consistently increased as the size of the tracts sold decreased in the study area. The control prices did likewise, except for a slight decline in Group 1 prices. During the last period (1953-61), for both areas, the price per acre showed a general increase as the size of the tracts sold decreased, but there was actually a slight

Table 21

CHANGES IN ADJUSTED LAND PRICES OF ABUTTING AND NONABUTTING PROPERTY IN SECTION 2 OF THE ROCKWALL COUNTY STUDY AREA FOR THE BEFORE, DURING, AND AFTER CONSTRUCTION PERIODS, WEIGHTED BY AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods	Number of Sales	Number of Acres	Average Price Per Acre	Price Changes Between Periods	
				Per Acre	Per Acre
	(Number)	(Acres)	(Dollars)	(Dollars)	(Percent)
		Abutting Property			
Before Period					
(1) 1944-51	9[1]	4,103	$108		
Construction Period					
(2) 1952-56	9	5,141	150	$ 42	39%
After Period					
(3) 1957-61[2]	9	1,351	386	236	157
Construction and After Periods	18	6,492	199	91	84
		Nonabutting Property			
Before Period					
(1) 1944-51	49	3,259	103		
Construction Period					
(2) 1952-56	41	2,797	131	28	27
After Period					
(3) 1957-61[2]	23	1,319	140	9	7
Construction and After Periods	64	4,116	134	31	22

[1]Since the new highway did not exist during this period, these were not truly abutting sales at that time.
[2]The increase in the price per acre between periods 1 and 3 was $27 or 257 percent for abutting land and $137 or 133 percent for nonabutting land.

Table 22

CHANGES IN ADJUSTED LAND PRICES OF PROPERTIES IN STUDY AND CONTROL AREAS ACCORDING TO SIZE OF AREA SOLD IN CONSTANT DOLLARS (1947-49=100)

Periods	Acreage Size Group[1]			
	Group 1	Group 2	Group 3	Group 4
	Price Per Acre	Price Per Acre	Price Per Acre	Price Per Acre
	Study Area			
1944-52	$315(13)[2]	$187(7)	$182(10)	$ 92(100)
1953-61	851(41)	318(7)	330(23)	170(74)
	Control Area			
1944-52	$143(21)	$155(12)	$ 90(17)	$ 70(260)
1953-61	335(30)	242(15)	243(16)	147(165)

[1]Each group has the following size limits; Group 1, 0 through 5 acres; Group 2, 5.1 through 10 acres; Group 3, 10.1 through 20 acres, and Group 4, 20.1 acres and over.
[2]The number of sales is shown in the parentheses.

drop in the price for both areas between size groups 3 and 2.

Therefore, for the study and control areas in both periods, there appears to be an inverse relationship existing between the price per acre and the size of the tract sold. This is an expected occurrence. Usually, the smaller tract with the higher (or more intensive) use, commands a higher value. Thus, this analysis indicates that acreage size can throw some bias into the area weighted land value comparisons when the groups of sales that are compared do not have the same proportionate number of different-sized tracts selling. The fact that the Rockwall County study and control areas have about the same relationship for each period indicates that this type of bias is not an important factor when comparing the two areas.

Changes in Land Values in Study and Control Areas as Reflected by Repeat Sales

It is desirable to know how many tracts of land within the study and control areas sold one or more times for several reasons. First, repeat sales of a property occurring within the same period could have an undue influence on the averages of sales prices, particularly in those calculations in which only a few sales are involved. Secondly, if there is a sufficient number of repeat sales occurring in both the study and control areas, these can give a good indication of real changes in land values. Thirdly, the number of repeat sales occurring in an area is an indication of the amount of land speculation taking place.

Table 23 presents the number of parcels of land which sold one or more times in both the study and control areas. It shows that 16.2 percent of the 235 study area tracts sold two or more times versus 14.7 percent for the 457 control area tracts. The new highway probably generated this greater repeat sale activity in the study area. On the other hand, one reason for repeat sale activity being so high in the control area was land buying around the Forney Reservoir.

Out of a total of 38 tracts selling more than once in the study area, there were 40 repeat sale combinations. The 69 control area tracts yielded 75 repeat sale combinations. Table 24 shows the changes in the actual land prices of these repeat sale combinations for the study and control areas on a time period basis. Both sales (the base and repeat sales) occurred within the same time period. The 1944-48 and 1949-61 periods represent the before and after periods, respectively. The 1944-61 period represents the over-all or whole study period.

Table 23

THE NUMBER OF PARCELS OF LAND WHICH SOLD ONE OR MORE TIMES IN THE STUDY AND CONTROL AREAS OF ROCKWALL COUNTY, 1944-61

Number of Times Sold	Parcels		Sales	
	Number of Parcels	Percent of Parcels	Number of Sales	Percent of Sales
	Study Area			
1	197	83.8%	197	71.6%
2	36	15.2	72	26.2
3	2	1.0	6	2.2
Totals	235	100.0%	275	100.0%
	Control Area			
1	388	84.9%	388	72.4%
2	61	13.4	122	22.8
3	6	1.3	18	3.4
4	2	0.4	8	1.4
Totals	457	100.0%	536	100.0%

When comparisons are made between areas within the *same* time period, the following results are obtained: Table 24 shows that the study area had 30 percent of all repeat sale combinations in the before period, but it had 35 percent in the after period. The average number of years between sales was greater for the control area than for the study area within each period. The opposite was true for the percentage increase of repeat prices over base prices per average year between sales. This was also true in the case of the sum of percentage changes per sale combination. Then, for the percentage increase of repeat prices over base prices (ignoring time lapse), the study area figures are higher than the figure of the control area within the before period only. The reverse is the case for the after period.

For the 1944-61 period, the intra-period comparison shows that the study area had 35 percent of all repeat sale combinations. This is a sizeable portion for such a small relative proportion of the total area. The average number of years between sales was slightly greater for the study area than that of the control area. The percent increase of repeat prices over base prices was 63 percent for the study area versus 54 percent for the control area. Therefore, on a per-average-year basis, both areas were 13 percent. But, it is very important to notice that the sum of percent changes per sale combination was 162 percent for the study area versus 93 percent for the control area. When the comparisons are made between the before and after periods, the number of study area repeat sale combinations more than tripled and those of the control area more than doubled. On a before and after basis, both areas had an increase in the number of years between base and repeat sale. The time lapse increased 188 percent (.8 to 2.3) and 78 percent (1.8 to 3.2) for the study and control

Table 24
CHANGES IN ACTUAL LAND PRICES OF STUDY AND CONTROL AREA PROPERTY AS REFLECTED BY TRACTS SELLING TWO OR MORE TIMES WITHIN THE SAME TIME PERIOD

Periods	Number of Repeat Sale Combinations	Average Number of Years Between Sales	Percent Increase of Repeat Prices		Sum of Percent Changes Per Sale Combination[3]
			Over Base Prices[1]	Over Base Prices Per Average Year[2]	
	(Number)	(Years)	(Percent)	(Percent)	(Percent)
			Study Area		
1944-48	6	.8	37%	45%	45%
1949-61	19	2.3	46	20	75
1944-61[4]	40	4.4	63	13	162
			Control Area		
1944-48	14	1.8	16%	9%	25%
1949-61	36	3.2	51	16	57
1944-61[4]	75	4.1	54	13	93

[1]These figures represent the percentage increases of the repeat sale prices over the base sale prices of the sale combinations.
[2]The percentage increase of repeat sale prices over the base prices divided by the average number of years which lapsed between the sales.
[3]The sum of the individual percentage changes in prices of repeat sales over their base prices divided by the number of sale combinations.
[4]This time period includes all repeat sale combinations which occurred in the study and control areas.

areas, respectively. Along with a much higher before period base value, this caused the study area's percentage increase of repeat prices over base prices during the after period to be only nine percentage points over that of the before period, versus a 35 percentage point increase for the control area. This is clearly reflected on a per-average-year basis where the percent per year decline was from 45 percent in the before period to 20 percent in the after period for the study area; whereas, it increased from 9 to 16 percent for the control area. The sum of all the individual percentage changes (repeat prices over or under the base prices) was divided by the number of repeat sale combinations; the results show that between the before and after periods, the study area experienced a 30 percentage point increase versus a 32 percentage point increase for the control area.

When viewed from the before and after approach, the above analysis indicates that the control area repeat sale prices increased greater percentage-wise than those of the study area. But, when viewed from the one overall time period, the increases in the study area repeat sales and prices are greater than that of the control area. Perhaps the latter comparison should carry the most weight in the mind of the reader, because it represents 15 more sale combinations for the study area and 25 more for the control area than does the before and after periods combined. Also, the results correspond with the changes in land values presented in the earlier land value analyses. However, the before and after comparisons reveal that the presence of repeat sales within the other land value analyses may have depressed somewhat the study area percentage changes in prices in relation to those of the control area. If so, the amount is considered small, due to the small number of sales involved. Finally, both the total number of repeat sales and the increase in the number of sales between before and after periods in the study area indicate that more land speculation occurred near the new highway than any other place in the county.

Figure 6 shows the location of all tracts which sold in the study area. Different symbols are used to show those which sold one, two, and three times. It shows that 14 tracts which sold two or more times were abutting the new highway. This substantiates the statement in the last sentence in the previous paragraph.

Variations in Land Values Due to Soil Type

In this section an attempt is made to examine the variations in land values which may be attributable to differences in soil type. Since there are six distinct soil types in both the study and control areas, could there be variations in land values attributable to differences in soil type which would inject some bias into the data used to determine highway influence on land values? Figure 3 shows that both the study and control areas have all six soil types. Most of both areas are covered by soil types 1 (black land) and 2 (shallow black land). The other types occupy only small areas of the county.

All soil types in the control area are well represented with land sales in relation to the land area they occupy. The study area has land sales of all soil types, except soil type 3 (heavy rawhide land). It has a fairly small number of sales of soil type 4 (light rawhide land) and type 5 (cultivated river bottom land). The combined soil types 1 and 2 have 75 percent of the control area land sales and 80 percent of the study area land sales.

In analyzing the land sales to detect possible variations in land values caused by differences in soil type, a simple linear correlation analysis was run to determine the relationship between time (years) and adjusted price per acre for each soil type represented in the study and control areas. It was hypothesized that each soil type would show essentially the same relationship between time and adjusted price per acre. If significant differences did occur in the regression coefficients of each soil type, the assumption was that there were differences in the regression of land values on time between soil types. Thus, variations in land values by soil type would have to be considered in the other land value analyses of this report.

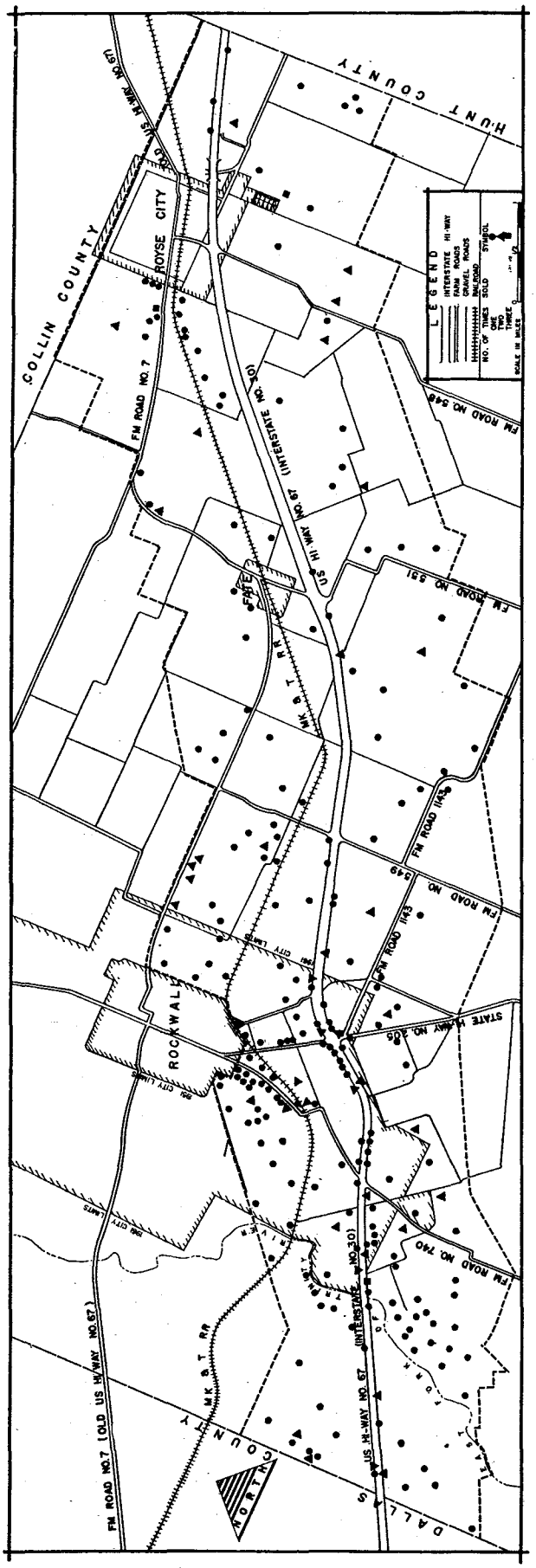


Figure 6. A map of the study area showing the location of all tracts of land selling one, two, and three times.

Table 25
SELECTED STATISTICS FOR THE REGRESSION OF ADJUSTED LAND VALUES ON TIME BY SOIL TYPES IN THE CONTROL AREA

Soil Type	Coefficient of Correlation[1]	Coefficient of Determination[2]	Regression Coefficient[3]
(1) Black Land	.42	.18	10.32
(2) Shallow Black Land	.39	.15	9.47
(3) Heavy Rawhide Land	.21	.04	9.06
(4) Light Rawhide Land	.23	.05	1.53
(5) Cultivated River Bottom Land	.53	.28	10.85
(6) Overflow River Bottom Land	.39	.15	6.15

[1]The coefficient of correlation (r) measures the degree of relationship between two variables.
[2]The coefficient of determination (r^2) shows the variation in the dependent variable which is explained by the independent variable, or the proportion of a total sum of squares that is attributable to another source of variation, the independent variable.
[3]The regression coefficient (b) shows the change in the dependent variable for a unit change in the independent variable.

Since the study area land values were affected considerably by the presence of the new highway, the control area land sales were used in this analysis.

In order to determine whether or not any of the regression coefficients (b values) for each soil type (see the footnotes under Table 25) might be considered to be estimates of a common beta (slope) they were paired in every possible combination and tested for homogeneity by using the t test. Values of t, distributed as Students t with $n_1 + n_2 - 4$ degrees of freedom, were tested against theoretical values of t at the 95 percent level. Of the fifteen comparisons made, only one comparison showed a significant difference between the regression coefficients at the stated level of probability. The one comparison which showed a significant difference was that between soil types 1 and 4. It may be stated that fourteen of these pairs of regression coefficients are homogeneous. Homogeneity of regression says that the two lines have the same slope but not that they necessarily have the same line.

Generally, time had the same effect on land values between the various soil types. As seen in Table 25, the correlation coefficients (r) between land values and time varied from .21 to .53 in the control area. Each of these coefficients was squared to give the coefficients of determination (r^2) which when multiplied by 100 show the percent of the variation in land value that is explained by time (the total sum of squares attributable to time). Since all the coefficients of determination are fairly low, it may be said that although the regression of land values on time is homogeneous between soil types, time does not explain a major portion of the variation in the land values of the various soil types. However, for soil types 1 and 2 (the two soils covering most of the control and study areas), the regression coefficients were highly homogeneous and the coefficients of determination were .18 and .15, respectively. Thus, it may be safe to assume that value differences attributable to soil type over time for most of the sales in the areas studied are not significant and have not affected the results presented in the other land value analyses.

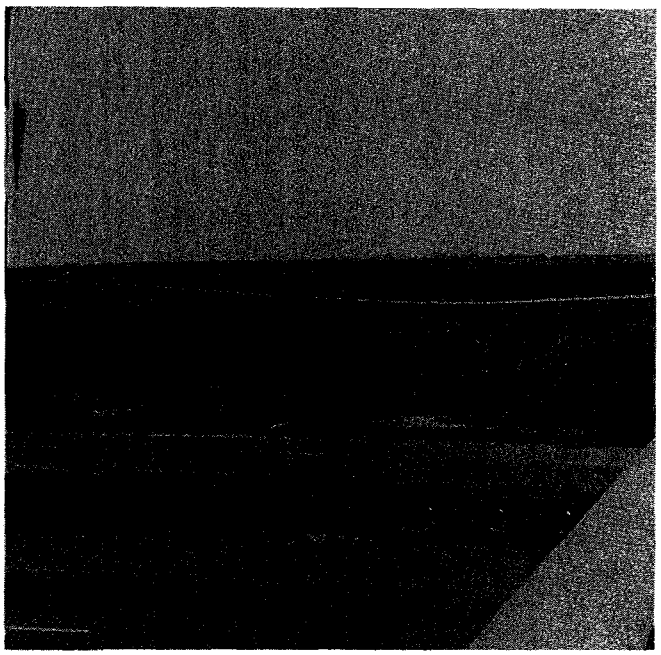
Changes In Land Use

This part of the report is devoted to an analysis of the land use changes which have occurred in the study area since 1951, the year the first section of the new highway was completed. Again, much of the analysis will be made on a sectional basis, because the two sections were completed five years apart. The last year of the construction periods, 1951 for Section 1 and 1956 for Section 2, has been selected for discussing land use in the before periods. In discussing land use in the after periods, 1961 is the year selected for both sections. This allowed interim periods of 10 and 5 years for Sections 1 and 2, respectively, in which land use changes could have occurred.

Land use change information came from local residents, realtors, and other individuals who had an intimate knowledge of the area as it was before 1951. The 1956-57 aerial photograph of the area (see Figure 7) was also helpful in isolating physical changes. Land use in 1961 was determined by visual inspection supplemented by interviews with local residents and businessmen in the area.

In addition to the aerial photographs, four land use maps of the study area were prepared for the presentation of the land use data for the before and after periods in each section. Property lines were drawn on each map as they existed in the respective years. Land was not classified according to use within the city limits of the towns in the before period year of each section. As mentioned earlier, the city limits of Rockwall were enlarged considerably during the after period. Thus, the after period map shows the land use changes within the new limits but not the old.

Before presenting the sectional analysis, a summary of the changes in land use occurring in the study area is given below to show the whole picture.



The new highway passes through what has remained primarily agricultural land.

Land Use Changes in the Study Area

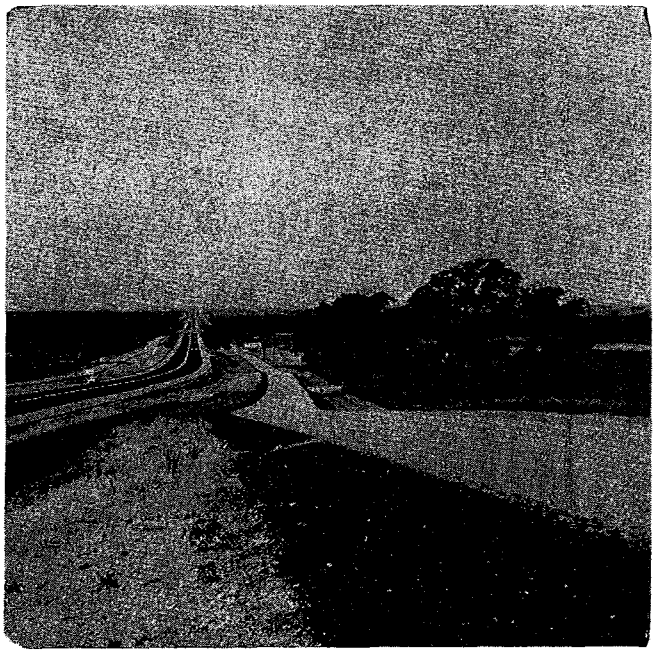
Significant changes in land use have occurred in the study area during the period of study but for the most part, the land remained primarily in agricultural use, especially to the east of the town of Rockwall.

A sizeable portion of land in the western part of the study area eventually will be inundated by the new Forney Reservoir. During 1960 and 1961, the City of Dallas purchased over 1,000 acres in this affected area.

Other agricultural tracts near the new highway, near the towns of Rockwall, Fate, and Royse City, and properties adjoining the new reservoir area are being speculatively held for future development into residential, commercial, and industrial use. Some 17 of the property transfers involving agricultural land in the study area gave indication of speculative land buying by individuals and business firms, either for later resale or for development.

The number of rural residences also increased in the study area, with some of them being located near the new highway. There were at least 19 tracts purchased from the holders of agricultural lands and improved with residences. Two others were purchased from holders of tracts held for future use and improved with residences. After the town of Rockwall enlarged its city limits to cover a larger area, some of these tracts were reclassified as urban residences.

Commercial tracts, improved with businesses, increased from zero to 12 in number during the after period. Six traffic serving businesses were located in the area, five abutting and one almost abutting the new highway. The general expectancy of the residents of the area is that the number of commercial establishments



A sizeable portion of land in the study area on both sides of the new highway will be inundated by the new Forney Reservoir.

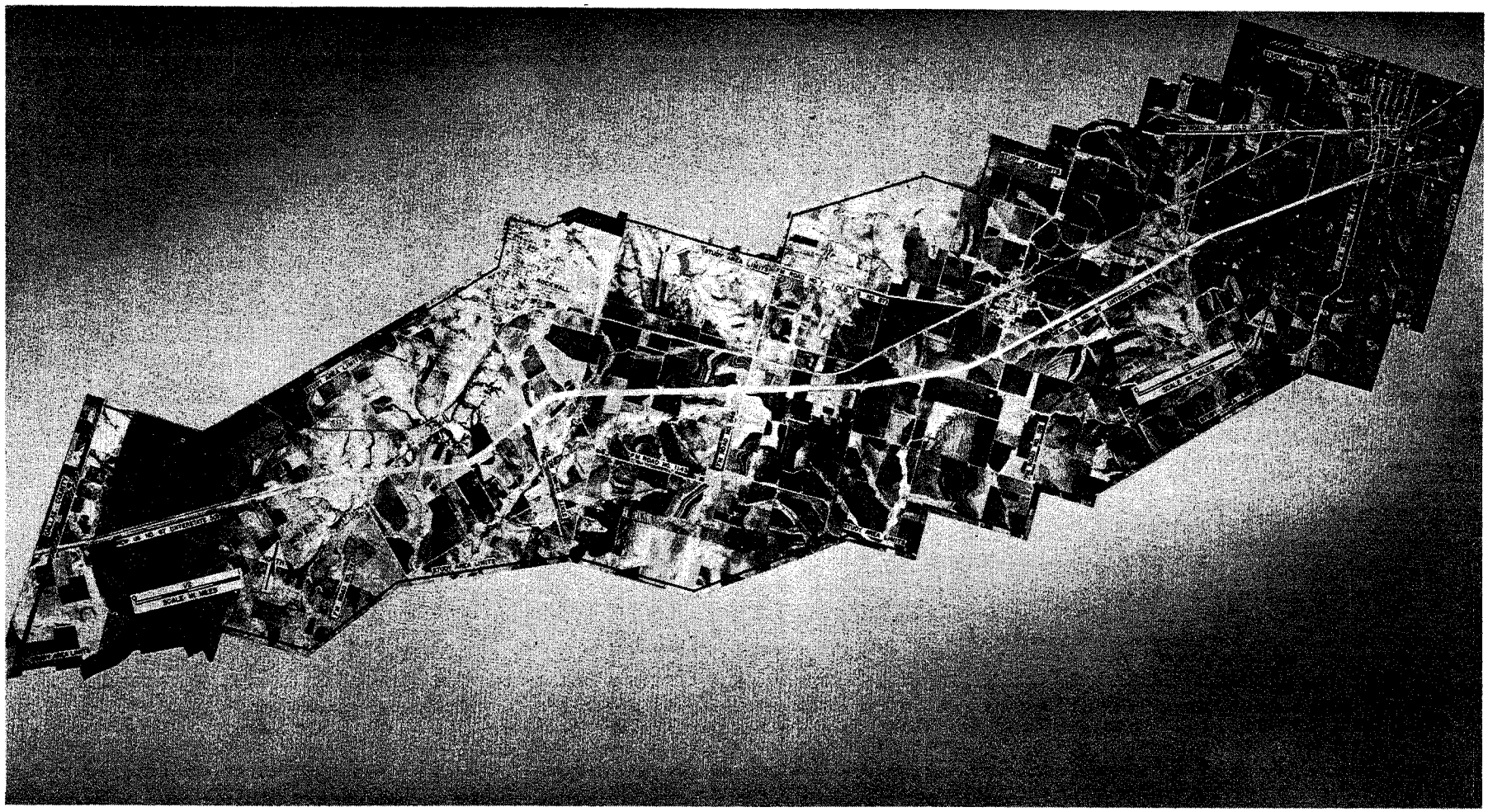
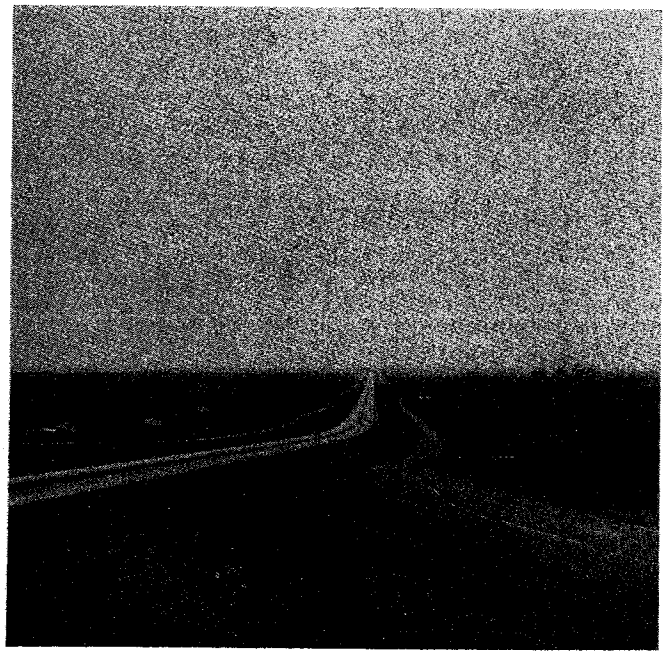


Figure 7. An aerial photograph of the study area showing the land use, towns, roads, etc., by late 1956.

