CHANGES IN LAND VALUE, LAND USE, AND BUSINESS ACTIVITY ALONG THREE SECTIONS OF THE INTERSTATE HIGHWAY SYSTEM IN TEXAS

A Study of the Economic Impact of the Interstate Highway System on Local Areas

by

C. V. Wootan
C. R. Haning
H. G. Meuth
J. N. Slater
TEXAS TRANSPORTATION INSTITUTE

This report is a result of a cooperative research project between the Texas Highway Department, the U.S. Bureau of Public Roads and the Texas Transportation Institute.

INTRODUCTION

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 which 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 was 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 preliminary report.

OBJECTIVES AND PROCEDURES

Objectives:

One of the principle objectives of this study was to measure any changes in land values that occurred during a specified period of time within given areas near the Interstate Highway System. A second part of thi objective was to determine the extent to which these changes might be attributed to or associated with the construction and operation of that facility. Another principle objective was to determine the changes in land use that may have occurred within these same areas, and to attempt to explain these changes in terms of influence by the facility. Still another objective was to determine the relationship of land use to land values, as land in the area of the highway facilities progresses through sequential uses. A final objective was to determine the effect of the highway facility upon over-all business activity in the areas which were served by it.

Procedures:

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

   1. Area Selection:

      Three general areas were selected for study. The Interstate Highway facilities in these areas 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.

These areas were:

a. An area in Austin from the intersection of U.S. 290 north to Walnut Creek.

b. An area in Temple from the intersection of State 36 north to near the intersection of old U.S. 81.

c. An area along new U.S. 67 through Rockwall County.

2. Boundary Selection:

a. Exterior boundaries of each area were carefully selected to permit the inclusion of the major expected influence area 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, three time periods were chosen for each area. The length of each period was determined by the construction schedule for each area. The periods were selected as follows:

a. Study Period - The study period was the length of time from the completion of construction through 1957.

b. Construction Period - The construction period was the time from the announcement of location through