Though presently in agricultural use, much of the land abutting the new highway (particularly near interchanges) is being held for future uses.

abutting the new highway will increase in number in the near future.

The land area used for industrial purposes was more than doubled during the after period. Two additional industrial firms were established in the area. In addition, the industrial foundation of Rockwall purchased a 19-acre tract, abutting the new highway within the new city limits of Rockwall, and subdivided it into industrial tracts to be sold to industries that will locate there. In 1962, one such firm had purchased a lot and had made plans to build a building.



As many as 19 small tracts, some abutting the new highway, have been improved with rural residences.

Table 26
SPECIFIC TYPES OF BUSINESSES LOCATED WITHIN THE STUDY AREA BY THE END OF 1961

Abutting New Highway		Not Abutting New Highway	
Type of Business	No.	Type of Business	No.
Traffic Serving		Traffic Serving	
Service Stations	4	Service Stations	1
Cafe	1	Nontraffic Serving	
Nontraffic Serving		Manufacturing Concerns	3
Auto Repair Shop	1	Auto Repair Shop	1
Butane Storage Yard	1	Automotive Dealer	1
Antique Shop	1		
Both Traffic and Nontraffic Serving			
Drive-In Grocery & Station	1		

Table 26 is presented to show the specific types and number of businesses which are located in the study area. The businesses are first categorized as being either abutting or nonabutting. They are then broken down further into traffic serving and nontraffic serving businesses.

Changes in Land Use in Section 1

The before land use map of Section 1 (see Figure 8) shows that most of the land was classified as either agricultural or overflow land in 1951.[1] There were, however, several small tracts near the town of Rockwall that were classified as land held for future use. Also, a few rural residential tracts were located in this section, and one tract was a public cemetery. As of 1951, there were no commercial or industrial tracts in the section.

The after land use map of Section 1 (see Figure 9) shows that land use in the section has undergone con-

[1]See Appendix A for a more detailed description of the land use classifications.

Land near the new highway and the future Forney Reservoir is being subdivided into residential tracts.

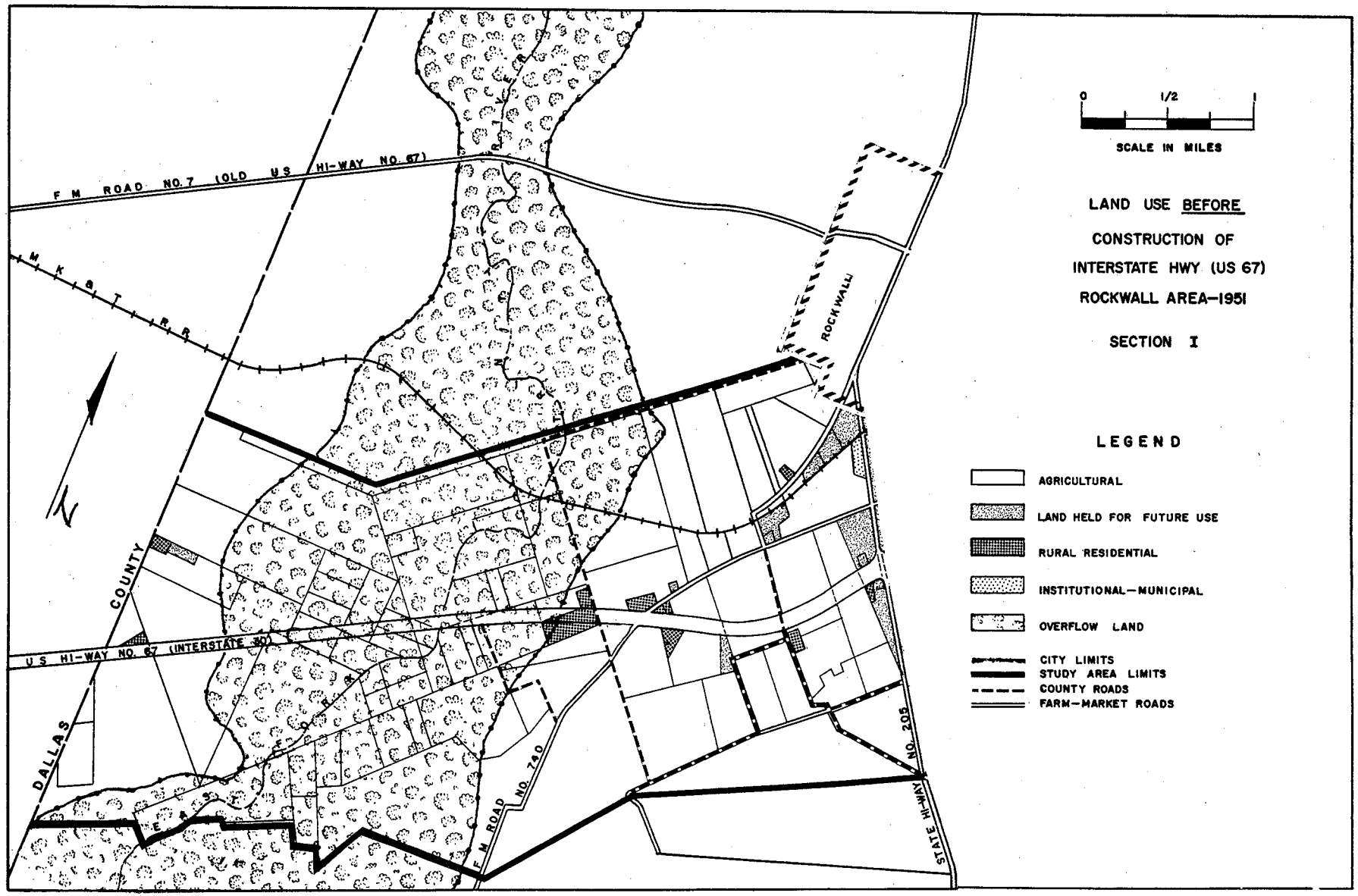
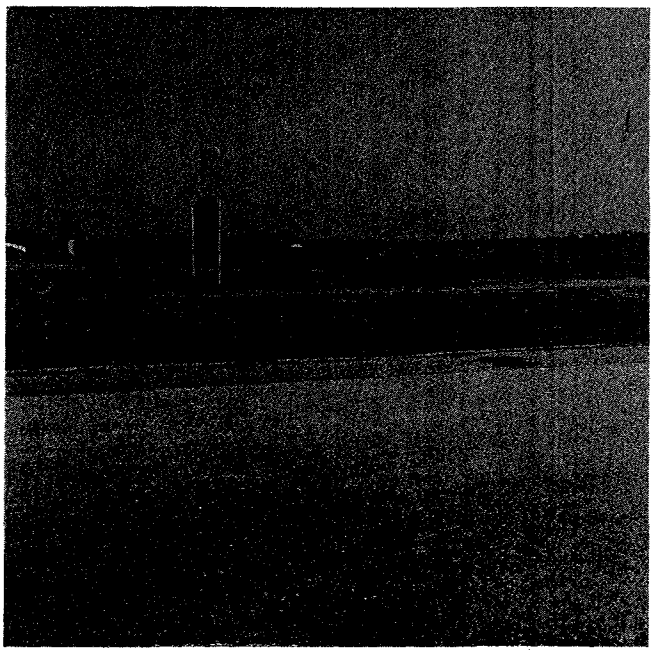


Figure 8. A map of Section 1 of the study area showing the before land use. (1951).

One of 12 tracts abutting or near the new highway that has been improved with a commercial business.



A 19-acre tract abutting the new highway has been subdivided into industrial lots of which some have already been sold.

siderable change during the last 10 years. Since it is now definite that the City of Dallas will build Forney Reservoir on the East Fork of the Trinity River in Rockwall County, the largest portion of the land in Section 1 will be inundated. The extent of this inundation is shown on the map. The City of Dallas has already made large purchases of land in this area.

Through expanding its city limits, the town of Rockwall now covers a considerable portion of the land area in Section 1 on both sides of the new interregional highway. Most of the land area not covered by the new lake, both in and out of the city limits, was classified as land held for future use. This land is lying idle and much of it has been sold at least once during the after period.

Land classified in agricultural uses is next in the land area. The small residential tracts which were outside the old city limits but within the new city limits were reclassified as urban residential. During the 10-year period, several new residences were built on small tracts within the new city limits. Seven commercial tracts improved with businesses were located in the section by 1961. Five are completely traffic serving and one is both traffic serving and nontraffic serving. The other is nontraffic serving. Five of the commercial tracts abut directly on the new highway and two are located at interchanges on crossroads within 100 feet of the new highway right of way. There is one rural subdivision located out of the city limits and near the Forney Reservoir. This tract, which has been subdivided for future home sites, is also near the new highway and abuts a hard surfaced Farm-to-Market Road which crosses the new highway.

Changes in Land Use in Section 2

The before land use map of Section 2 (see Figure 10) shows that practically all of this area was classified as agricultural land in 1956. Already, however, several tracts—some fairly large and located near the town of Rockwall and Royse City as well as the new highway—were classed as land being held for future use. It appears that there was more total land area in Section 2 in this use during 1956 than in Section 1. Part of it was due to the fact that the new highway was constructed through Section 2 five years later than in Section 1 and land speculations in Section 2 had begun even before construction of the new highway had begun. In 1956, there were 11 rural residential tracts scattered through Section 2. Two small publicly owned tracts near Royse City were in the section. Just outside the town of Rockwall, one large industrial tract was located in the section. It has extensive improvements and furnishes housing for part of the Texas Aluminum Company, Inc., which was established at this location in 1953 and is by far the largest industry in Rockwall County. The company officials state that construction of the new highway was a prime factor in locating the aluminum extrusion plant in Rockwall County. It is within sight of and has easy access to the new highway. No commercial tracts were developed in the section by 1956.

After the new highway was completed in 1956, some changes in land use in Section 2 did occur, as evidenced by Figure 11. Still, by far, most of the land remained agricultural in nature. Most of such land was being cultivated in 1961, but there was a sizeable portion (greater than in 1956) being used for pasturing of livestock. The area of land held for future use had enlarged considerably near the three towns and the new highway interchanges. This should be considered as a normal part of the reopening process.

Six additional rural residential tracts were established in the section. Five of the original 11 rural residential tracts were in the new city limits of Rockwall and were reclassified as urban residential.

Five commercial tracts were established in the section, four of which abut the new highway. The other abuts State Highway 205 within sight of the new high-

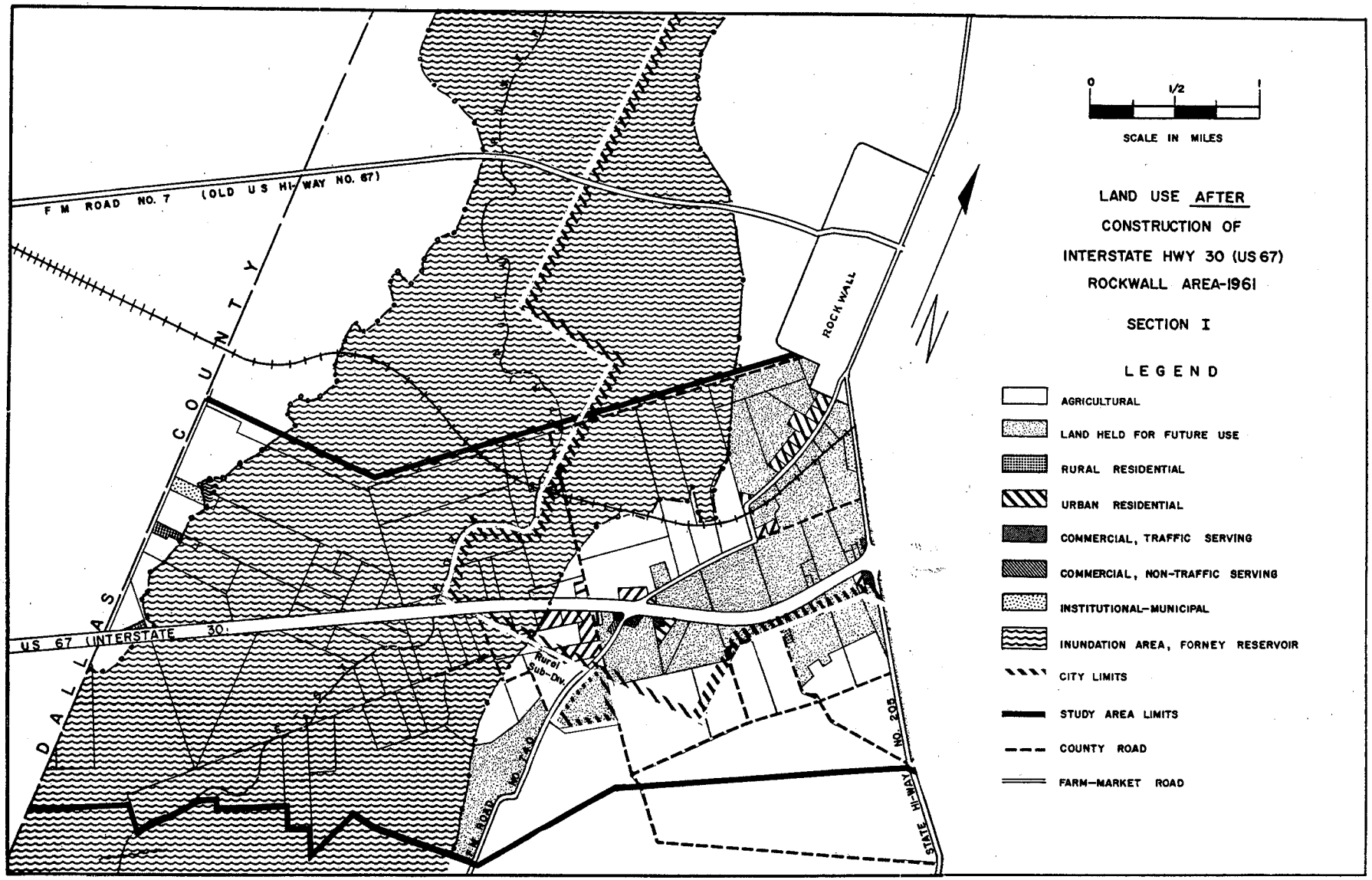


Figure 9. A map of Section 1 of the study area showing the after land use (1961).

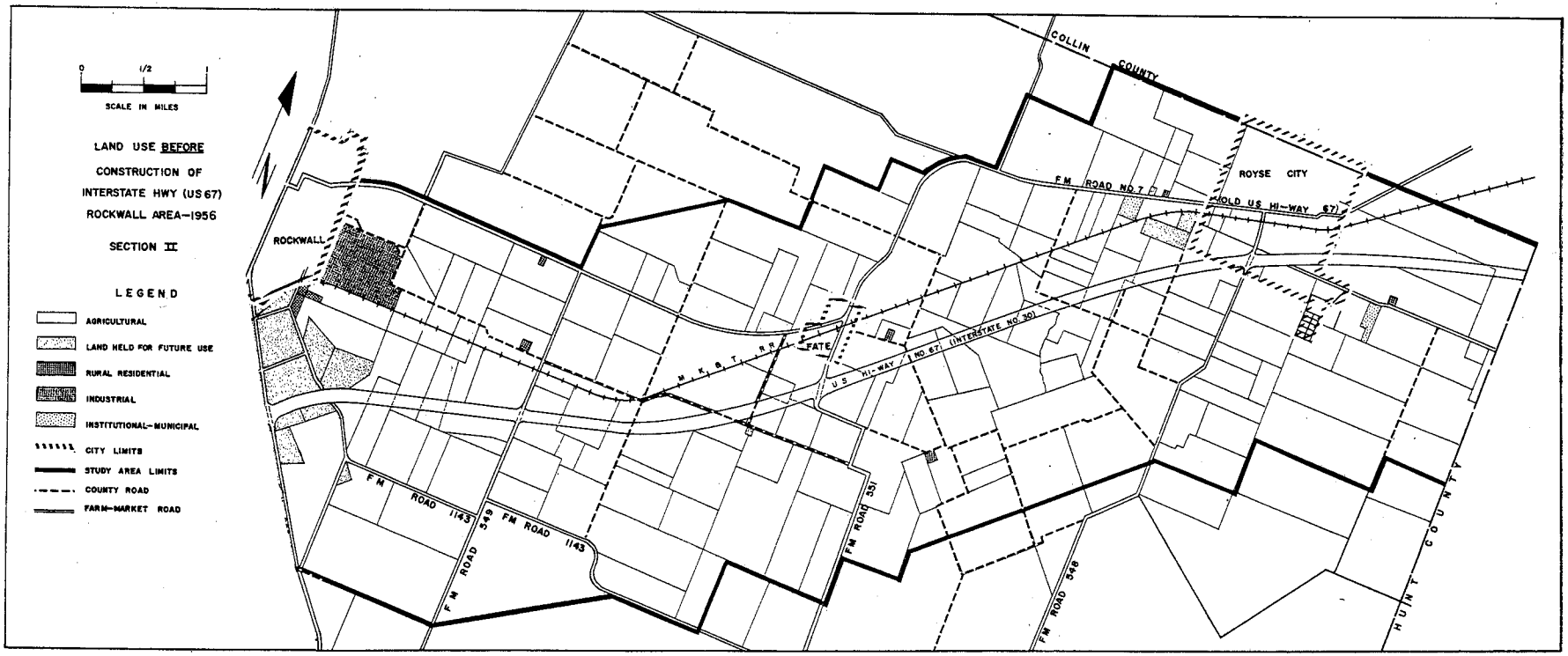


Figure 10. A map of Section 2 of the study area showing the before land use (1956).

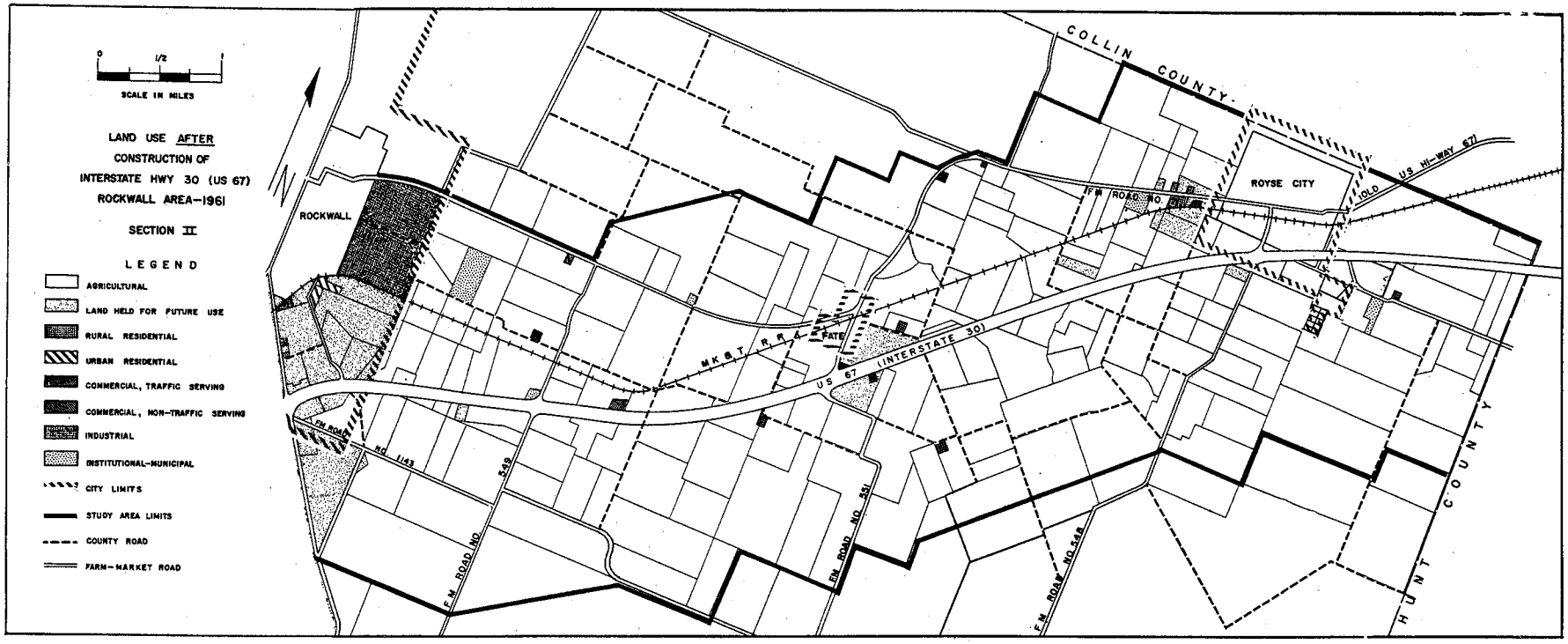


Figure 11. A map of Section 2 of the study area showing the after land use (1961).

way. All of these tracts are improved with businesses, one of which is a traffic serving business and four are nontraffic serving businesses. In addition, three other commercial tracts were established on the new highway just in the city limits of Royse City, on land previously in agricultural use. Two of these tracts were improved with traffic serving businesses on or near an interchange.

Since 1956, the land area in industrial use more than doubled. Three new industrial tracts were established near the new highway during the after period. One of these was an addition to the aluminum plant. Another tract now houses the Southwest Agricultural Supply Company. The third is the home of Rockwall Manufacturing Company, a maker of aluminum windows.

Relationship Between Changes In Land Use and Land Values

The two prior sections have reported the changes in land values and land use, respectively. The purpose of this section will be to identify the relationships that exist between changes in land use and land values.

Many factors can influence the value and use of property. Location of a property in relation to urban areas, major traffic arteries, etc., is considered to be one of the primary factors which influences the value of the property and helps determine its highest and best use. When a property is located close to urban areas and abuts a major traffic artery, such as the new highway in Rockwall County, it tends to have a higher value for commercial use than does other property not so located. If such a property is so strategically located and is still in agricultural or other low type use, the assumption is that it will eventually change to a higher use and its value will increase. It is further assumed that this increase in value can be measured through the market price of the tract when it sells. Underdeveloped tracts, or those in lower uses, tend to sell (change hands) before they are actually changed to a higher use. The buyers are usually either those who have the capital to develop them into the higher use or speculators who are aware of the higher use potential of the tracts. Thus, it seems logical to evaluate the changes in land use in this study area as these changes are reflected by changes in price.

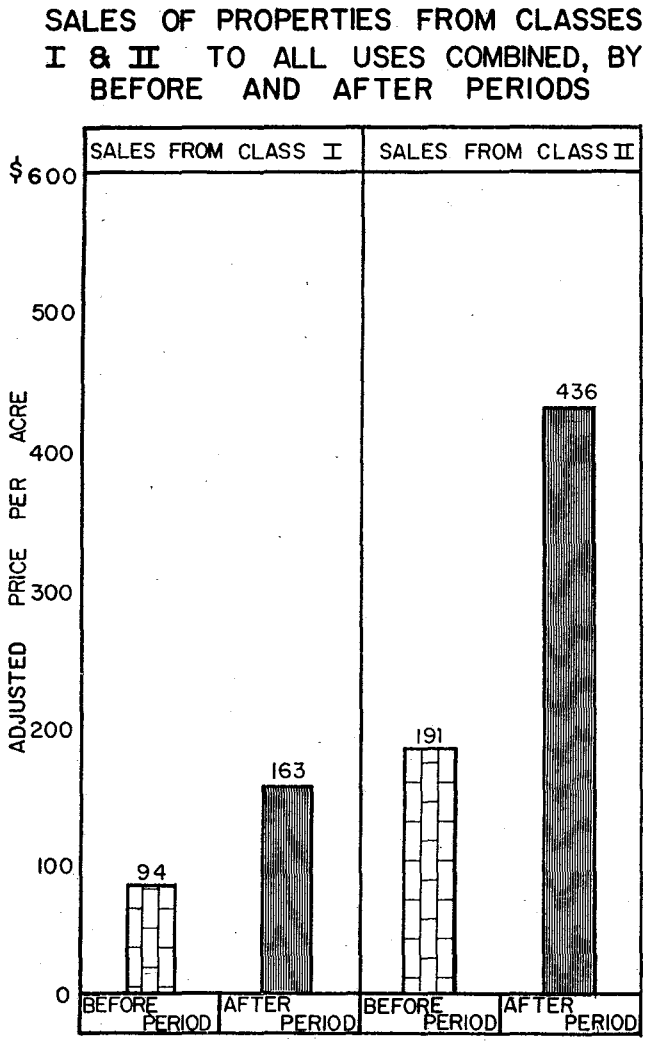


Figure 12.

The analysis involves the 275 property transactions used to study land value changes in the study area. In each case, a determination was made as to the land use of the tract before and after it sold. The time period was 1944 through 1961. The land use changes, as reflected by these properties that sold at least once during the period, will complement the section on changes in land use that dealt with a shorter time period.

The analysis shows three different relationships between land use and land prices. First, the sales were grouped according to their use before they sold—by time period—to show the differences in prices between time periods for the various original uses. Secondly, the sales were grouped according to their use after they sold by time period to show the differences in prices beween time periods for the various after uses. Thirdly, the sales were grouped according to specific uses to show the differences in prices when the properties changed from a specific use to another specific use.

After presenting the analysis for the whole study area, by combining Sections 1 and 2, a sectional analysis will follow.

Changes in Land Uses and Values in the Study Area

Changes in land use reflected by the 275 property transactions are presented in Table 27. It is shown that 33.5 percent of the properties changed land use after being sold. Of these, 68.5 percent changed in use during the last nine years of the study. Almost 50 percent of them changed in use within the last six years. This means that those which changed in use did so in a rela-

Table 27
CHANGES IN LAND USE OF PROPERTIES SELLING IN THE STUDY AREA, 1944-61

Land Use Changes[1]	Properties Selling in Study Area					
	Section 1		Section 2		Total Area	
	Number	Percent	Number	Percent	Number	Percent
1 to 1	71	52.6	88	62.9	159	57.8
1 to 2	18	13.3	25	17.9	43	15.6
1 to 3	18	13.3	2	1.4	20	7.3
1 to 6	0		1	0.7	1	.4
1 to 7	0		4	2.9	4	1.5
1 to 8	15	11.1	1	0.7	16	5.8
2 to 2	9	6.7	15	10.7	24	8.7
2 to 3	2	1.5	3	2.1	5	1.8
2 to 5	2	1.5	0		2	.7
2 to 7	0		1	0.7	1	.4
Total	135	100.0	140	100.0	275	100.0

[1]The numbers represent the following land uses: (1) agricultural, (2) land held for future use, (3) rural residential, (5) commercial traffic serving, (6) commercial nontraffic serving, (7) industrial (manufacturing), and (8) institutional-municipal.

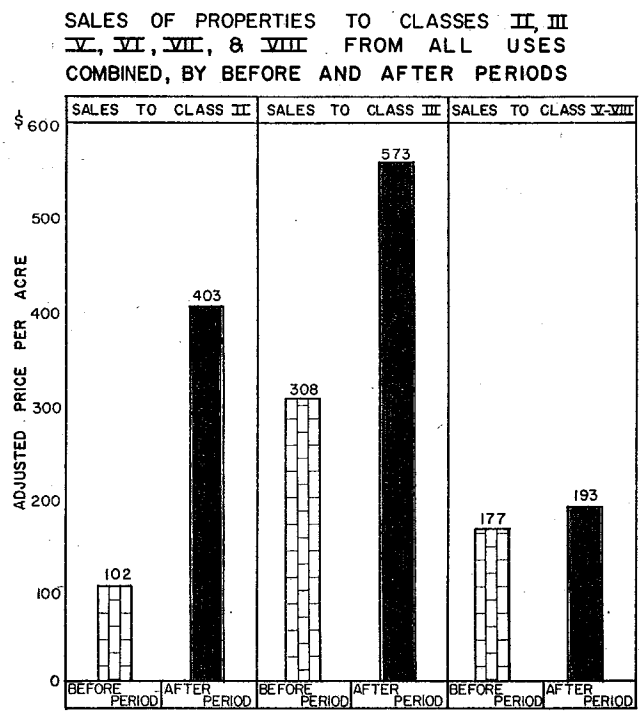


Figure 13.

tively short period of time. The table also shows that 15.6 percent of the properties changing use changed from agricultural to land held for future use.

For the study area, sales of properties grouped according to their original specific use classes are shown graphically in Figure 12, by before (1944-52) and after (1953-61) time periods. In this case, the total time period (18 years) was simply divided in half, the first nine years called the before period and the last nine the after period. Because so few land use changes occurred in the regular before period (1944-48), used in the other sections, the before period was lengthened. The graph shows that the properties in before sale land use Classes 1 and 2 (agricultural and land held for future use) sold for considerably higher prices in the after period than in the before period, as expected. The presence of the new highway apparently had an influence on land prices for both land classes during the after period. The prices of Class 2 land increased more sharply during the after period, although it also sold at higher prices during both periods than did Class 1 land.

Figure 13 shows changes in the prices of different classes of land when grouped according to use after sale, by time period. Here again, land succeeding to Classes 2 and 3 (the latter is rural residential) and

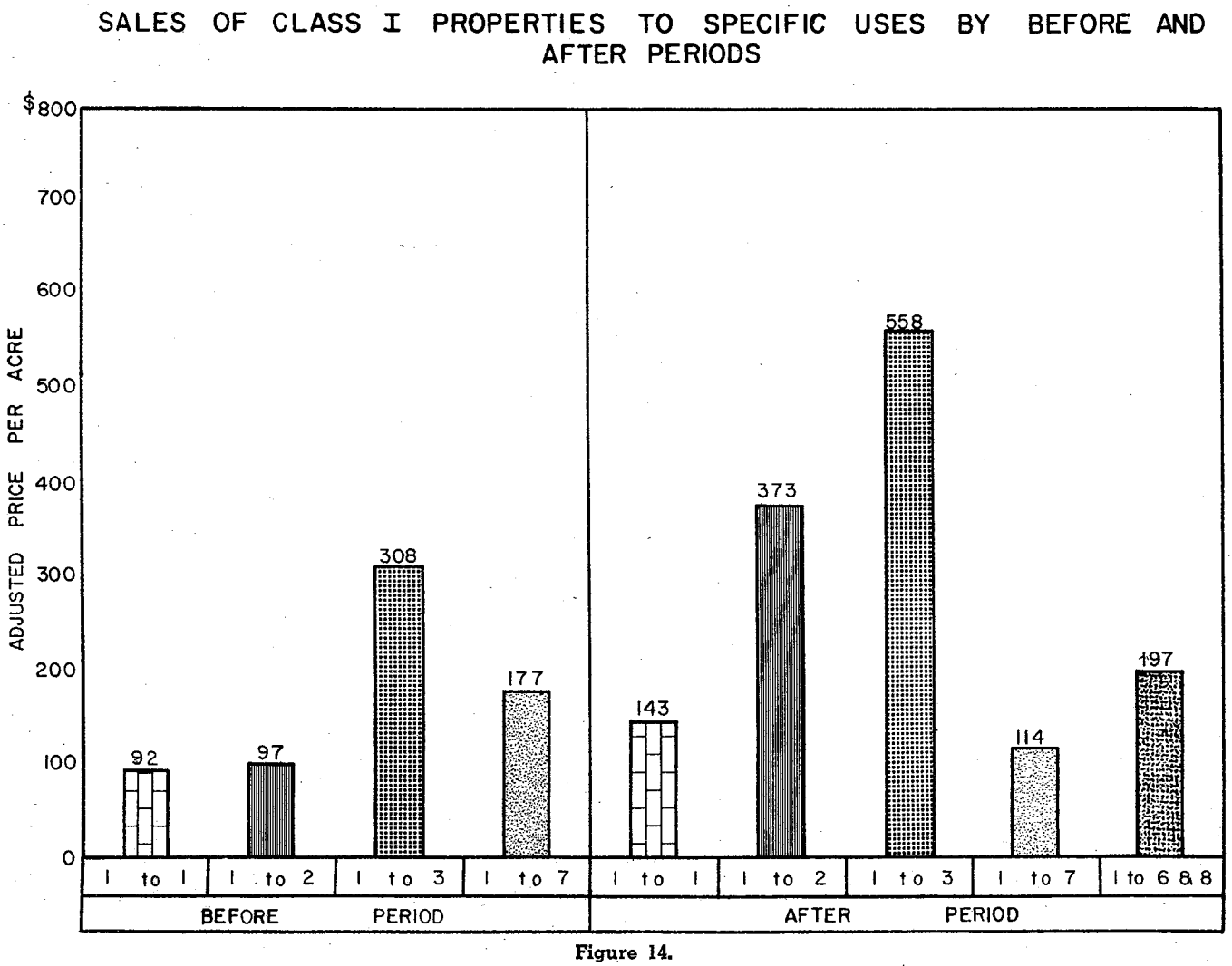


Figure 14.

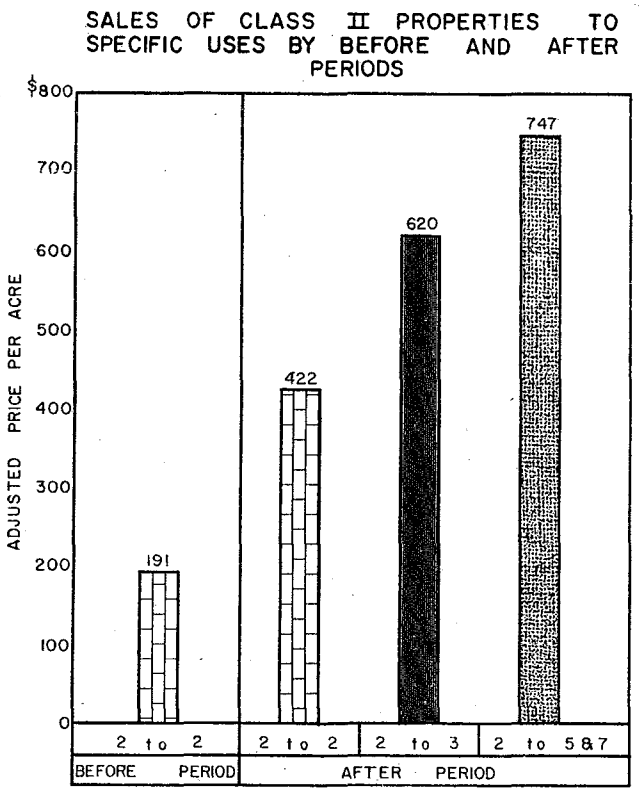


Figure 15.

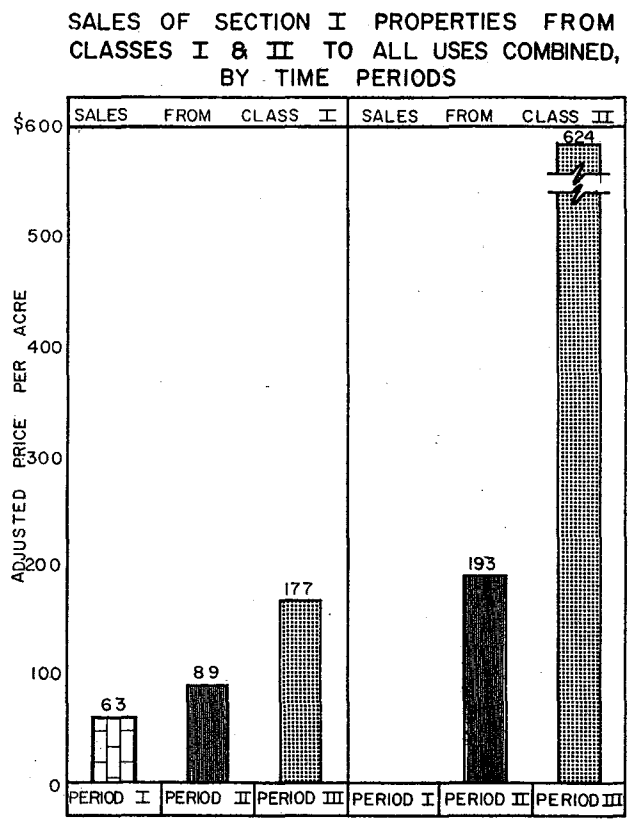


Figure 16.

Classes 5 through 8 combined (commercial traffic serving and nontraffic serving, industrial, and institutional-municipal, respectively) during the after period sold for higher prices than similar land during the before period. Especially was this true for land changing to Classes 2 and 3 from other uses which increased sharply. The price of Class 3 land was higher in both periods than Class 2 land. In the case of Classes 5 through 8, the increase was not as great in the after period. One explanation is that 16 of the 22 after period sales were purchases of low valued over-flow bottom land by the City of Dallas for the new Forney Reservoir. Three of the remaining 6 tracts were sold to the Texas Aluminum Company at very low prices. One of these three involved a 157 acre tract which was sold to the company by the City of Rockwall for $60 per acre. Because of these unusual transactions the prices of land in the higher uses were actually lower than those in Classes 2 and 3 during the before and after periods.

Figure 14 shows the changes in the sale prices of Class I properties grouped according to the specific use to which the land was put after the property was sold. The prices of land in Classes 1 through 3 were higher in the after period than the before period. There was also a general progression of price in relation to the intensity of use through use Class 3. In the case of the land changing from Class 1 to Class 7, however, the number of special transactions involved kept these prices very low. The before period sale prices of industrial land more nearly reflected the prevailing market price at that time than did those in the after period. The numerous purchases by the City of Dallas for the new reservoir affected the average price level of the land in Classes 6 and 8 which sold in the after period.

Figure 15 shows the changes in the sale prices of Class 2 properties grouped according to their after sale land use, by time periods. In terms of volume of transactions, the sales of Class 2 properties during the after period exceeded those in the before period by more than four to one. It is also interesting to note that none of the speculatively held Class 2 lands actually changed uses during the before period. However, sales within Class 2 were at higher prices during the after period than those in the before period. The fact that all Class 2 properties sold for a higher price in the after period shows that those who acquired these properties during the before period were able to sell them for considerably higher prices during the after period. When comparing Figures 14 and 15, it can be readily seen that the Class 2 properties were sold at consistently higher prices than Class 1 properties.

Changes in Land Uses and Values in Section 1

In analyzing the changes in land uses and values in each section, comparisons were made between the before, during, and after construction periods. For Section 1, the years involved for each of the three periods are the same as mentioned earlier, and are as follows: Before, 1944-48; Construction, 1949-51; and After, 1952-61.

Figure 16 shows the changes in the sale prices of properties classified according to their original use prior to sale. Both Classes 1 and 2 properties sold for higher prices during each succeeding period, with the biggest increase coming in the after period. This was especially true of Class 2 prices. Notice that there were no sales

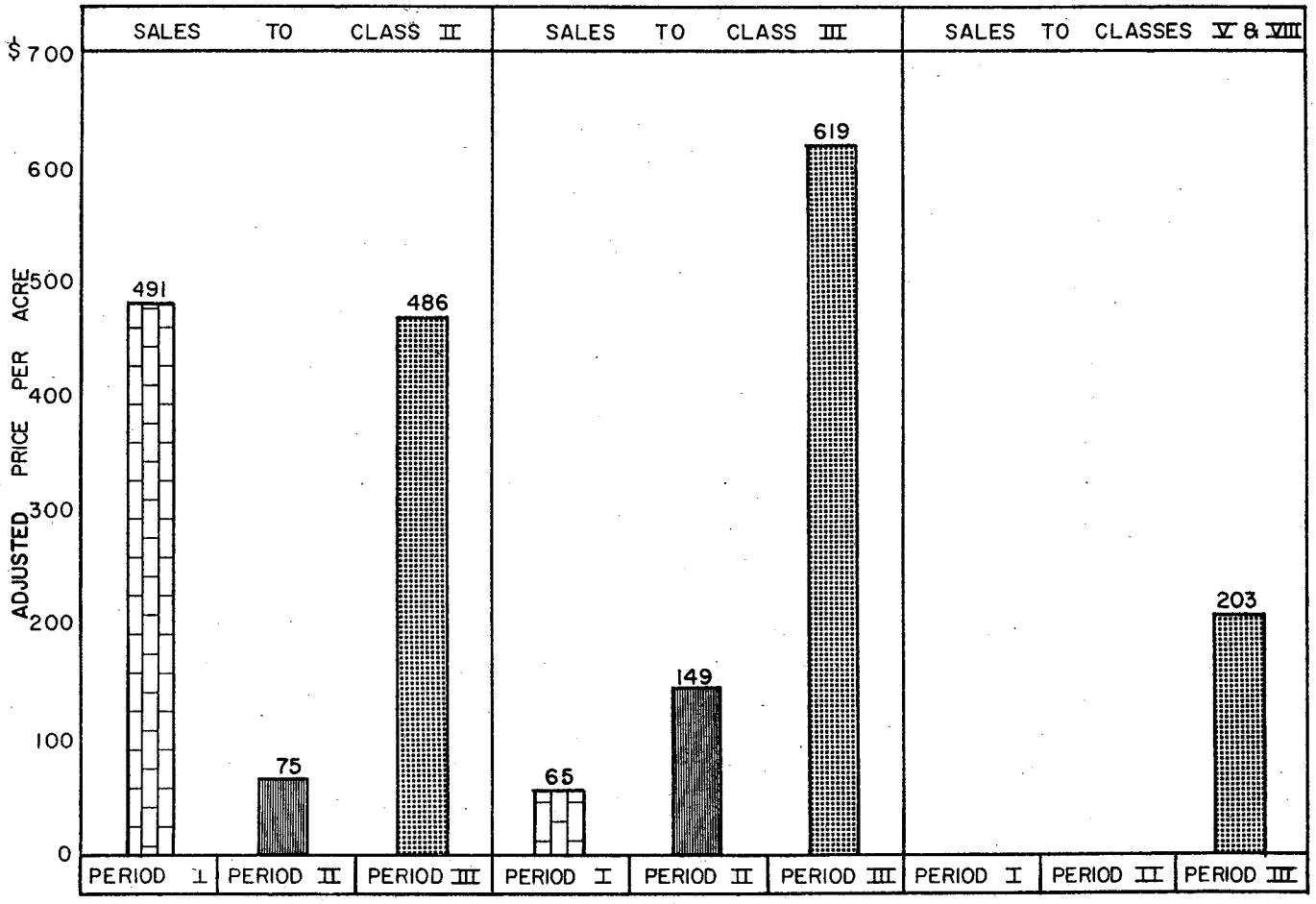


Figure 17.

of Class 2 properties during period 1. This is logical for an agricultural area such as Section 1, since there was little reason for land speculation in this rural area prior to the announcement of the new highway.

Figure 17 shows the changes in the sale prices of properties grouped according to their after sale uses. With only two exceptions, the prices of properties in their respective uses followed the expected pattern of increasing directly with intensity of use. First, the extremely high price of Class 2 property in the first period represents only one transaction of 5.3 acres abutting a major Farm to Market Road. Thus it appears not to represent the market price of Class 2 land for that period. Second, the prices of Classes 5 through 8 land are extremely low for reasons already discussed; that is, the City of Dallas's purchases of overflow land and the City of Rockwall's sale of industrial land at low prices to induce industrial development. Aside from these exceptions, the prices of Class 3 land were higher than those of Class 2 land. The prices increased within use for each succeeding period, with the third period increases being much greater than those of other periods. There were no sales of properties succeeding to the higher classes (5 through 8) during the first two periods.

Figure 18 gives a picture of changes in the sale prices of Class 1 properties grouped according to their specific land use after being sold. The same relationships as discussed in connection with Figure 17 apply here too, with one addition. It is concerned with low sales prices of land changing from Class 1 to Class 2 during the second period. Of the five sales of agricultural land going for speculative purposes, one involved a 524-acre tract, part of which was low valued overflow bottom land. This tract was sold to a construction company, which, in turn later resold parts of the tract. Otherwise the sale prices of Class 1 land increased with a change to higher land use classes. By periods, the prices of land in corresponding land uses increased modestly from period 1 to period 2 and at a greater rate from period 2 to period 3. The prices of land which did not change land use were also slightly higher in each succeeding period.

The changes in the prices of Class 2 land grouped by use after being sold in each period are shown in Figure 19. The differences in the sale prices of land in like uses by periods cannot be compared, except for the Class 2 to 2 grouping, since there were no sales of Class 2 properties during the first period and very few in the second period. The prices of the land not changing use

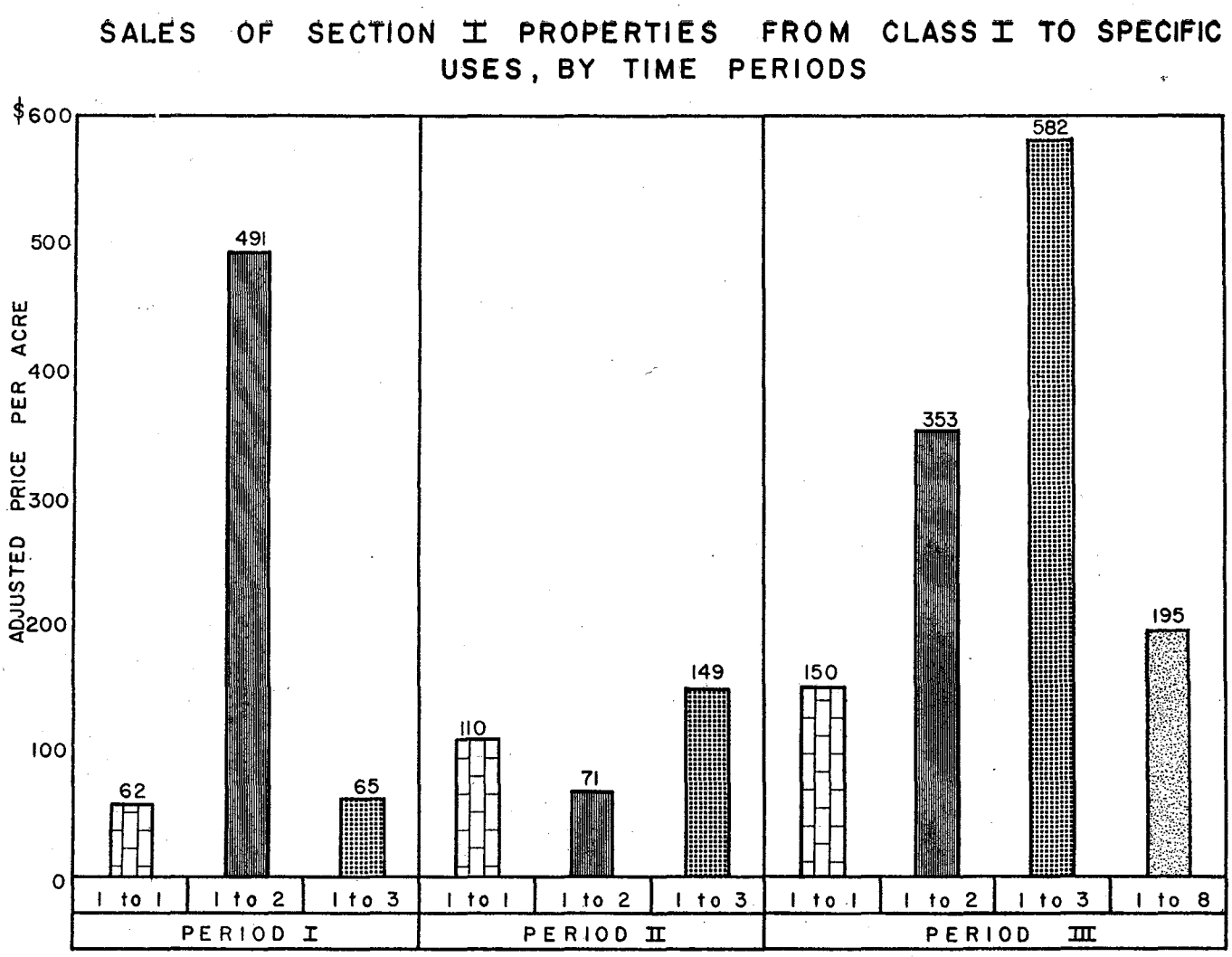


Figure 18.

were considerably higher in the third period than in the second. The prices of land changing from Class 2 to Class 3 were considered high due to the sale of tracts very close to the town of Rockwall. Only two sales are represented in this class. On the other hand, the prices of land changing from Class 2 to Class 5 were considered to be low due to the sale of a rather large commercial tract abutting the new highway at the Rockwall interchange. The total price of this site was substantial, but when placed on a price per acre basis, it was lower than average for the smaller sized commercial tracts.

Changes in Land Uses and Values in Section 2

Figure 20 shows the changes in the sale prices of Section 2 properties classified according to their original use prior to sale. Both Classes 1 and 2 properties sold for higher prices during each succeeding period, with Class 1 prices increasing only slightly and Class 2 prices doing likewise until the third period. Then the prices increased sharply. This is a good example of the speculative influence generated by the highway. The Class 2 properties were near or abutting the new highway to a greater extent than were the Class 1 properties. The graph also shows that the prices of Class 2 properties were higher than those of Class 1 for each corresponding period.

Figure 21 shows the changes in the sale prices of properties grouped in their after sale uses. The prices of properties changing to Class 2 showed an increase for each succeeding period with a sizeable increase occurring during the third period. This is again an indication of the speculative influence. Sales to Class 3 properties were few in number (only five). Three of these occurred in the second period and two in the third period. One of the three second period sales involved a property that was very close to Royse City and sold for a higher price than usual. Sales to Classes 6, 7, and 8 were only seven in number. The low price reflected in the third period is the result of the sale of industrial land at a low price by the City of Rockwall.

Figure 22 shows the changes in the sale prices of Class 1 properties grouped according to their specific land use after being sold. The prices of properties not changing use increased gradually each succeeding period. The prices of properties changing to Class 2 also increased gradually through the second period and sharply in the third period. There was only one property sale which changed to Class 6 and it was located near the highway on SH 205 leading to Rockwall. Properties changing to Class 7 sold only during the last two periods. The third period sale was the large industrial tract sold by the City of Rockwall to the Texas Alumi-

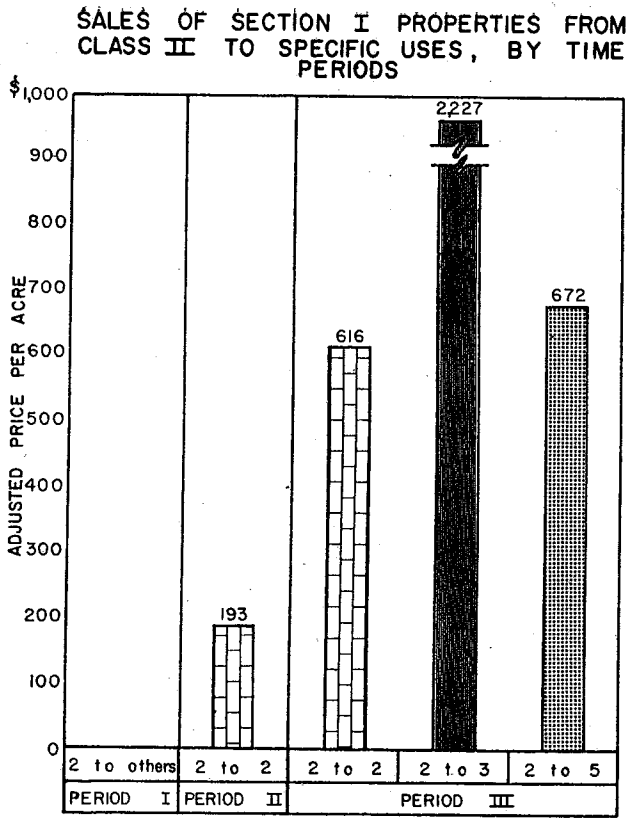


Figure 19.

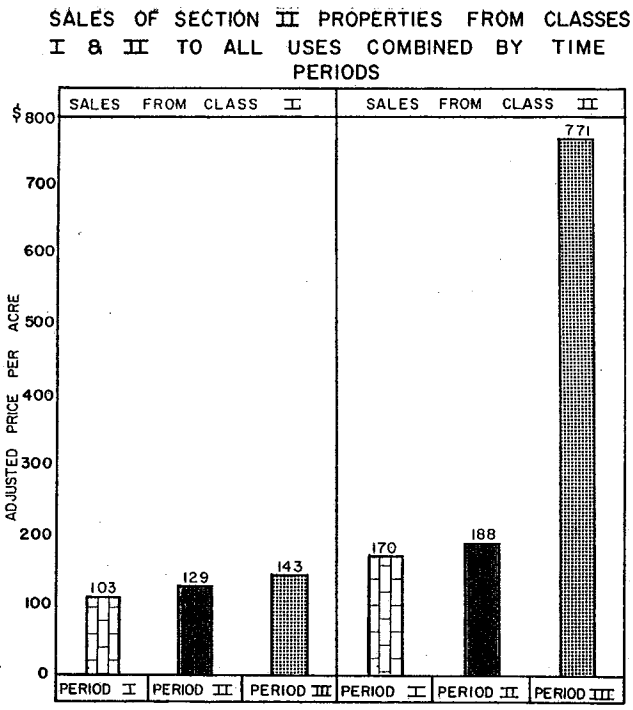


Figure 20.

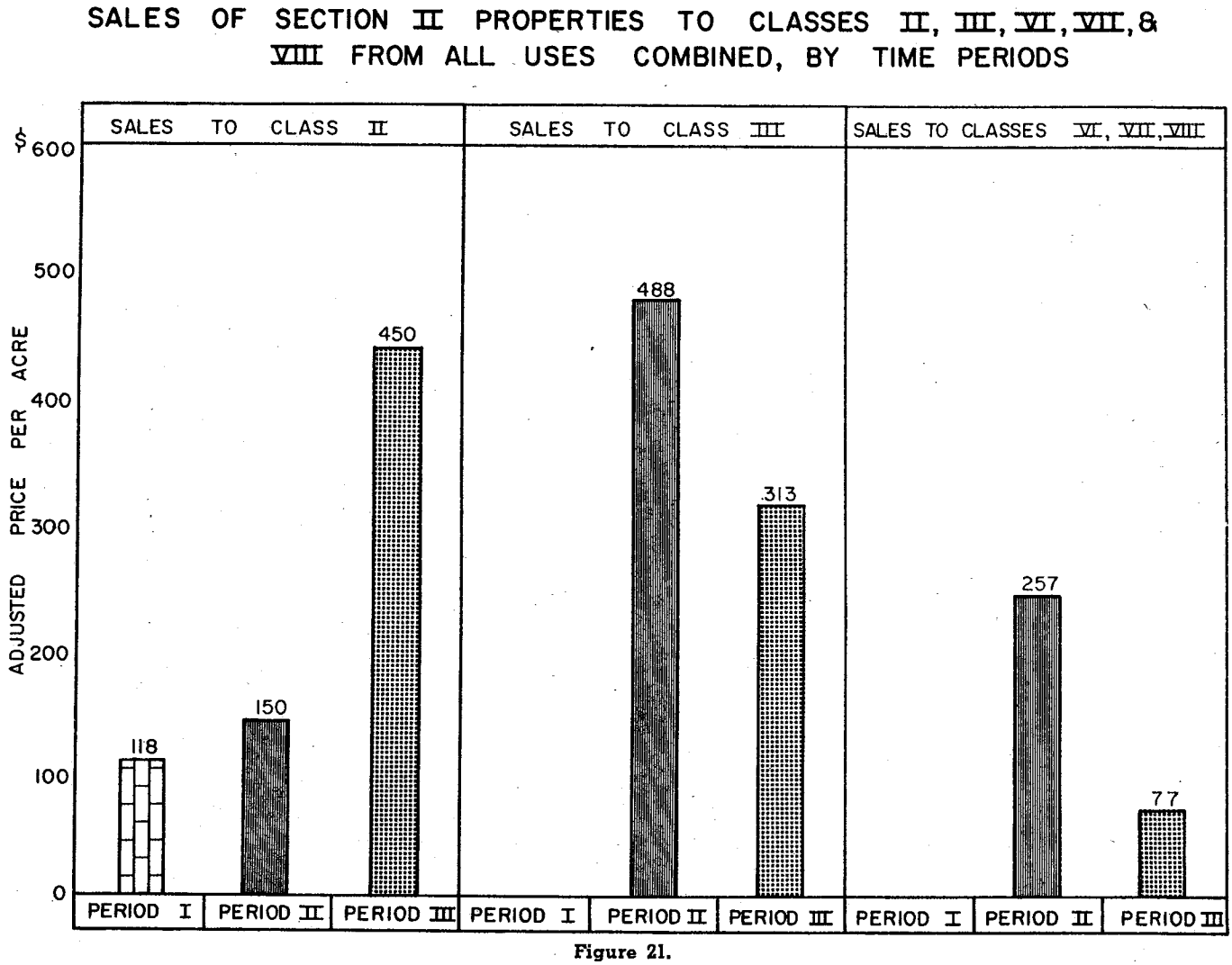


Figure 21.

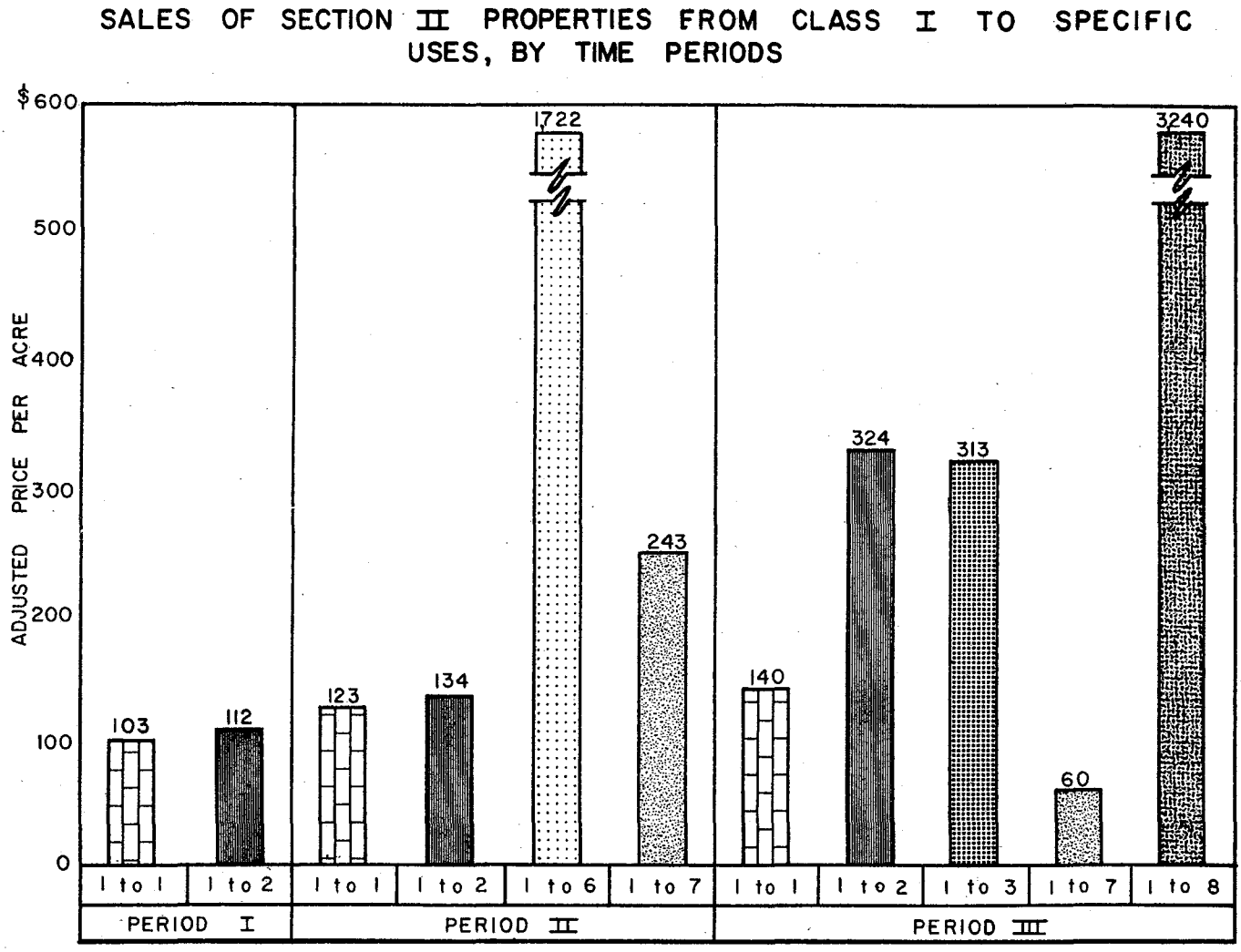


Figure 22.

num Company. Also, only one sale was involved in the price of Class 8 property. In this case, a very high payment was made by the Texas Municipal Water District for a very small tract.

The changes in prices of Class 2 land grouped by use after being sold are presented in Figure 23. The prices of land which did not change use increased only slightly in the second period over that of the first period. But in the third period, the prices increased over 400 percent above the second period prices. Properties changing to Class 3 sold only during the second period and were priced well above Class 2 properties. Properties changing to Class 7 sold only during the third period and were priced much higher than either Classes 2 or 3 properties. As a general rule, property prices increased readily through each succeeding period.

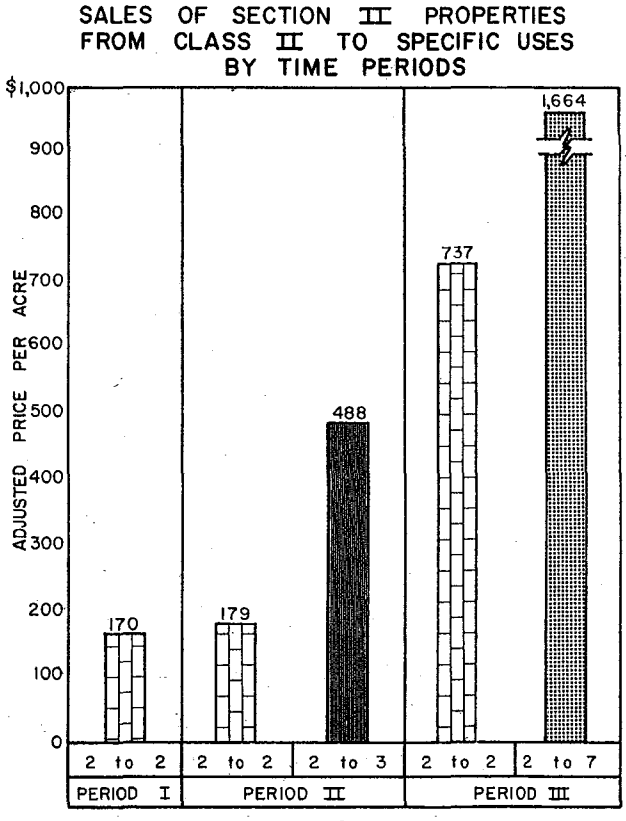


Figure 23.

Changes In Business Activity

This section of the report will be devoted to analyzing the effects the new interregional highway has had on retail business activity in the Rockwall study area. The area presents an interesting situation for testing in that the business districts of the three towns of Rockwall, Fate, and Royse City, are completely bypassed by the new highway. Thus, a large amount of traffic flow has been diverted from these towns by the construction of the new facility.

Both short and long-term effects may have resulted from the construction of such a facility in relation to the above towns. The short-run effects are considered as those which occurred during or immediately after construction of the new highway. The beneficial short-term effects result from the expenditures of funds for construction, labor, materials, and other local purchases created as a result of the construction. Short-term detriments usually result from disrupting normal business operations by the construction process itself; however, since no portion of the old U. S. Highway 67 was affected by the construction of the new facility, no disbenefits should have resulted during the construction period. However, immediately after construction when the traffic was diverted from the old route, disbenefits did result. They were the most severe during this period before any adjustments, such as relocating a business on the new highway, or changing the operation of the business in some way to offset the loss of another portion of the business could be made. After reasonable adjustments have been made, the longer run benefits or disbenefits can be measured more accurately. Because the short-term effects are so diffused and transitory in nature, they do not lend themselves to measurement by the analytical tools and processes available to this study. Consequently, while they are recognized as being an important effect of the highway program, they will not be treated in detail. Rather, efforts will be concentrated toward analyzing the longer run effects.

The longer term effects in turn can be considered from either a limited or broad view of the area in question. The most limited view would be to consider only the effects that the new highway had on a particular business located on the old route. A broader view would be to consider the effects on all businesses of this and other types located on the old route. But, an expansion of this view to include all businesses of each type located on the old and new routes in the area would be even more logical and reasonable to consider. The analysis becomes more complicated as the scope is broadened, but in terms of over-all influence is more realistic. Even within a business type, individual businesses are affected differently. The management of each business will adjust differently to the changed conditions. The result is that conclusions must be drawn only after a thorough and careful analysis has been made.

Businesses located on both the old and new highways were included in the analysis. Figure 24 shows the business study areas. The old route study area takes in all of the Old U. S. Highway 67 which is located in Rockwall County. In addition, that portion of State Highway 205 between the old and new route was considered a portion of the old route, since it carried the highway traffic upon the completion of the first section from Dallas to the SH 205 interchange near Rockwall in July, 1951. Through traffic was not diverted from Rockwall and Fate, by way of SH 205 and old U. S. 67 until December, 1956. Three years later, in December, 1959, the business section of Royse City was bypassed. Since Farm Road 548 carried the through traffic into Royse City during those three years, that portion of Farm Road 548 connecting the old and new highways was also considered a part of the old route.

The new route section of the study area is an area along the new route throughout the county. Businesses abutting the new highway or those within a hundred feet of it, at interchanges, were considered a part of the same area.

The business activity data used in this analysis were collected by personal interview during 1962. Since the "before" and "after" approach was used, data were obtained for two one-year periods, with 1955 serving as the last full year before traffic was diverted from any of the three towns, and 1961 serving as the latest full year for study after diverting traffic from all the towns.

The new highway had a considerable effect on the traffic volume along the old route. This was revealed by a comparison of the average daily traffic volumes for specific locations on both routes. The data shown in Table 28, were obtained from the Highway Planning Survey Division of the Texas Highway Department, and show the differences in traffic volumes for each of the routes separately and both routes together. Traffic counts were taken at both the east and west entrances to the county in 1950 and again in 1961. The figures show

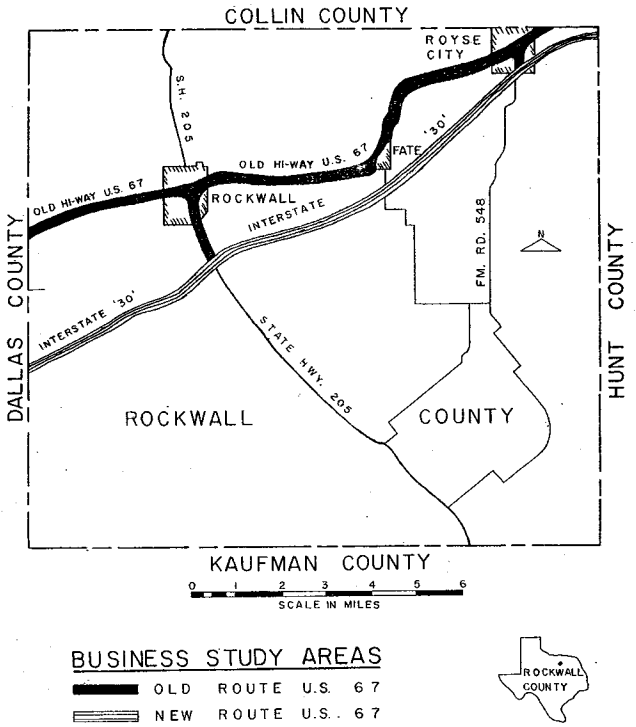
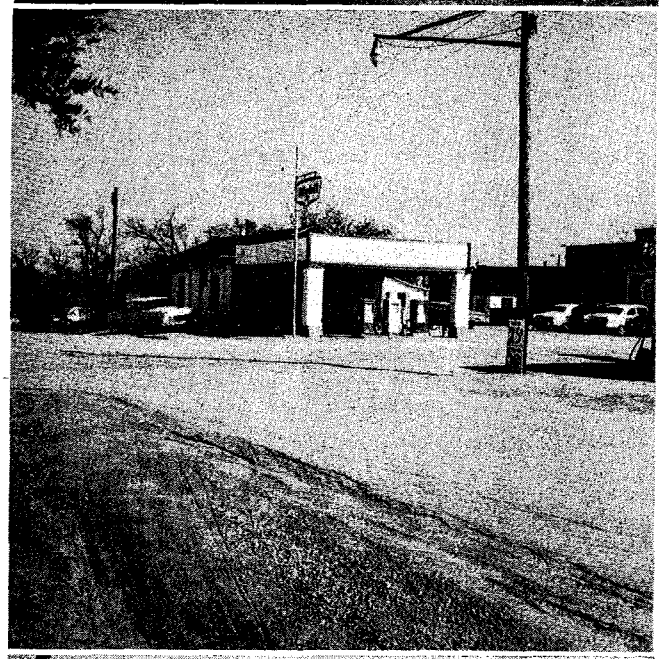
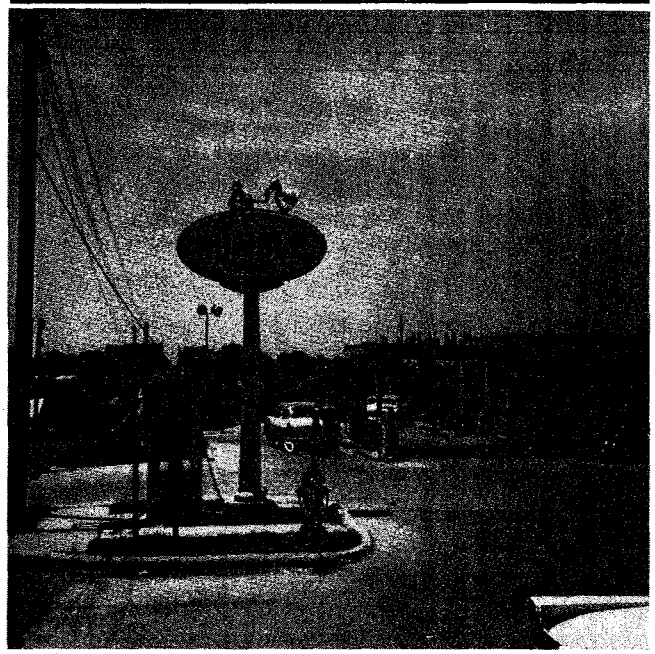
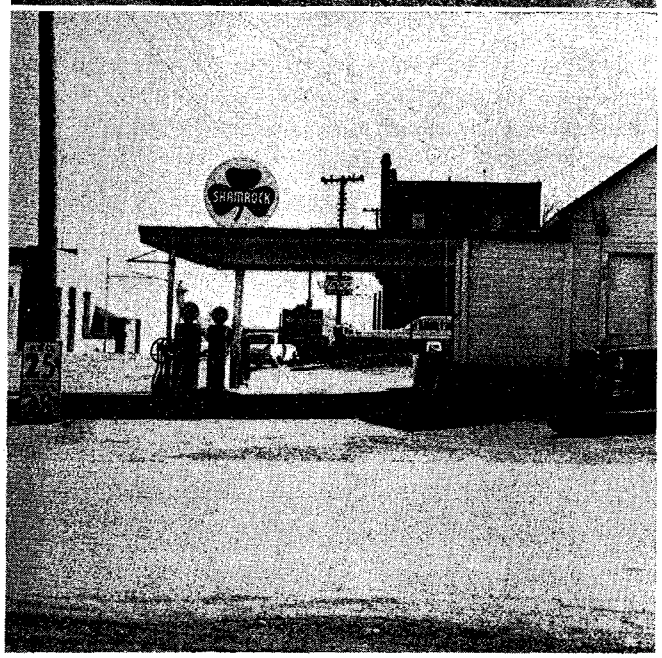


Figure 24.







Old

New

Some of the old and new service stations located along the old route.

that the traffic volume along the old route was reduced over fifty percent at both entrances due to the opening of the new highway through the county. However, in 1961, the traffic volume on the new route was almost double that of 1950 on the old route. By combining the volumes of both routes for each year, the traffic had increased by 113.8 and 82.3 percent at the west side and east side entrances, respectively. (Tables 46 and 47, in Appendix B, show the traffic volumes along all routes leading into and out of the towns of Rockwall and Royse City.) The traffic volumes on each route, or both combined, have special significance to the traffic-serving businesses.

Businesses Interviewed

Because of the inherent differences in their operations, and particularly their dependence upon the passing motorist as a source of sales, it was necessary to classify each firm into one of the two major groups of traffic serving or nontraffic serving businesses. The traffic serving businesses were further subdivided into service stations and food service establishments. (There were no motels in the county.) All other businesses interviewed were classified as nontraffic serving. A total of 81 businesses were interviewed along both the new and old routes. Of the above number, 12 interviews were not completed for various reasons: eight firms were unwilling to cooperate, three were not able to provide records that were conducive for study, and one was closed both years of the study. However, some data were collected on each of these businesses, part of which appears in tabular form in this section.

The analysis below discusses traffic serving businesses and nontraffic serving businesses under separate headings. The two groups are then brought together and discussed in general terms as a single group of firms. Principally, the analysis will revolve around changes in gross dollar sales, gasoline gallonage volume, hours of operation and types of customers served (local and transient).

Traffic Serving Businesses

A total of 32 traffic serving businesses were in operation in the study area during 1955 and/or 1961. Of these, 24 were old route businesses and 8 were new route businesses. One other new route business, a service station, was closed during both years. Two of the old route businesses, closed in 1961, were uncooperative and are not included in the study.

Old Route Service Stations—There were a total of 11 service stations in operation on the old route in 1955 before traffic was diverted to the new route. Only 7 of these were still in operation in the same location in 1961. Of the four stations that closed, two were in very old frame buildings that were in extremely poor condition. The other two, while in somewhat better condition were also very old and lacking in modern equipment.

To replace these four stations that closed, four new stations were built along the old route between 1955 and 1961. Two of these were built specifically as replacements by operators who had closed old stations, while the others were under new management. By 1961, the number of stations in operation along the old route was the same as it had been in 1955.

Table 28
CHANGES IN THE AVERAGE DAILY TRAFFIC VOLUMES TO AND FROM ROCKWALL COUNTY VIA U.S. HIGHWAYS, 1950 VERSUS 1961

Location to County	Average Daily Traffic		Change in ADT Between	
	1950	1961	1950	1961
	(Number)	(Number)	(Number)	(Percent)
Old Route U.S. 67				
West Side	3,990	1,660	—2,330	—58.4
East Side	3,670	1,100	—2,570	—70.0
New Route IH 30				
West Side		6,870	+6,870	NA
East Side		5,590	+5,590	NA
Old & New Routes				
Total West Side	3,990	8,530	+4,540	+113.8
Total East Side	3,670	6,690	+3,020	+ 82.3

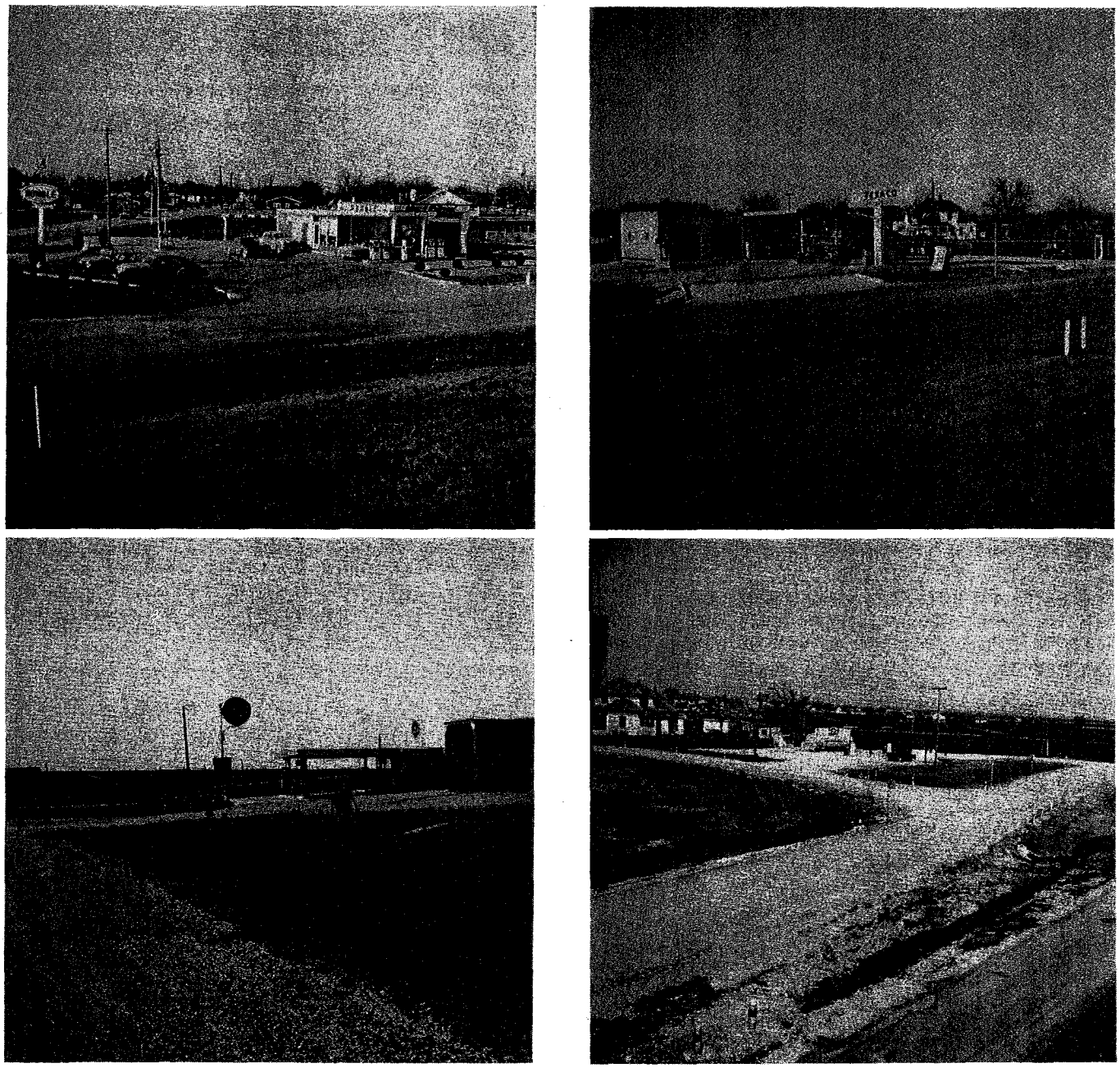
The records of the seven old stations remaining in operation show that they suffered a 45 percent decline in gross dollar volume (see Table 29). The loss in sales was general, since only one station showed an increase over 1955 sales. All of these stations were at least 15 years of age and most were badly in need of repairs and modernizing.

The general age and condition of the old stations was at least partly responsible for their loss in sales—particularly in view of the increased competition from the new firms. Not only was the through traffic diverted, but the more modern new stations were more attractive, and as shown by their higher average sales per firm, undoubtedly drew a greater proportional part of the local trade from the older stations. Table 30 shows that the opening of four new stations not only replaced the 1955 volume of the four old stations which closed, but also covered all but about $18,000 of the loss suffered by the seven remaining open. When considering the gross sales of all 15 stations involved, a decline of less than one percent occurred over the six years. All the new Stations were located in the central business section of the towns, but three were on the access roads (two on State Highway 205 and one on Farm Road 548) leading to the new highway.

Table 29
CHANGES IN GROSS DOLLAR VOLUME OF SEVEN OLD SERVICE STATIONS IN OPERATION ALONG OLD U. S. 67 BETWEEN 1955 AND 1961

Station Number	Dollar Volume		Change From 1955 to 1961	
	1955	1961		
	(Dollars)	(Dollars)	(Dollars)	(Percent)
1	$ 48,000	$ 6,300[1]	$— 41,700	—86.9%
2	50,200	49,500	— 700	— 1.4
3	21,500	15,500	— 6,000	—27.9
4	60,000	28,700	— 31,300	—52.3
5	23,000	24,000	+ 1,000	+ 4.3
6	47,000	16,000	— 30,900	—65.7
7	15,100	5,500	— 9,600	—63.6
Seven Stations	$264,800	$145,600	$—119,200	—45.0%

[1]This station was open for only four months during 1961.



Some of the service stations located along the new route.

The gasoline gallonage sales reflect about the same results as shown by the gross dollar sales. The seven old stations remaining open showed a 46.1 percent drop (See Table 31.) The four new stations did not do as well in replacing the gallonage lost by the old stations as they did in the case of the gross dollar volume. The 1961 operators indicated that they had put more emphasis on services after losing gasoline sales resulting from the diversion of traffic on to the new highway. This is probably the reason the dollar sales did not take as much of a dip as the gasoline sales. The over-all decline was 10 percent for all 15 stations (See Table 32).

An analysis of the operating time periods in relation to changes in dollar volume of the several old stations, as shown in Table 33, reveals that the percent change in dollar volume was about four times as great as the percent change in hours of operation. But individual station figures indicate very little correlation between the percent changes in hours of operation and business volumes. In one case, the number of hours of operation decreased 6.9 percent, but the business volume increased 4.3 percent, while the only station that increased its hours of operation had a substantial loss in sales. The annual hours lost by the four stations that closed were almost offset by the hours gained by the four new stations.

New Route Service Stations—By 1961 there were a total of seven service stations located on the new route. Six of these were opened after 1955. The other one is both a service station and a grocery store. All but two of these new stations sell major brand gasoline and two are large modern stations. There was another station

Table 30

CHANGES IN GROSS DOLLAR VOLUME OF ALL SERVICE STATIONS IN OPERATION ALONG OR NEAR OLD U. S. 67 DURING 1955 AND/OR 1961

Stations	Gross Dollar Volume		Change From		
	1955	1961	1955	to	1961
	(Dollars)	(Dollars)	(Dollars)		(Percent)
7 Old Stations	$264,800	$145,600	$—119,200		—45.0%
4 Old Stations that Closed					
2 Reporting	54,300		— 54,300		NA
2 Non-reporting—Calculated[1]	79,800		— 79,800		NA
Total 11 Old Stations	398,900	145,600	+253,300		—63.5
4 New Stations		252,000	+252,000		NA
Total All 15 Stations	$398,900	$397,600	$— 1,300		— 0.3%

[1]Calculation is based on the average volume of the nine other old stations.

located on the route but it was closed both of the years during which data were gathered.

In general, the service stations located along the new route sustained a fairly high level of sales (See Table 34). Only one business was having trouble staying in operation, and it had a rather low quality plant and did not offer a complete line of services. The overall annual sales of the seven new route stations averaged just over $65,000 per firm during 1961. This is a respectable level of sales, but is only about $2,000 or three percent more than the average of the four new stations on the old route.

Gasoline gallonage figures, shown in Table 35, give a somewhat different picture. New route firms averaged over 235,000 gallons of gasoline annually while the new firms on the old route pumped only 161,000 gallons each. This is a difference of about 46 percent in volume compared to a three percent difference in dollar sales. The large difference must be attributed to the difference in the type of customer patronizing businesses in the two areas. Along the old route most of the businesses are local in nature and include a much greater proportion of services, such as wash, grease, and minor mechanical work. Conversely, most of the business along the new route is straight gasoline sales.

Old and New Route Service Stations—On both the old and new routes, a total of 22 service stations were in operation during 1955 and/or 1961. Twelve were old stations, eight of which were still in operation in 1961. Ten were new stations, added after 1955 to make a total of 18 stations in operation during 1961. This is a net increase of 6 stations over 1955. By combining the data of both routes, as shown in Table 34, the 1961 gross dollar sales were 105.3 percent more than that of 1955. Thus, the area as a whole experienced a healthy increase in dollar volume over the six-year period.

Table 35 shows that the gasoline gallonage sales increased by 117.5 percent. One thing which caused a greater percentage increase in gasoline sales than that of dollar sales was the fact that fewer services were offered by the through traffic serving stations on the new route than those on the old route.

Old Route Food Service Establishments—"Food service establishments" consisted of either regular cafes and restaurants or drive-ins. There were a total of 7 businesses of this type located in the study area during 1955. Of these, only 5 were still in operation in 1961. One was voluntarily closed, and one burned between 1955 and 1961. To replace these, however, two new businesses were built and in operation by 1961.

Table 36 shows that the combined gross sales of the five businesses remaining open declined by 35.5 percent between 1955 and 1961. Three of these experienced sharp declines and two experienced modest gains.

The addition of the dollar volume of the two new businesses compensated for about half of the volume lost by the two businesses which closed before 1961. (See Table 37.) Thus, the combined gross sales of all nine businesses on the old route declined by 38.7 percent during the six-year period.

A large part of this decline appears to be directly attributable to the diversion of traffic to the new highway. This assumption is substantiated by the data in Table 38 which indicates that the five old businesses experienced a decrease in transient customers from 48 percent in 1955 to only 4.2 percent in 1961.

These eating places have not been able to increase their local trade sufficiently to overcome the loss in transient trade. One reason for this seems to be that none of these establishments have modern facilities, including those recently opened for business. Most are housed in older buildings which are not particularly attractive. Many of the local people do not patronize them, but go as far as Dallas, by way of the new route, to eat in more modern restaurants.

Table 31

CHANGES IN GASOLINE GALLONAGE OF SEVEN OLD SERVICE STATIONS IN OPERATION ALONG OLD U. S. 67 BETWEEN 1955 AND 1961

	Gallonage		Change From		
	1955	1961	1955	to	1961
	(Gallons)	(Gallons)	(Gallons)		(Percent)
1	47,000	18,000	— 29,000		—61.7%
2	136,000	42,000	— 94,000		—69.1
3	83,000	90,000	+ 7,000		+ 8.4
4	145,000	88,000	— 57,000		—39.3
5	118,000	43,000	— 75,000		—63.5
6	137,000	128,000	— 9,000		+ 6.6
7	132,000	21,000[1]	—111,000		—84.1
Seven Stations	798,000	430,000	—368,000		—46.1%

[1]This station operated for only four months during 1961.

New Route Food Service Establishments—Only one food service establishment has been located on the new route. It was in operation before 1955 and has remained in operation through 1961. Since 1955 it has changed management about 12 different times. In 1955, the owner was operating the business, but since then it has been operated on a lease basis by various other managers. The building is of frame construction and unimposing. Because of its unstable operating history, it would be difficult to infer that the decline in sales was due to the diversion of traffic to the new facility. This is particularly true since its location, at the intersection of State Highway 205, should have provided better access to move more through traffic after the new route was opened than was available before.

What is pointed up here, however, is that as the character of the passing traffic stream changes, certain changes are necessary in the business that serve that traffic. Since motorists on the Interstate System travel at a higher average rate of speed and the average length of trip is greater, they have a greater range of alternatives available to them in solving their needs. The distance, in terms of travel time, between competing

Table 32

CHANGES IN GASOLINE GALLONAGE OF ALL SERVICE STATIONS IN OPERATION ALONG OR NEAR OLD U. S. 67 DURING 1955 AND/OR 1961

Stations	Gallonage		Change From		
	1955	1961	1955	to	1961
	(Gallons)	(Gallons)	(Gallons)		(Percent)
7 Old Stations	798,000	430,000	—368,000		—46.1%
4 Old Stations that Closed					
2 Reporting	158,000		—158,000		NA
2 Non-Reporting—Calculated[1]	239,000		—239,000		NA
Total 11 Old Stations	1,195,000	430,000	—765,000		—64.0
4 New Stations		645,500	+645,500		NA
Total All 15 Stations	1,195,000	1,075,500	—119,500		—10.0%

[1]Calculation is based on the average gallonage of the nine other old stations.

Table 33

COMPARISON OF OPERATING TIME PERIODS IN RELATION TO CHANGES IN DOLLAR BUSINESS VOLUME

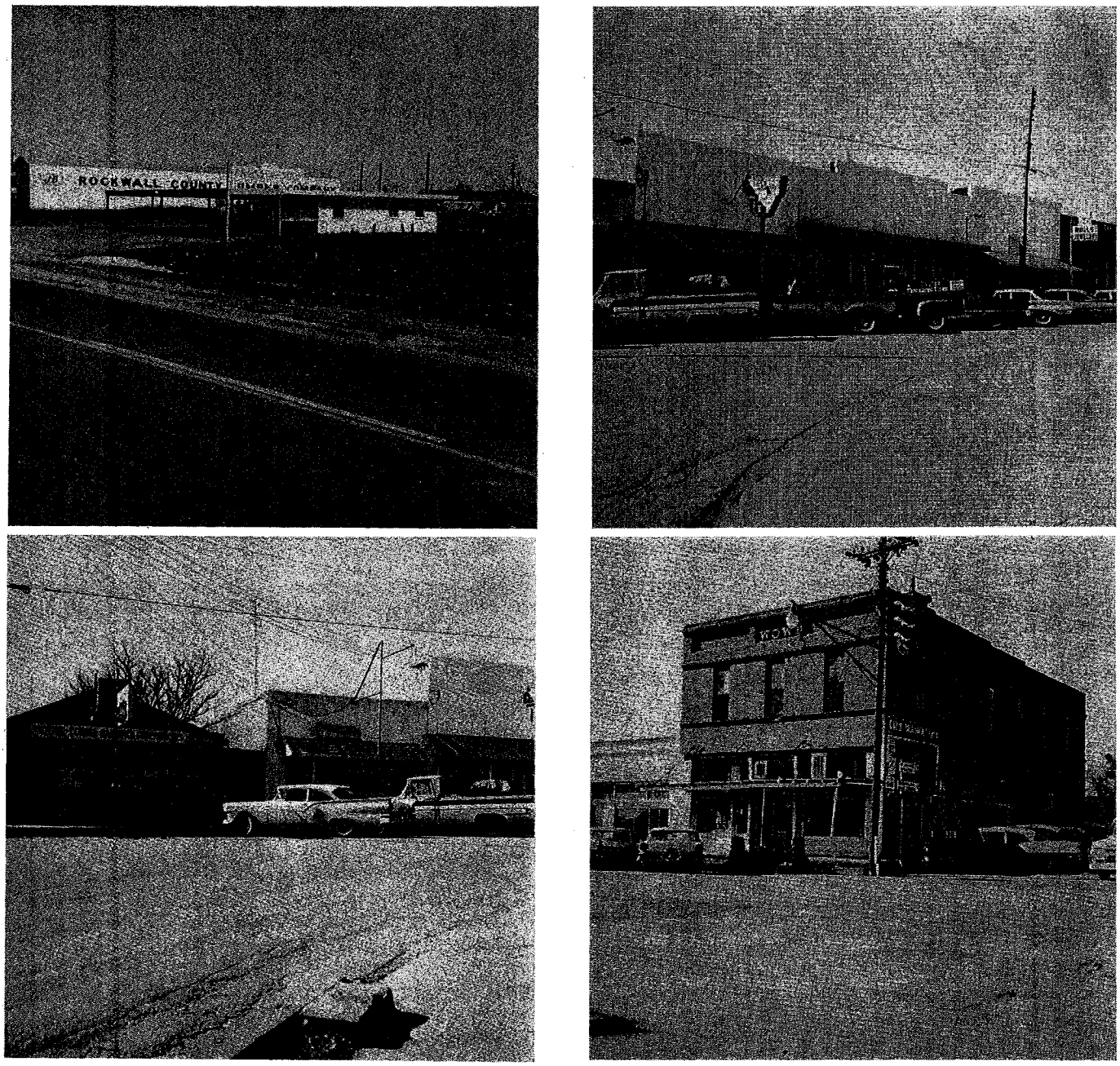
Station	Daily Hours of Operation 1955	Days of Operation per Week 1955	Annual Hours of Operation 1955	Daily Hours of Operation 1961	Days of Operation per Week 1961	Annual Hours of Operation 1961	Percent Change in Annual Hours of Operation 1955-1961	Percent Change in Volume of Business 1955-1961
	(Hours)	(Days)	(Hours)	(Hours)	(Days)	(Hours)	(Percent)	(Percent)
1	15	7	5,475	14.5	6.5	4,915	—10.2%	—27.9%
2	15	7	6,205	14	6	4,382	—29.4	— 1.4
3	15	7	5,475	14	6	1,456	—73.4	—86.9
4	16	6	5,008	14	6.5	4,746	— 5.2	—63.6
5	18	6	5,634	14	6	5,110	— 9.3	—65.7
6	14.5	6.5	4,915	13.5	6.5	4,576	— 6.9	+ 4.3
7	14	6.5	4,746	14	7	5,110	+ 7.7	—52.3
Total 7 Stations	109.5	46	37,458	98	45.5	30,295	—19.1%	—45.0%

[1]In operation only four months.

Table 34

TOTAL GROSS DOLLAR VOLUME OF ALL SERVICE STATIONS IN OPERATION IN THE STUDY AREA, 1955 AND/OR 1961

Stations	Gross Dollar Volume		Change From		
	1955	1961	1955	to	1961
	(Dollars)	(Dollars)	(Dollars)		(Percent)
Old Route					
7 Old Stations	$264,800	$145,600	$—119,200		— 45.0%
4 Old Stations That Closed	134,100		—134,100		NA
4 New Stations		252,000	+252,000		NA
New Route					
1 Old and 6 New Stations	17,100	456,300	439,200		2568%
Total All 22 Stations in Study Area	$416,000	$853,900	$+437,900		+105.3%

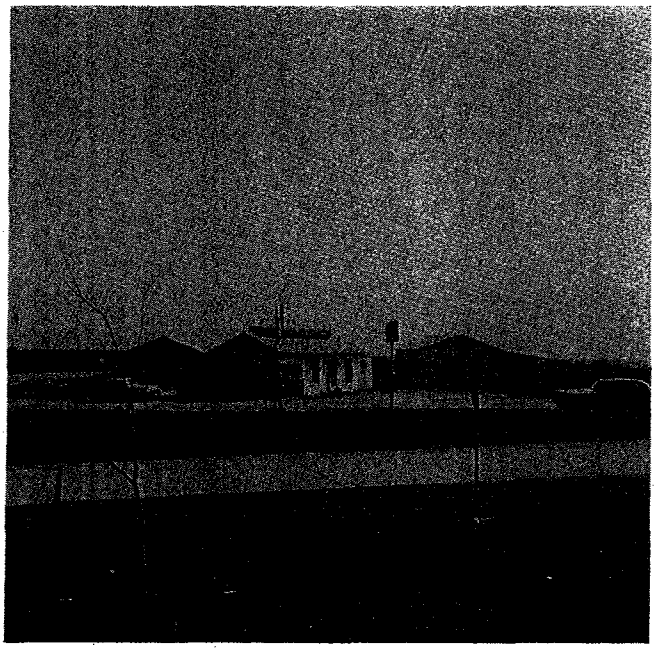


Some food service establishments located along the old route.

businesses is reduced, which has the same effect as increasing the effective market area of each business and reducing the locational monopolistic advantages of isolated firms. This means that firms which had previously been operating within relatively isolated areas and depending upon their locational advantages must now compete with similar firms at greater distances. To maintain its business volume then, such a firm must be able to offer those items of service such as price and quality of product, attractiveness of buildings, decorations, etc., which will allow it to compete with all other similar firms in a much wider geographical area. In terms of this study, these firms are now being forced to compete more directly with restaurants in Dallas.

Old and New Route Food Service Establishments—A total of ten food service establishments were in operation during 1955 and/or 1961. The combined dollar volume of these businesses showed a sharp decline of 42.8 percent during the six-year period. Of the eight businesses still in operation in 1961, all but two were still operating in old buildings with low quality facilities. Interviews with residents in the area revealed a need for at least one nice, modern restaurant to be established somewhere in the area.

Old and New Route Traffic Serving Businesses—A consideration of the effect of the facility on all traffic serving businesses located within the entire study area seems to be in order at this time. The combined groups represent only service stations and food service establishments. There were 18 old businesses operating on the old route in 1955 and only two on the new route. Six of the old route businesses went out of business be-



Only one food service establishment was located along the new route.

fore 1961, while there were no failures on the new route. Six new businesses were established on each route.

The combined gross sales of all the old route traffic serving businesses declined 11.2 percent between 1955 and 1961, whereas, the sales of the new route businesses increased by 1143.4 percent. (See Table 39) By combining the gross sales of the 32 businesses along both routes the whole area experienced a net 60.9 percent increase in sales over the six-year period. The twelve new businesses were entirely responsible for this increase, since the 14 old businesses which were still open had a decline of 42.9 percent in sales. The new businesses overcame this decline and much more, as the figures indicate. Since six of the new businesses were located on the new route and their gross sales almost doubled those of the six new businesses on the old route, it may be assumed that the new route had quite a favorable influence on the gross dollar volume of the traffic serving businesses in the area.

Table 36

CHANGES IN GROSS DOLLAR VOLUME OF ALL FOOD SERVING ESTABLISHMENTS IN OPERATION ALONG OR NEAR OLD U. S. 67 DURING 1955 AND 1961

Business Number	Dollar Volume		Change From 1955 to 1961	
	1955	1961		
	(Dollars)	(Dollars)	(Dollars)	(Percent)
1	$ 20,200	$21,200	$+ 1,000	+ 5.0%
2	9,500	10,300	+ 800	+ 8.4
3	24,300	18,700	— 5,600	—23.0
4	43,000	14,400	—28,600	—66.5
5	21,000	11,500	— 9,500	—45.2
Total All Businesses	$118,000	$76,100	$—41,900	—35.5%

Nontraffic Serving Businesses

It was thought desirable to interview the nontraffic oriented businesses on both the new and old routes in order to see what the more indirect effects of the new facility might have been as reflected on their gross sales during 1955 and 1961. Generally, such data should give an indication of the economic effect on that part of the community not specifically oriented to the passing traffic. These nontraffic serving businesses are supported principally by local residents in the area.

Forty-eight nontraffic serving businesses were located on the two routes. Each of these businesses was contacted, but only thirty-nine interviews were completed. Six of the firms refused to cooperate and three others were considered to be unsuitable for inclusion in the study.

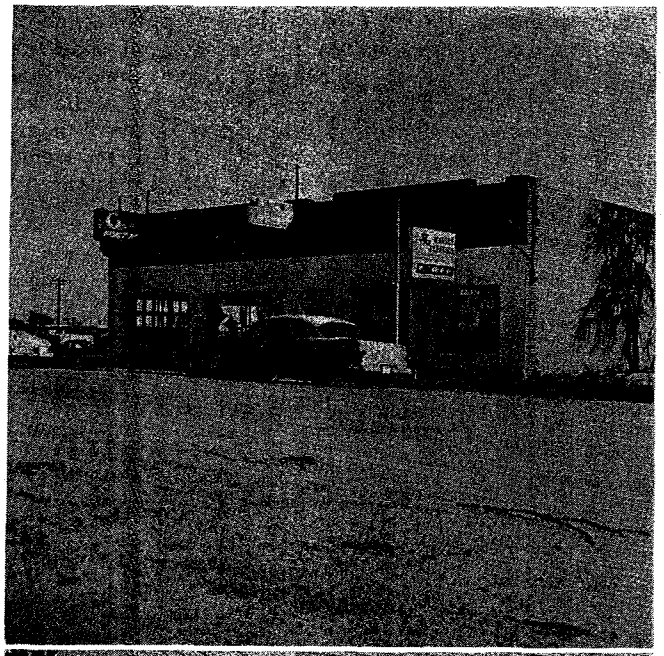
Old Route Nontraffic Serving Businesses—Forty-three of the 48 nontraffic serving businesses were located on the old route. Gross dollar volumes for both 1955 and 1961 were collected from thirty-seven of these businesses. Table 40 shows the types of businesses which were interviewed. They were classified as follows: grocery; automotive; personal service; furniture, hardware and appliances; dry goods and variety; lumber and building supplies; and others.

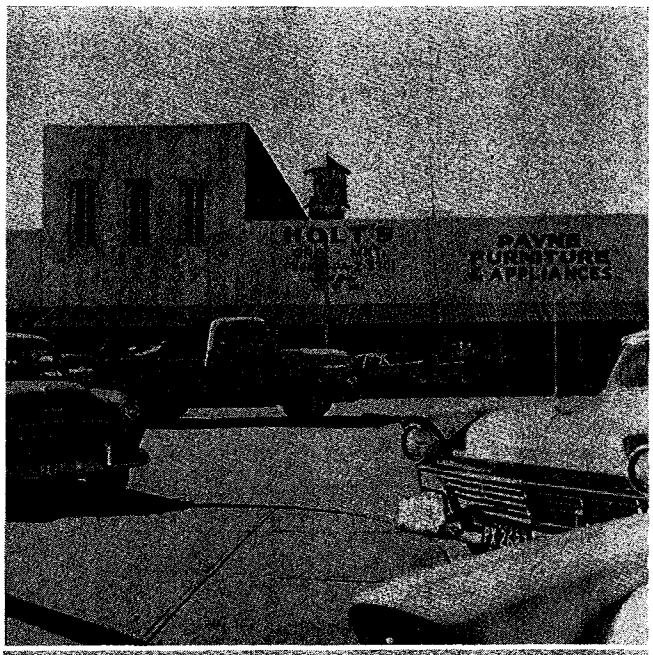
The results show that nine of the eleven grocery businesses had an increase in gross dollar sales, while

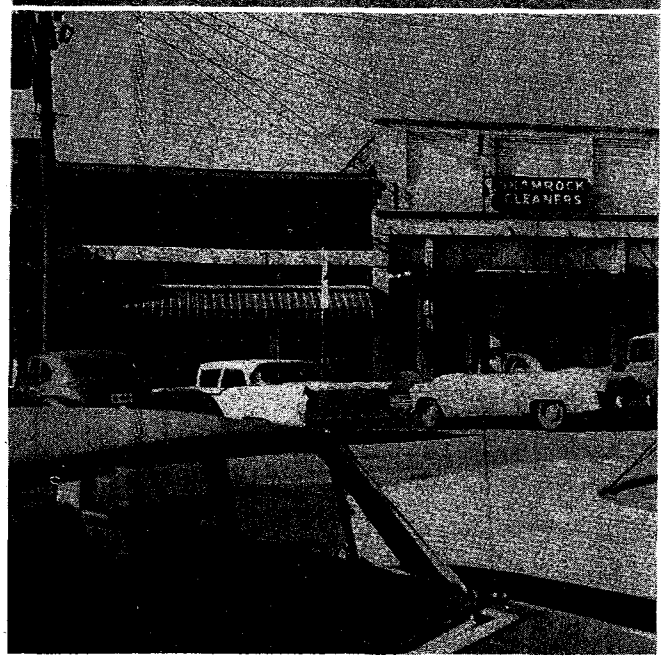
Table 35

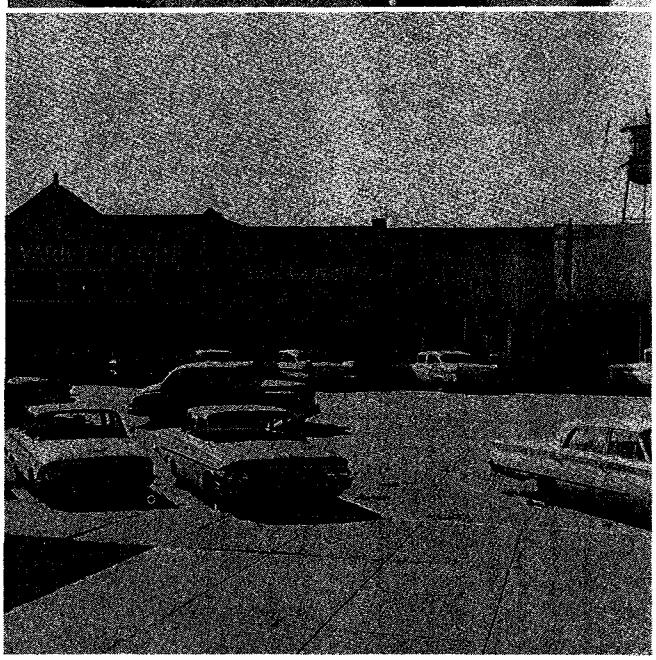
TOTAL GASOLINE GALLONAGE OF ALL SERVICE STATIONS IN OPERATION IN THE STUDY AREAS, 1955 AND/OR 1961

	Gallonage		Change From 1955 to 1961	
	1955	1961		
	(Gallons)	(Gallons)	(Gallons)	(Percent)
Old Route				
7 Old Stations	798,000	430,000	— 368,000	— 46.1%
4 Old Stations That Closed	397,000		— 397,000	NA
4 New Stations		645,500	+ 645,500	NA
New Route				
1 Old and 6 New Stations	57,000	1,648,200	+1,605,600	NA
Total All 22 Stations in Study Area	1,252,000	2,723,700	+1,471,700	+117.5%









In Royse City

In Rockwall

A few of the nontraffic businesses housed in old buildings that are located on the old route.

Table 37

TOTAL GROSS DOLLAR VOLUME ALL FOOD SERVING ESTABLISHMENTS IN OPERATION IN THE STUDY AREA DURING 1955 AND/OR 1961

Businesses	Dollar Volume		Change From		
	1955	1961	1955	to	1961
	(Dollars)	(Dollars)	(Dollars)		(Percent)
Old Route Businesses					
5 Old Businesses	$118,000	$ 76,100	$—41,900		—35.5%
2 Old Businesses That Closed	40,000		—40,000		NA
2 New Businesses		20,800	+20,800		NA
Total 9 Businesses	$158,000	$ 96,900	$—61,100		—38.7%
New Route Businesses					
1 Old Business					—75.0%
Total 10 Businesses	$178,000	$101,900	$—76,100		—42.8%

Table 38
CHANGES IN PROPORTION OF LOCAL AND TRANSIENT CUSTOMERS SERVED BY OLD ROUTE FOOD SERVICE ESTABLISHMENTS IN 1955 AND 1961

Business Number	1955		1961	
	Percent Local	Percent Transient	Percent Local	Percent Transient
	(Percent)	(Percent)	(Percent)	(Percent)
1	55%	45%	95 %	5 %
2	25	75	95	5
3	70	30	90	10
4	75	25	100	0
5	35	65	99	1
Average 5 Businesses	52%	48%	95.8%	4.2%

the other two lost in volume. The automotive group had a substantial influence on the total results because of its large volume in relation to other businesses. The two, which lost volume were both new car dealers. Since 1955 was the best year on record for new car sales all over the U. S., some of this loss in volume may be attributed to the general decline in new car sales activity between the two years. In addition, a general decline in farm tractor sales was also apparent during the period and influenced one of the two dealers in the minus column. There were two automotive repair shops in this group, both of which experienced increased sales.

None of the next two groups of businesses (five personal service businesses and five furniture, hardware and appliance businesses) experienced a decline in volume; rather, all showed healthy gains. The dry goods and variety group was split, with two increasing sales by 33.5 percent and two decreasing by 8.2 percent. The lack of a variety of merchandise and a complete line of drygoods probably contributed to the decline in the latter two firms.

Each of the four lumber and building supply businesses experienced a decline in sales. It was the general consensus of the owners that the decline was primarily due to a general building recession in home building during 1961. Table 51 in the Appendix, shows that building permit values in the town of Rockwall were down more than 50 percent in 1961 below their 1955 level. One operator also mentioned that he had experienced increased competition from Dallas builders. However, the one lumberyard with most of its sales coming from small purchases of lumber, etc., experienced a very small decline.

Of the 37 nontraffic serving businesses, 23 had increased volumes with a net increase of 28.2 percent. Three held constant and the remaining eleven experienced declines averaging 41.5 percent. The total of all 37 businesses shows a net decline of 14.8 percent.

As shown in Table 48 in the Appendix, the nontraffic serving businesses located in Royse City fared somewhat better than those in Rockwall. Of the businesses showing an increase in gross sales, those in Royse City increased by 34.5 percent as compared to 25.5 percent for Rockwall. Of those experiencing declines, Royse City's volume declined 35.6 percent compared to 42.6 percent for Rockwall. Many of the businesses in Rockwall, which is about eight miles nearer to Dallas than is Royse City, complained of increased competition with businesses located in Dallas and Garland. These merchants specifically mentioned Big Town Shopping Center, located on the new highway about 17 miles from Rockwall. Even though more people lived in Rockwall during 1961 than in 1955, the increased shopping travel to Big Town which opened between the two years apparently more than offset the population increase.

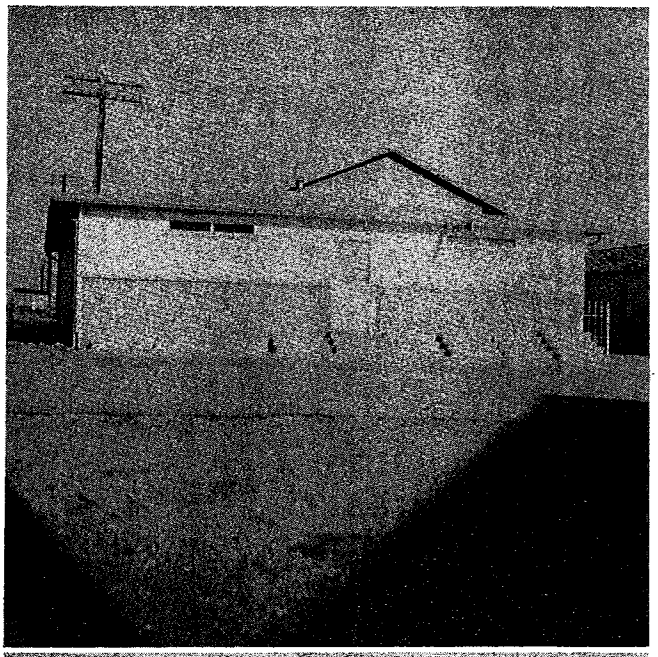
New Route Nontraffic Serving Businesses — Five nontraffic serving businesses were located on the new route by 1961. Actually, one of these is both traffic and nontraffic serving. Dollar sales volumes were collected from only two of these businesses, the one mentioned above, and another which opened in late 1961. The other business, which was in operation during both 1955 and 1961, experienced a decline in sales. This business is located almost three miles from the town of Rockwall.

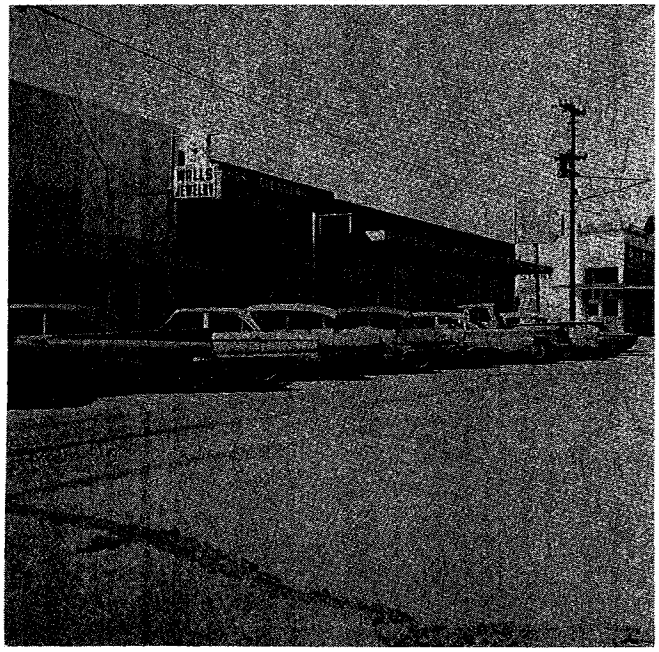
Old and New Route Nontraffic Serving Businesses— Of the 48 nontraffic serving businesses interviewed on both routes, 38 yielded some gross sale information. Due

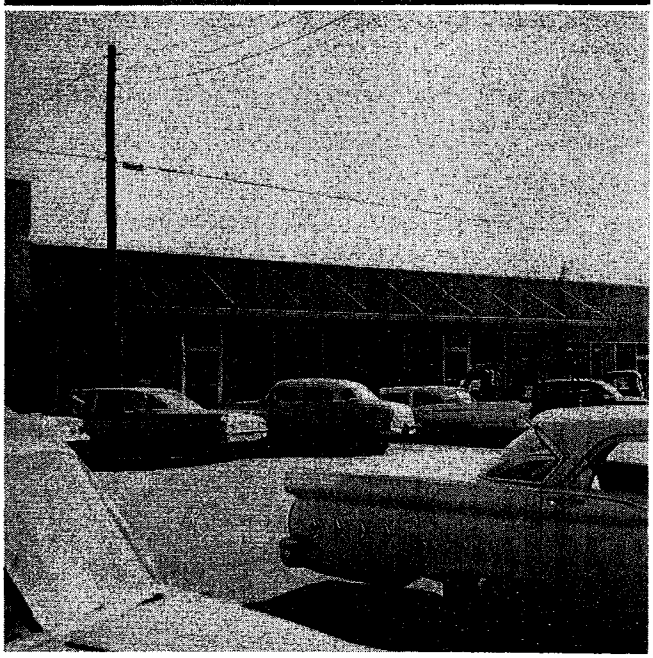
Table 39
CHANGES IN GROSS DOLLAR VOLUME OF ALL TRAFFIC SERVING BUSINESSES IN OPERATION IN THE STUDY AREA DURING 1955 AND/OR 1961

Businesses	Dollar Volume		Change From		
	1955	1961	1955	to	1961
	(Dollars)	(Dollars)	(Dollars)		(Percent)
Old Route					
12 Old Businesses	$382,800	$221,700	$—161,100		—42.1%
6 Old Businesses that Closed	174,100		—174,100		NA
6 New Businesses		272,800	+272,800		NA
Total 24 Businesses	556,900	494,500	— 62,400		—11.2
New Route					
2 Old Businesses	$ 37,100	$ 18,200[1]	$— 18,900		—50.9%
6 New Businesses		443,100	+443,100		NA
Total 8 Businesses	37,100	461,300	+424,200		+1143.3
Total 32 Traffic Serving Businesses	$594,000	$955,800	$+361,800		+ 60.9%

[1]One of these businesses was closed about half of the time during 1961.







In Rockwall

In Royse City

Some of the nontraffic serving businesses housed in new buildings that are located on the old route.

to the small number and status of the new route businesses, it was not possible to include them in the analysis. Consequently, the changes reflected by the old route businesses become the composite picture for the nontraffic serving businesses for the area as a whole.

In general, it appears that the businesses of Rockwall County have not been able to adapt to the changing conditions brought about by the new highway.

The new highway is being used by many of the local residents of Rockwall County as a facility to travel to other retail trade areas, bringing increased competition to the local businesses. Those firms that have not been able to improve their business operation to meet this increased competition have been most seriously affected by the new facility.

Total Businesses in the Area

By combining the gross sales of all 71 traffic and nontraffic serving businesses located on both routes, the change between 1955 and 1961 for the whole area can be estimated. Thirty-two traffic serving and 39 nontraffic serving businesses show this change.

Table 41 shows that the gross dollar volume for all businesses combined declined by 6.4 percent. As a group, the traffic serving businesses increased their sales volumes by 60 percent, whereas the nontraffic serving businesses declined almost 15 percent. Thus, the overall decline shown by the combined businesses is wholly due to the latter group. It is quite interesting to note that had it not been for the sharp decline in the volumes of two automotive firms in this group, the entire picture

Table 40

CHANGES IN GROSS DOLLAR VOLUME OF THIRTY-SEVEN NONTRAFFIC SERVING BUSINESSES IN OPERATION ALONG OR NEAR OLD U. S. 67 DURING 1955 AND 1961

Type of Business	Dollar Volume		Change From 1955 to 1961	
	1955	1961		
	(Dollars)	(Dollars)	(Dollars)	(Percent)
11 Grocery	$ 692,665	$ 895,029	$+ 202,364	+29.2%
9 Increased Volumes	574,697	797,515	+ 222,818	+38.8
2 Decreased Volumes	117,968	97,514	— 20,454	—17.3
6 Automotive	2,985,109	2,025,616	— 959,493	—30.1
4 Increased Volumes	718,137	862,616	+ 144,479	+20.1
2 Decreased Volumes	2,266,972	1,163,000	—1,103,972	—48.7
5 Personal Service	38,041	48,353	+ 10,312	+27.1
2 Increased Volumes	23,241	33,553	+ 10,312	+44.4
3 Constant Volumes	14,800	14,800		
5 Furniture, Hardware, & Appliances	367,536	464,392	+ 96,856	+26.4
5 Increased Volumes	367,536	464,392	+ 96,856	+26.4
4 Dry Goods and Variety	133,816	140,974	+ 7,158	+05.3
2 Increased Volumes	43,411	57,974	+ 14,563	+33.5
2 Decreased Volumes	90,405	83,000	— 7,405	—08.2
4 Lumber and Building Supplies	443,199	357,928	— 85,271	—19.2
4 Decreased Volumes	443,199	357,928	— 85,271	—19.2
2 Others	115,622	135,519	+ 19,897	+17.2
1 Increased Volumes	95,622	117,019	+ 21,397	+22.4
1 Decreased Volumes	20,000	18,500	— 1,500	—07.5
Total 23 Increased Volumes	$1,822,644	$2,333,069	+ 510,425	+28.2
Total 3 Constant Volumes	14,800	14,800		
Total 11 Decreased Volumes	2,938,544	1,719,942	—1,218,602	—41.5
Total 37 Businesses	4,775,988	4,067,811	— 708,177	—14.8

may have been quite different. Of the $1.6 million total loss in sales by all firms in the area, over $1.1 million can be charged to these two firms. If the records of these two firms had been disregarded, the combined change in the area as a whole would have shown a net increase of about 15 percent.

The traffic businesses established on the new route recovered more than enough sales volume to offset the decline experienced by the old route businesses. In the case of the nontraffic serving businesses, however, this did not happen. New businesses on the new route were not particularly successful and the new route made other retail trade areas more accessible to the residents of Rockwall County, thereby creating more competition with the local firms.

As a further clarification of the over-all retail sales picture in Rockwall County, the findings of Sales Management Magazine's "Survey of Buying Power" are presented in Tables 42 and 43. They report that the county experienced a decline of 8.2 percent in retail sales, as compared to a 6.4 percent decline reported by the 71 businesses which were interviewed by the Texas Transportation Institute. This compared to a 15.5 percent increase in the state as a whole and a 26 percent in-

Table 41

CHANGES IN GROSS DOLLAR VOLUME OF SEVENTY-ONE BUSINESSES IN OPERATION IN THE STUDY AREA DURING 1955 AND/OR 1961

Businesses	Dollar Volume		Change From 1955 to 1961	
	1955	1961		
	(Dollars)	(Dollars)	(Dollars)	(Percent)
Old Route				
37 Nontraffic Service Businesses	$4,775,988	$4,067,811	$—708,177	—14.8%
24 Traffic Serving Businesses	556,900	494,500	— 62,400	—11.2
Total 61 Old Route Businesses	5,332,888	4,562,311	—770,577	—14.4
New Route				
2 Nontraffic Serving Businesses[1]	25,000	26,600	+ 1,600	+ 6.4
8 Traffic Serving Businesses	37,100[2]	461,300	+424,200	+1143.3
Total 10 New Route Businesses	62,100	489,900	425,800	+68.7
Total All 71 Businesses	$5,394,988	$5,050,211	$—344,777	— 6.4%

[1]One of these businesses opened in October, 1961, and the other is partly traffic serving. The dollar volume was divided between the two types of business activity.
[2]Represents only two businesses that were in operation during 1955, one of which is partly nontraffic serving.

Table 42

A COMPARISON OF CHANGES IN RETAIL SALES AS REFLECTED BY SEVENTY-ONE BUSINESSES INTERVIEWED VERSUS THAT REPORTED BY THE SALES MANAGEMENT MAGAZINE'S "SURVEY OF BUYING POWER" FOR ROCKWALL COUNTY, DALLAS COUNTY, AND THE STATE OF TEXAS, 1955 AND 1961[1]

Source of Information	Total Retail Sales		Changes Between	
	1955	1961	1955 and 1961	
	(Dollars)	(Dollars)	(Dollars)	(Percent)
71 Businesses Interviewed	$ 5,394,988	$ 5,050,211	$ —344,777	— 6.4%
"Survey of Buying Power"				
Rockwall County	6,753,000	6,202,000	—551,000	— 8.2
Dallas County	1,231,752,000	1,552,592,000	320,840,000	26.0
State of Texas	10,071,936,000	11,637,843,000	1,565,907,000	15.5%

[1]An annual survey is conducted by the Sales Management Magazine on a county and city basis where estimates of retail sales are made by type of business. Key cities and counties within a state are sampled to collect actual retail sales from businesses. Then, these figures are used with the most current reports on retail sales from the Department of Commerce's Survey of Current Business and Census of Business to arrive at estimates for individual cities and counties.

Table 43

A COMPARISON OF CHANGES IN RETAIL SALES AS REFLECTED BY SEVENTY-ONE BUSINESSES INTERVIEWED VERSUS THAT REPORTED BY THE SALES MANAGEMENT MAGAZINE'S "SURVEY OF BUYING POWER" FOR ROCKWALL COUNTY, DALLAS COUNTY, AND THE STATE OF TEXAS, 1955 AND 1961

Type of Business	Percent Changes in Retail Sales Between 1955 and 1961			
	Businesses Interviewed	Survey of Buying Power		
		Rockwall County	Dallas County	State of Texas
	(Percent)	(Percent)	(Percent)	(Percent)
Food	29.2%	21.3%	43.5%	30.0%
General Merchandise and Apparel	5.3	16.0	32.7	21.7
Furniture, House Appliances	26.4	10.2	39.1	8.5
Lumber, Building Hardware	—19.2	—26.7	— 2.7	3.2
Automotive	—48.7	—56.9	— 2.9	— 5.0
Drugs	18.1	17.9	73.3	42.5
Eating & Drinking Establishments	—42.8	—55.9	31.0	19.1
Service Stations	117.5	9.3	61.8	37.9

crease in Dallas County which is the nearest major market area. This shows that Rockwall County lagged far behind its neighboring county, a major metropolis. This is a reasonable and an expected occurrence.

Table 43 shows the comparisons of the percentage changes in retail sales of the above two sources by types of business. Here again, the percentages compare favorably in most instances, with the exception of the gas stations. While retail sales in Rockwall County decreased 8.2 percent, they increased 15.5 percent for the state as a whole, according to the "Survey of Buying Power." The state figures show that retail sales in the automotive group declined by 5 percent, confirming the direction of the change indicated by the business interviews.

Business activity in Dallas County was generally much better during the 1955-61 period than in either Rockwall County or the state as a whole. In fact, the Dallas business groups showed a larger increase in sales for each of the categories except "lumber, building, and hardware." This follows the general growth rate trend that has been in evidence in both the City of Dallas and its immediate suburban areas.

To complete the picture of the effect of the new highway on businesses, each businessman was asked several questions about how the construction had affected his operation. These questions were designed to permit the respondent to comment on how the new highway had affected his individual business. Operators of 14 traffic serving businesses stated emphatically that the highway had severely affected their businesses. The remaining traffic serving businesses said that it had no effect. None of them believed that it had helped. Eight nontraffic serving businesses said that it had helped and the rest either said that it had no effect or gave no response. It appears, therefore, that the type of response depended upon the type of business. Operators of traffic serving businesses generally thought that their businesses had been hurt as a result of the new highway. On the other hand, operators of nontraffic serving businesses thought the new highway had no effect or helped their businesses.

Other Economic Changes In Rockwall County

This section of the report reviews some of the other economic changes which have occurred within Rockwall County between 1955 and 1961. To some extent, some of these changes could have been at least partially caused by the construction of the new interregional highway through the county; however, the exact causal relationship cannot be measured.

There are several indicators which give some indication of the economic conditions of an area. The changes in some of these are discussed below. Even though not all the indicators show positive increases, the city and county officials interviewed are optimistic for the future. In general they feel that they are on the threshold of experiencing spectacular growth.

Employment by Manufacturing Firms

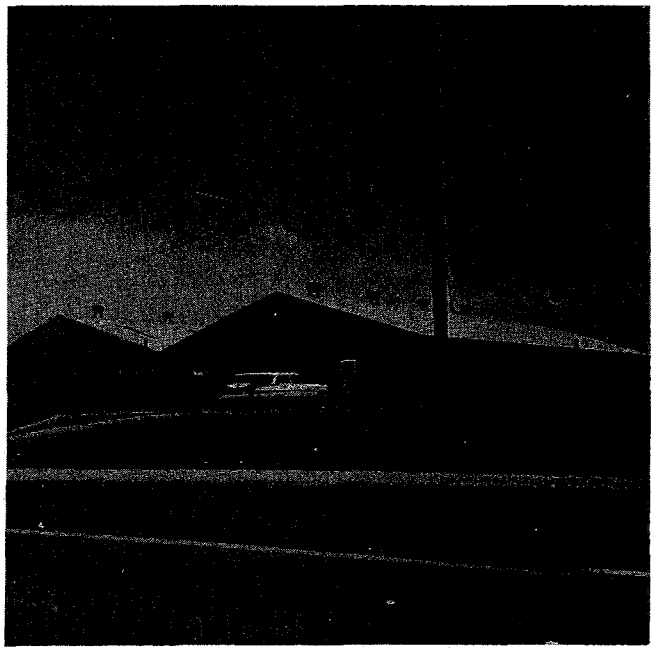
By 1961, six manufacturing firms were in operation in Rockwall County, five in Rockwall and one in Royse City. Another was established in Royse City in 1958, but had moved by 1961. (This was a Dallas-based dressmaker.) Three of these six firms were established at their locations after 1955, while the largest firm of all was established in 1953. The diversity of industrial development in the area is shown by the wide range of products produced by the above firms. Aluminum windows, air conditioning units, galvanized pipe, draperies, decorator pillows, studio lounges, aluminum extrusions, saddles, saddle pads, and other leather riding equipment are among the major products.

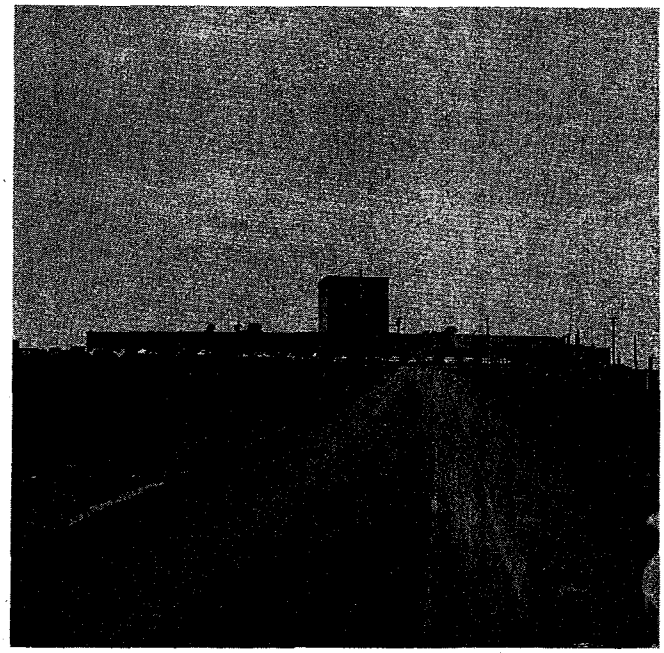
In 1955 the three existing manufacturing firms employed approximately 182 people, about 50 percent of whom lived in Rockwall County. By 1961, all six firms employed about 300 people with about the same percentage living in the county. This amounted to an increase of about 2/3 in the number of people employed in the county. The addition of the three new firms employing 118 more people has definitely helped the economic condition of both the town and county of Rockwall. This is especially true since industrial growth has a cumulative effect on commercial employment and retail sales. In Rockwall, these firms have helped to increase the population of the town which has grown 48 percent during the last decade. Royse City, on the other hand, had no new manufacturing firms located permanently between 1955 and 1961 and showed no growth in population.

Interviews with the executives of the three firms which located in the area after the new highway was constructed revealed that the presence of the facility was one of the primary considerations in choosing a site for their plants. They pointed out that their location in Rockwall County on the Interregional Highway gave them easy access to Dallas, a major market for their products.

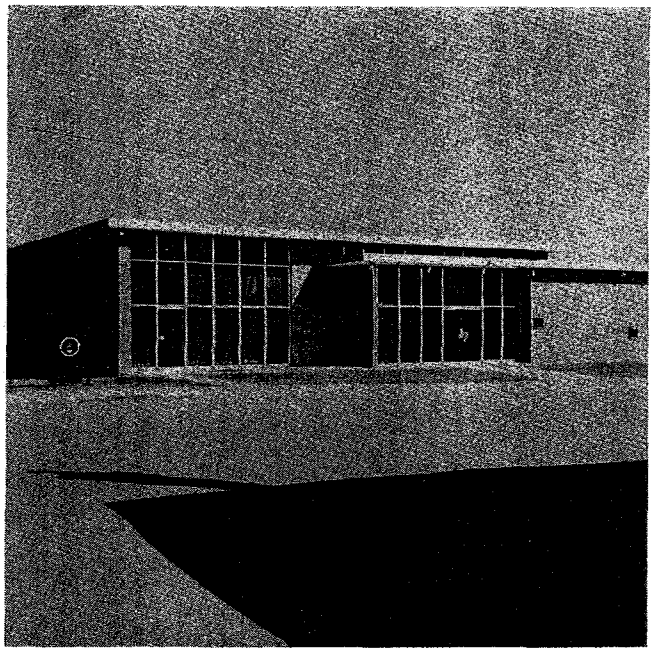
Assessed Tax Valuations

To some extent, increases in the assessed valuations of real and personal property usually indicate that a town or community is growing economically. In the case of the town of Rockwall, this generally holds true. A glance at Table 44 reveals that the assessed tax valuations of Rockwall increased over 100 percent between 1955 and 1961. However, a large portion of this increase was due to an extension of the city limits. During this time the incorporated area grew more than eightfold, from about 900 to 7,346 acres. One of the principal reasons for this expansion of the city limits was to take in the area on either side of the new highway, and to include the Texas Aluminum Plant. In addition to expanding the physical size of the area, commercial and residential development has also continued since 1955, adding to the valuation. Also, the increase

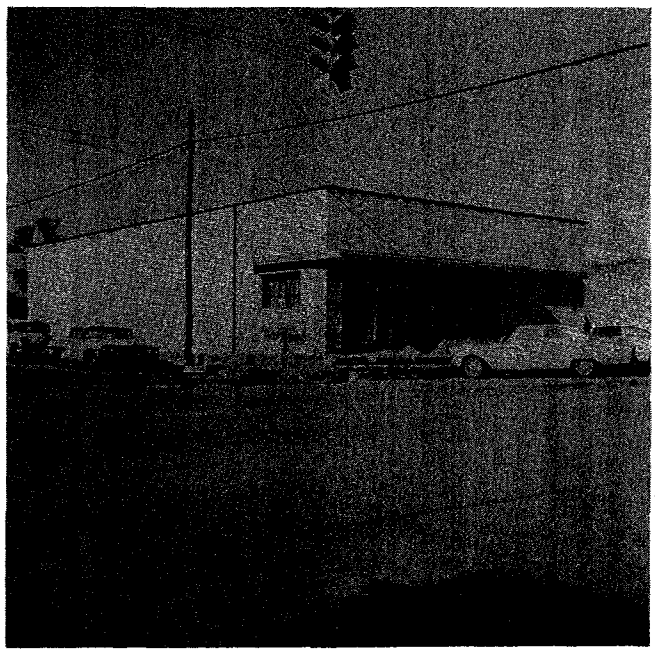




Two of several new industries which have located in the Rockwall Study Area within sight of the new highway.



In Rockwall



In Royse City

The two banks serving the study area are housed in new modern buildings.

in the value of real estate near the new highway has increased assessed valuation in that section.

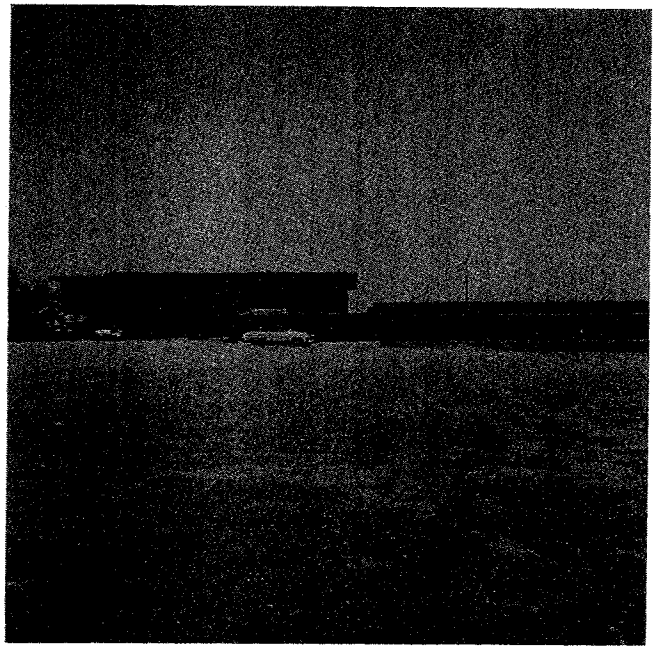
Another look at Table 44 will show that Royse City did not experience nearly as much increase in assessed valuation as did Rockwall. Little or no change was made in the incorporated area, and the 13.4 percent increase was principally due to new commercial and residential construction. Also, since the new highway passed through an undeveloped portion of the town, land values in that area increased greatly, allowing an increase in assessed valuation which more than offset the loss in tax valuations from land taken off the tax rolls by right of way requirements. (See Tables 49 and 50 in Appendix B for detailed tax data.)

Table 44

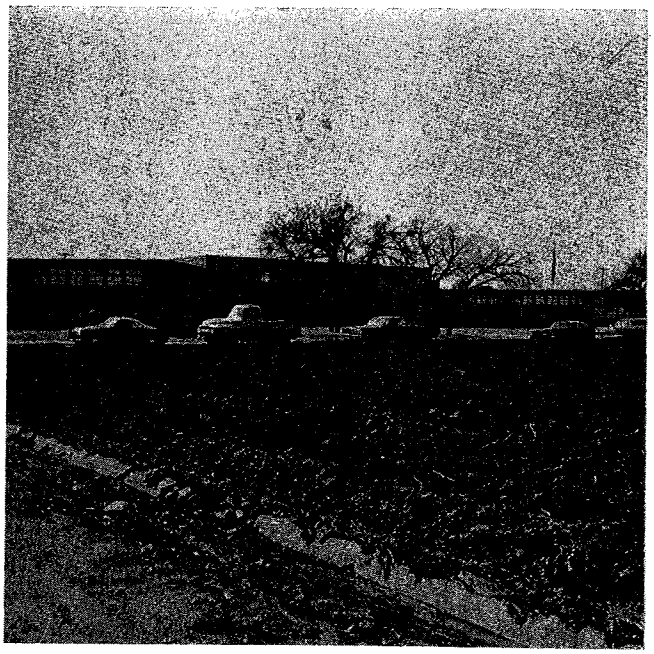
CHANGES IN VARIOUS ECONOMIC INDICATORS IN THE TOWNS AND COUNTY OF ROCKWALL BETWEEN 1955 AND 1961.

Item	Quantity		Change in Quantity Between	
	1955	1961	1955 and	1961
	(Number)	(Number)	(Number)	(Percent)
Employment by local Manufacturing Firms	182	300	118	64.8%
Assessed Tax Valuations				
Rockwall	1,585,666	3,190,305	1,604,639	101.0
Royse City	764,199	866,322	102,123	13.4
Building Permit Values				
Rockwall	265,750	113,083	—152,667	—57.4
Bank Deposits				
County	2,759,000	3,375,800	616,800	22.4
Rockwall	1,266,000	1,532,000	266,000	21.0
Royse City	1,493,000	1,843,800	350,800	23.5
Value of Bank Loans				
County	1,391,300[1]	1,356,900	—34,400	— 2.5
Rockwall	644,000[1]	599,000	—65,000	— 9.8
Royse City	747,300[1]	757,900	10,600	1.4
Enrollment in Public Schools	(55-56)	(60-61)		
County (Urban & Rural)	1,426	1,407	—19	— 1.3
Rockwall (Urban)	318	338	20	6.3
Royse City (Urban)	349	274	—75	—21.5
Water Connections				
Rockwall	640	830	190	29.7
Royse City	375	425	50	13.3
Motor Vehicles Registered	4,440	4,622	182	4.1

[1]Excessively high because of emergency loans to farmers and ranchers during drought years.



In Rockwall



In Royse City

Two of the schools located in the study towns have modern facilities.

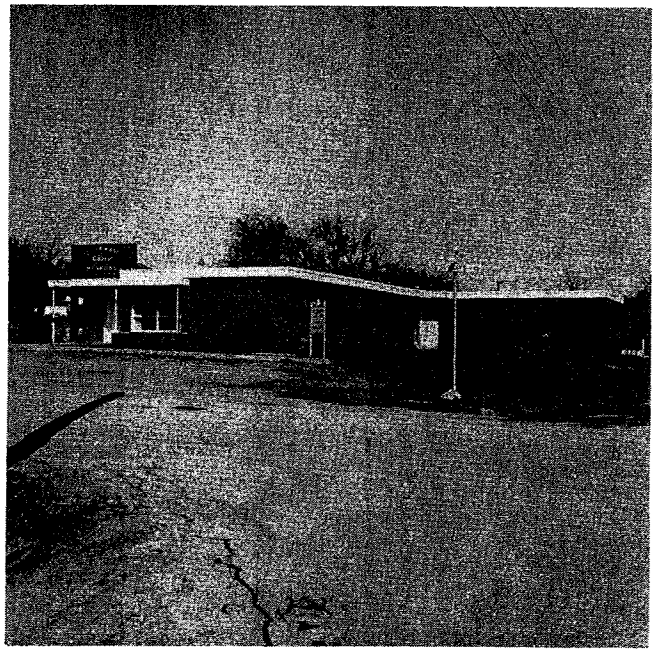
Building Permit Values

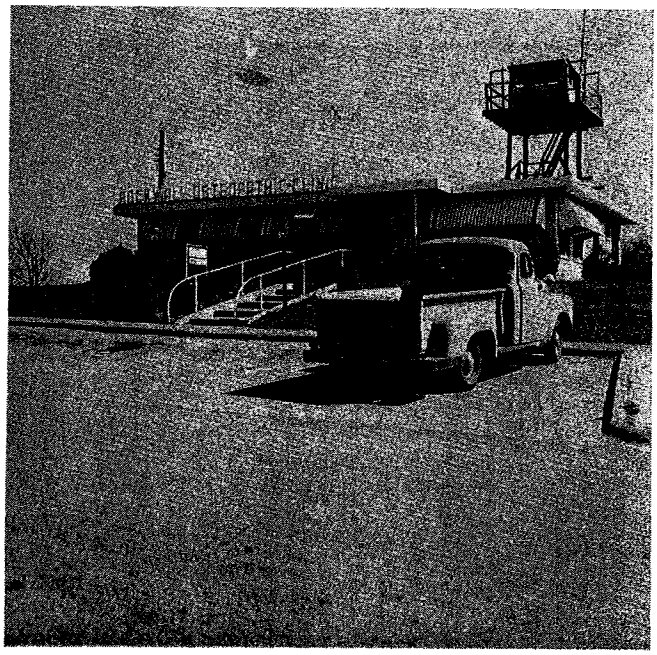
Building permit values in the town of Rockwall were down 57.4 percent in 1961 compared to 1955. (See Table 44.) Part of this drop was due to the general building recession mentioned earlier. Actually, since 1955, permits valued at a total of $800,000 have been issued. This indicates that the town was not standing still as far as new construction is concerned. Table 51 in Appendix B presents more detail on the building permits issued by the Town of Rockwall than is presented here.

Due to the lack of available data on building permits issued in Royse City prior to 1959, no comparisons could be made between 1955 and 1961. But, during the period 1959-61, building permits with a total value of over $300,000 were issued. This indicates a substantial building activity over the last three years. A survey of the permits issued indicates that almost half of the dollar value was being devoted to construction of commercial buildings, several of which were being constructed abutting the new highway.

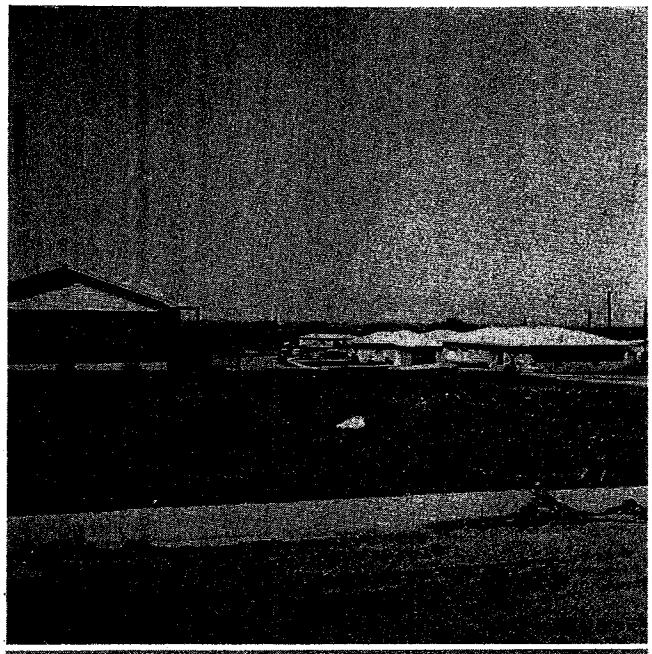
Bank Deposits

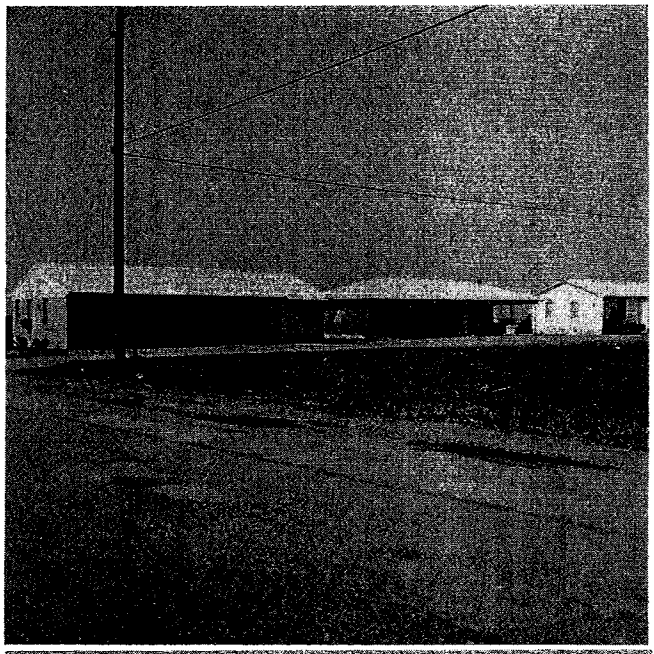
The total bank deposits of Rockwall County increased by 22.4 percent between 1955 and 1961. (See Table 44.) Over a 300 percent increase in time deposits ac-

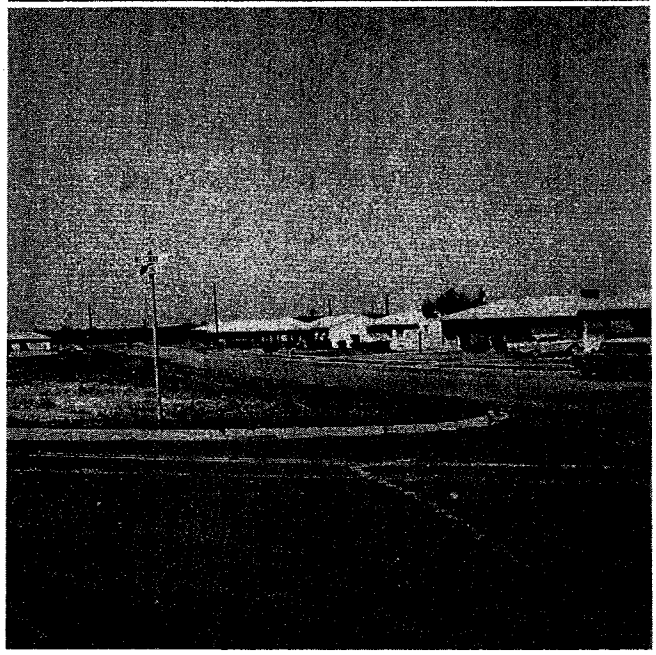


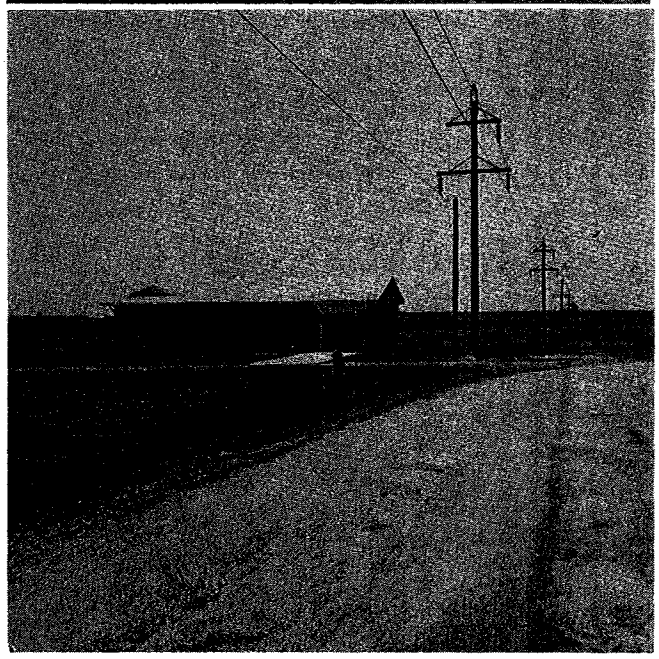


Modern hospital facilities are located at Rockwall.









In Rockwall

In Royse City

Some of the modern homes which have been constructed in the study towns after the new highway was completed.

counted for most of this increase. Deposits by individuals also increased, but deposits by the public decreased slightly. The above figures represent the combined activity of the two banks located in Rockwall County. Individually, Rockwall's bank experienced a 23.5 percent increase in deposits and the one in Royse City had a 21.0 percent increase. (See Tables 53 and 54 in Appendix B for more detailed information.) The increase in individual deposits appeared rather favorable in the light of an over-all decrease in the county's population.

Value of Bank Loans

Table 44 shows the change in the total value of bank loans made in Rockwall County between 1955 and 1961. Because 1955 was one of the drought years when excessively high agricultural loans were made, there was a 2.5 percent net decline in the total value of loans made. Actually, loans to all other groups experienced increases during this time. For example, loans to commercial, industrial, and manufacturing concerns increased by 262 percent. These were capital and operation expenditure loans made primarily to the new firms located in the county.

When the financial activities of the two towns are viewed separately, it is seen that the Rockwall bank actually had a net increase in loans of 1.4 percent. The major difference between the banks was in the area of consumer loans. There was a 21.4 percent decline in consumer loans for the Royse City bank versus a 76.5

percent increase of the same for the Rockwall bank. Both banks had over a 200 percent increase in the commercial, industrial and manufacturing type loans. Again Tables 53 and 54 in Appendix B present more complete information on the bank loan situation.

Enrollment in Public Schools

School enrollment declined 1.3 percent in Rockwall County between 1955 and 1961. (See Table 44.) The above figure represents both the urban and rural enrollment in the two school districts in the county. The enrollment of pupils living in Rockwall (urban area) increased by 6 percent, but declined in Royse City by 21.5 percent. Rural enrollment in the Rockwall district increased by 20 percent and declined in Royse City's by 13 percent. Thus, all the decline was generated in the Royse City school district. (See Table 55 in Appendix B for a detailed breakdown.)

The over-all decline in enrollment in Rockwall County has been taking place for over 20 years. This loss is primarily a result of the trend of movement of people from farms to cities and is general in practically all agricultural areas. The above figures indicate that the Rockwall school district has slowed this trend during the past six years.

Water Connections

The town of Rockwall has had a 29.7 percent increase in the number of water connections between 1955 and 1961. Royse City had an increase of 13.3 percent. (See Table 44.) This, while of no particular significance in itself, tends to confirm the fact that more residences and other types of buildings are being constructed and occupied than are being vacated. Rockwall has had a gradual increase in the number of connections every year between 1951 and 1961. Royse City has also had a gradual increase every year since 1955. (For annual figures, see Table 56 in Appendix B.)

In 1952, Rockwall had 50 business connections versus 68 in 1961. This represents an increase of 18 or 36 percent between 1952 and 1961. Comparable comparisons could not be obtained for Royse City.

An attempt was made to obtain the number of customers using electricity in each town for the above period, but since the electric company involved only keeps its back records for four years, such data were not available prior to 1958. From 1958 forward, both the urban and rural areas have shown a gradual increase in the number of electric connections.

Motor Vehicles Registered

Table 44 shows that between 1955 and 1960, the number of motor vehicles registered in Rockwall County increased by 4.1 percent. A longer term history is shown in Table 57 of Appendix B. This shows a gradual increase since about 1952. Since the increase has been fairly consistent, and since automobile ownership is considered to be one indication of economic activity, this data tends to substantiate the contention of continued economic growth and development in the county.

APPENDIX A

Objectives and Procedures

Objectives:

The purpose of this study was to determine the economic effects of a four lane divided highway (a limited access facility of the Interstate Highway System) on a primarily agricultural area near an urban center. The results of such a study may be used in anticipating the economic effect that portions of the Interstate System will have (or has had) upon other comparable areas. The principal objectives of this study were:

1. To determine the changes that have occurred in land values during a period before and after construction of the new highway.
2. To relate these changes to the facility from the standpoint of both proximity and cause.
3. To determine the changes that have taken place in land use within the proximity of the new facility versus changes in general land use of land further removed.
4. To determine the relationship of land use to land values of land in the vicinity of the new highway as such land changes uses.
5. To determine the effect of the new highway facility upon over-all business activity in the area which is served by it.
6. To determine the effects of the new facility on general travel habits within the area.
7. To determine other economic changes as might be revealed by a study of the area. Data to be collected would give a reflection on the general community development of the area.

Procedures:

A uniform set of procedures was developed for use in each of the economic impact study areas. Except where local conditions made deviations necessary, the same procedures were followed in each area.

A. The procedures followed in developing and analyzing the land value information were as follows:

1. Area Selection:

   A general area was first selected for study. The Interstate Highway facility in this area had, in the opinion of the Project Advisory Committee, been constructed long enough for changes in land use and land values to become apparent and for variation in over-all area business activity to be discernible. This area is located in Rockwall County. It extends along new Interstate Highway 30 through the whole county.

2. Boundary Selection:

   a. Exterior boundaries of the area were carefully selected to permit the inclusion of the major expected influence zone and still keep the area to a manageable size.

   b. Interior boundaries were drawn so that properties were divided into two classes for analytical purposes — abutting and nonabutting.

   c. Such additional interior divisions as seemed feasible were made in each area.

3. Time Periods:

   To measure changes in land value, time periods were selected to present a before and after construction comparison. The before period was 1944-48, and the after period was 1949-61. The latter period was further divided into three periods to make all the time periods approximately the same length. To do a sectional study, it was then necessary to arrange the data into three different time periods determined by the construction schedule for each section. The periods for each section are presented in the text of the report.

4. Property Identification:

   Through use of county records, A.S.C. maps, and aerial photos and State right of way strip maps, each piece of property within the study area was identified and the owner recorded.

5. Land Sales:

   Through the use of ownership maps, each property transaction was traced through the deed records in the County Clerk's office. Sales prices were recorded for each legitimate sale. In cases where the actual consideration was not revealed, the median of the range as revealed by the Federal Revenue Stamps was used. (These stamps are affixed in multiples of $.55 per $500.) Only unimproved land sales were used in the analysis, except for large tracts where the improvement values were insignificant in relation to the total price. No sales of land located within the city limits of the towns of Rockwall County were used in the analysis, except in the case of the town of Rockwall which expanded its city limits into the study area during the after period.

6. Control Area:

   The control area for the Rockwall study area was the rest of Rockwall County. This area represents properties similar to those prevalent in the study area prior to construction of the Interstate System.

7. Statistical Treatment of Sales:

   a. To remove the effect of general inflation over the large number of years studied, each sale's price was deflated by the Bureau of Labor Statistics' Consumer Price Index (1947-1949=100). This reduced all sales prices to a common dollar value base. (See schedule in next section.)

   b. The sales were next converted to a common price per acre so that comparisons could be made from a common unit base.

   c. All sales were then grouped according to the various classifications being considered.

   d. Changes were shown as both actual and percentage changes on an area weighted basis and without area weights.

B. The procedures followed in the analysis of land use changes were as follows:

1. Land use for the last year in the base period for each section was investigated and recorded for each piece of property within the study area. This use was then compared to the present land use as shown by determinations for 1961.

2. Properties were grouped into nine classes according to the following system of land uses.

   a. Agricultural Land

      (1) Used primarily for agricultural purposes.

      (2) Minimum size 10 acres. (Exception: truck or other intensive type farm minimum size 2 acres.)

   b. Land Held for Future Use

      (1) Generally considered to be held for future use rather than its utility at present.

      (2) May be farmed or grazed or used for other agricultural purposes during interim period.

   c. Rural Residence

      (1) Used primarily as a dwelling place. Must have habitable house but need not necessarily be occupied.

      (2) Outside city limits.

      (3) Maximum size 10 acres: Larger size becomes either a or b above, depending on whether farming activity is carried on. (Exception: truck or other intensive type farm maximum size 2 acres.)

   d. Urban Residence

      (1) Dwelling unit inside city limits.

      (2) Subdivisions outside city limits.

      (3) Maximum size 5 acres (larger plots will be classed as b above.)

   e. Commercial—Traffic-Serving

      (1) Any commercial firm deriving more than 50 percent of its income from traffic.

      (2) Primarily nonmanufacturing.

   f. Commercial—Nontraffic Serving

      (1) Any commercial firm deriving less than 50 percent of its income from traffic.

      (2) Primarily nonmanufacturing.

   g. Industrial

      (1) Manufacturing firm.

   h. Institutional-Municipal

      (1) Any publicly-owned property (city, county, state or Federally-owned property).

      (2) Any group-owned or operated property (churches, schools, cemeteries, etc.)

   i. Over-flow Bottom Land or Inundation Area

      (1) In the before period, this was land in the Trinity River bottom which was subject to frequent overflow. It was not protected by levees, and most of it was dense woodland. Much of it was covered most of the year with stagnant water, making it undesirable even for livestock.

      (2) In the after period, the same area above plus additional land was classed as the inundation area for the Forney Reservoir.

C. The procedures followed in relating changes in land value to changes in land use were as follows:

1. Land use at time of sale was determined according to the classifications in B above for each piece of property that sold. Post-sale use was also determined for each property.

2. Each sales card was classified in accordance with the changes in land use attendant to the sale.

3. Analyses were run on each land use classification change. All sales were grouped by use changes and the analysis was made on the basis of relative changes in the area weighted price per acre.

4. The relationship between the changes in land use and land value is shown graphically.

D. The procedures followed in determining the effects of the new facilities on retail business activity were as follows:

1. It was decided to use the gross sales figures of retail businesses as the most practical measure of business activity.

2. A complete inventory of businesses along both the old and new routes was made.

3. All retail businesses located on the old route within the study area were personally interviewed by members of the research staff. A concerted effort was made to obtain gross sales figures for both the last year before construction of the new highway (1955) and the last year prior to opening the facility (1961). Additional information concerning the operation of each business was also obtained.

4. All retail businesses located on the new route were interviewed and a record of 1961 sales was obtained. Since the new route was located on a new location, most of the businesses were not established until after the new highway had been opened.

5. All businesses were classified into homogeneous groups such as service stations, motels, etc. These groups were then classed as traffic serving or nontraffic serving businesses in accordance with their dependence on traffic for their revenue.

6. In analyzing the effect of the new facility on business activity, as many as eight major combinations of businesses were used for comparative purposes; a further breakdown of these combinations was accomplished by other groupings of the businesses. The number of comparisons used depended upon the availability of data in each case. These comparisons are:

   a. Business Comparisons

      (1) Cooperating old businesses — old route.

      (2) Total old businesses—old route (derived by adding in the calculated volumes for noncooperating businesses).

      (3) New businesses—old route (those established after the new facility had opened).

      (4) All businesses—old route.

      (5) Old businesses—new route.

      (6) New businesses—new route.

      (7) All businesses—new route.

      (8) All businesses—both routes.

   b. Business Grouping

      The purpose in grouping the businesses was to allow an inspection of the effects on businesses from several viewpoints. We are interested in the influence of the new facility from the following standpoints.

      (1) As it influences particular groups of old firms located on the old route.

      (2) As it influences traffic serving as opposed to nontraffic serving old businesses on the old route.

      (3) As it influences activity of the old route as a whole (old plus new firms).

      (4) As it influences the development within the entire area under study (both old and new routes.)

E. The procedures followed in determining the changes in travel habits of residents in the area were as follows:

   1. Personal interviews were conducted with key city and county officials and other individuals, such as owners of the local businesses and representatives of the banks, newspapers, and Chambers of Commerce located in Rockwall and Royse City.

   2. The above sources were asked to give an estimate of the number of people commuting to Dallas from the local area by way of the new highway after its completion.

   3. Other questions were asked to establish the various reasons for using the new highway versus that of the old route.

F. The procedures followed in determining other economic changes which occurred in the area during the period studied were as follows:

   1. Personal Interviews were conducted to obtain data which would indicate the general economic changes of the area.

   2. A list of the various data collected is presented below:

      a. Number of persons employed by local commercial and manufacturing firms.

      b. The assessed tax values for tax purposes in the towns of Rockwall and Royse City.

      c. Building permit values for Rockwall and Royse City.

      d. Bank deposits and loans of the two banks in the county.

      e. Public school enrollment in the county, urban and rural.

      f. The number of utility connections (water and electric) in Rockwall and Royse City.

      g. The number of motor vehicle registrations in the county.

APPENDIX A (Cont.)

Consumer Price Index

As a means of measuring price changes, constant dollars were calculated and presented in the analysis of this report. The actual dollars were multiplied by the reciprocal of the consumer price index for the United States, as published by the U. S. Department of Commerce, Bureau of Labor Statistics, to arrive at the constant dollar value.

Below is a listing of the consumer price index and its reciprocal for each year involved. The base was 1947-49=100.

Year	Index	Reciprocal
1944	75.2	1.330
1945	76.9	1.300
1946	83.4	1.200
1947	95.5	1.047
1948	102.8	0.973
1949	101.8	0.982
1950	102.8	0.973
1951	111.0	0.901
1952	113.5	0.881
1953	114.4	0.874
1954	114.8	0.871
1955	114.5	0.873
1956	116.2	0.861
1957	120.2	0.832
1958	123.5	0.810
1959	124.6	0.803
1960	126.5	0.791
1961	127.9	0.782

APPENDIX B

Other Supporting Data in Tabular Form

Table 45

LAND USE CHANGES OF STUDY AREA PROPERTY COMPARED WITH THE NUMBER OF TIMES PROPERTIES SOLD

Number of Times Properties Sold	Number of Sales by Land Use Class Changes					
	1 to 1	1 to 2	1 to 3, 6, 7, & 8	2 to 2	2 to 3	2 to 5 & 7
No Repeat	108	33	38	13	2	3
Base Sale[1]	27	8	0	3	0	0
First Repeat	23	2	2	8	3	0
Second Repeat	1	0	1	0	0	0
Total	159	43	41	24	5	3

[1]First sale of properties selling more than once.

Table 46

CHANGES IN THE AVERAGE DAILY TRAFFIC VOLUMES TO AND FROM THE CITY OF ROCKWALL VIA HIGHWAYS AND FARM ROADS, 1950 VERSUS 1961

Location to City	Average Daily Traffic During		Change in ADT Between	
	1950	1961	1950	1961
	(ADT)	(ADT)	(ADT)	(Percent)
Old Route US 67				
West Side	3,990	1,660	—2,330	— 58.4
East Side	3,670	1,030	—2,640	— 71.9
IH 30				
West Side		6,870	+6,870	NA
East Side		6,270	+6,270	NA
Total West Side	3,990	8,530	+4,540	+113.8
Total East Side	3,670	7,300	+3,630	+ 98.9
SH 205				
North Side	500	940	+ 440	+ 88.0
South Side	610	800	+ 190	+ 31.1

Source: Texas Highway Department.

Table 47

CHANGES IN THE AVERAGE DAILY TRAFFIC VOLUMES TO AND FROM THE CITY OF ROYSE CITY VIA HIGHWAYS AND FARM ROADS, 1950 VERSUS 1961

Location to City	Average Daily Traffic During		Change in ADT Between	
	1950	1961	1950	1961
	(ADT)	(ADT)	(ADT)	(Percent)
Old Route US 67				
West Side	3,710	1,050	—2,660	— 71.7
East Side	3,670	1,100	—2,570	— 70.0
IH 30				
West Side		6,450	+6,450	NA
East Side		5,590	+5,590	NA
Total West Side	3,710	7,500	+3,790	+102.2
Total East Side	3,670	6,690	+3,020	+ 82.3
FH 548				
South Side	290	420	+ 130	+ 44.8

Source: Texas Highway Department.

Table 48

PERCENT CHANGES IN GROSS DOLLAR VOLUME OF THIRTY-SIX NONTRAFFIC-SERVING BUSINESSES OPERATING IN ROCKWALL AND ROYSE CITY ALONG OR NEAR OLD U. S. 67 DURING 1955 AND 1961[1]

Type of Business	Percent Change in Gross Sales from 1955 to 1961				
	City of Rockwall		Royse City		Both Cities
	Number	Percent	Number	Percent	Percent
10 Grocery	6	+19.4%	4	+42.3%	+29.1%
8 Increased Volumes	5	+27.1	3	+56.5	+38.9
2 Decreased Volumes	1	—24.8	1	—10.2	—17.3
6 Automotive	3	—37.6	3	—11.3	—30.1
4 Increased Volumes	2	+20.4	2	+19.7	+20.1
2 Decreased Volumes	1	—49.3	1	—44.6	—48.7
5 Personal Service	3	+32.6	2		+27.1
2 Increased Volumes	2	+44.4	0		+44.4
3 Constant Volumes	1		2		
5 Furniture, Hardware & Appliances	3	+24.9	2	+34.3	+26.4
5 Increased Volumes	3	+24.9	2	+34.3	+26.4
4 Dry Goods and Variety	3	+00.5	1	+26.9	+05.3
2 Increased Volumes	1	+42.1	1	+29.9	+33.5
2 Decreased Volumes	2	—08.2	0		—08.2
4 Lumber Yards	2	—17.6	2	—24.5	—19.2
4 Decreased Volumes	2	—17.6	2	—24.5	—19.2
2 Others	2	+17.2	0		+17.2
1 Increased Volumes	1	+22.4	0		+22.4
1 Decreased Volumes	1	—07.5	0		—07.5
Total 22 Increased Volumes	14	+24.5%	8	+34.5%	+28.2%
Total 3 Constant Volumes	1		2		
Total 11 Decreased Volumes	7	—42.6	4	—35.6	—41.5
Total 36 Businesses	22	—20.9%	14	+04.7%	—14.8%

[1]One business was located in Fate and was left out of this table, but was included in Table 40.

Table 49

CHANGES IN THE CITY TAX VALUATIONS OF PROPERTY IN THE CITY OF ROCKWALL, 1951-61

Tax Year	Dollar Valuations			
	Real Property	Percent Change	Total Property[1]	Percent Change
1951	$ 929,061		$1,199,732	
		+10.7		+ 11.1
1952	$1,028,553		$1,333,257	
		5.8		5.4
1953	1,088,188		1,405,388	
		6.2		4.6
1954	1,155,367		1,470,629	
		7.9		7.8
1955	1,246,640		1,585,666	
		13.8		8.2
1956	1,418,976		1,716,192	
		8.2		7.0
1957	1,535,468		1,835,528	
		3.4		3.0
1958	1,587,248		1,890,930	
		3.5		3.8
1959	1,642,856		1,962,262	
		1.3		9.1
1960	1,856,276		2,139,978	
		17.8		49.1
1961	2,187,122		3,190,305	

Increase Between 1951 and 1956			
Real Property	$ 489,915	=	52.7%
Total Property	516,460	=	36.4
Increase Between 1956 and 1961			
Real Property	$ 768,146	=	64.0%
Total Property	1,474,113	=	85.9
Increase Between 1951 and 1961			
Real Property	$1,258,061	=	135.4%
Total Property	1,990,573	=	165.9

[1]Includes both real and personal property.
Source: Tax Assessor of the Town of Rockwall.

Table 50

CHANGES IN THE CITY TAX VALUATIONS OF PROPERTY IN THE TOWN OF ROYSE CITY, 1951-61

Tax Year	Dollar Valuations			
	Real Property	Percent Change	Total Property[1]	Percent Change
1951	$427,914		$636,354	
		— .2%		+ .7%
1952	427,658		640,618	
		4.2		5.5
1953	445,716		676,081	
		5.7		3.9
1954	470,939		702,465	
		12.9		8.8
1955	531,624		764,199	
		2.8		1.0
1956	546,640		771,799	
		4.5		4.1
1957	570,984		803,066	
		1.0		1.8
1958	576,745		817,500	
		9.3		1.9
1959	630,501		833,010	
		4.1		1.9
1960	656,029		849,037	
		2.4		2.0
1961	671,586		866,322	

Increase between 1951 and 1956			
Real Property	$118,726	=	27.7%
Total Property	135,445	=	21.3
Increase Between 1956 and 1961			
Real Property	$124,946	=	22.9%
Total Property	94,523	=	12.2
Increase Between 1951 and 1961			
Real Property	$243,672	=	56.9%
Total Property	229,968	=	36.1

[1]Includes both real and personal property.
Source: Tax Assessor of the town of Royse City.

Table 51

THE DOLLAR VALUE OF BUILDING PERMITS ISSUED FOR NEW CONSTRUCTION AND BUILDING REPAIRS BY THE TOWN OF ROCKWALL, 1952-61

Year Issued	Building Permit Values					
	Residential[1]		Commercial[2]		Total	
	Number	Value	Number	Value	Number	Value
1952	7	$ 30,625	0	$	7	$ 30,625
1953	20	132,820	4	28,500	24	161,320
1954	29	163,710	2	11,300	31	175,010
1955	38	262,250	3	3,500	41	265,750
1956	17	166,000	0		17	166,000
1957	14	88,166	0		14	88,166
1958	11	33,570	0		11	33,570
1959	35	99,100	2	82,000	37	181,100
1960	30	192,000	1	15,000	31	207,000
1961	30	113,083	0		30	113,083
1952-56	111	$ 755,405	9	$ 43,300	120	$ 798,705
1957-61	120	525,919	3	97,000	123	622,919
Dollar Change		$—229,486		$+53,700		$—175,786
Percent Change	+9%	—30.4%	—67%	+124%	+3%	—22%

[1]Includes churches.
[2]Includes manufacturing.
Source: City of Rockwall.

Table 52

THE DOLLAR VALUE OF BUILDING PERMITS ISSUED FOR NEW CONSTRUCTION AND BUILDING REPAIRS BY THE TOWN OF ROYSE CITY, 1959-61

Year Issued	Building Permit Values					
	Residential		Commercial		Total	
	Number	Value	Number	Value	Number	Value
1959	11	$ 64,450	7	$ 63,000	18	$127,450
1960	7	53,300	6	53,485	13	106,785
1961	12	78,900	3	1,010	15	79,910
TOTAL	30	$196,650	16	$117,495	46	$314,145

Source: City of Royse City.

Table 53

CHANGES IN BANK DEPOSITS AND LOANS MADE AT ROCKWALL STATE BANK BETWEEN 1955-61

Item	Amount of Dollars For		Change From 1955 to 1961	
	1955	1961		
	(Dollars)	(Dollars)	(Dollars)	(Percent)
Total Deposits	$1,493,000	$1,843,800	+350,800	+ 23.5%
By Individuals	1,097,000	1,188,900	+ 91,900	+ 8.4
By Public	310,000	291,000	— 19,000	— 6.1
Time	85,000	348,000	+263,000	+309.4
Total Loans				
Agricultural	425,300[1]	225,000	—200,300	— 47.1
Commercial, Industrial & Manufacturing	42,000	180,400	+138,400	+329.5
Real Estate	150,800	125,000	— 25,800	— 17.1
Consumer	129,200	228,000	+ 98,800	+ 76.5

[1]Excessively large because of drought.
Source: Rockwall State Bank.

Table 54

CHANGES IN BANK DEPOSITS AND LOANS MADE AT THE CITIZENS STATE BANK OF ROYSE CITY BETWEEN 1955-61

Item	Amount of Dollars For		Change From 1955 to 1961	
	1955	1961		
	(Dollars)	(Dollars)	(Dollars)	(Percent)
Total Deposits	$1,266,000	$1,532,000	+266,000	+ 21.0%
Total Loans	644,000	599,000	— 65,000	— 9.8
Agricultural	376,000[1]	182,000	—194,000	— 51.6
Commercial	52,000	160,000	+108,000	+207.7
Real Estate	56,000	82,000	+ 26,000	+ 46.4
Consumer	220,000	173,000	— 47,000	— 21.4

[1]Excessively large because of drought.
Source: Citizens State Bank, Royse City.

Table 55
CHANGES IN SCHOOL ENROLLMENT BY SCHOOL DISTRICTS IN ROCKWALL COUNTY, 1955-61

School Year	Total School Enrollment					
	Rockwall District[1]			Royse City District		
	Urban	Rural	Total	Urban	Rural	Total
1955-56	318	405	723	349	354	703
1956-57	337	400	637	289	354	643
1957-58	356	421	777	278	321	599
1958-59	336	440	776	248	350	598
1959-60	375	467	842	297	305	602
1960-61	338	487	825	274	308	582

[1]Transfers from out of county are excluded.
Source: County School Superintendent and High School Principals of Rockwall and Royse City Independent School Districts.

Table 56
TOTAL NUMBER OF WATER CONNECTIONS IN THE TOWNS OF ROCKWALL AND ROYSE CITY EACH YEAR, 1951-61

	Total Number of Water Connections			
	Rockwall	Increase	Royse City	Increase
	(Number)	(Number)	(Number)	(Number)
1951	460			
		85		
1952	545		400	
		33		
1953	578			
		37		
1954	615			
		25		
1955	640		375	
		61		25
1956	701		400	
		17		0
1957	718		400	
		62		5
1958	780		405	
		10		5
1959	790		410	
		4		5
1960	794		415	
		36		10
1961	830		425	

Source: Towns of Rockwall and Royse City.

Table 57
TOTAL NUMBER OF MOTOR VEHICLES REGISTERED IN ROCKWALL COUNTY EACH YEAR, 1951-61

Year	Total Number of Vehicles In Rockwall County	Increase or Decrease
1951	5,068	
		—1,262
1952	3,806	
		— 92
1953	3,714	
		649
1954	4,363	
		77
1955	4,440	
		— 57
1956	4,383	
		12
1957	4,395	
		14
1958	4,409	
		423
1959	4,832	
		160
1960	4,992	
1961	4,622	
		— 370

Source: Texas Highway Department Biennial Report.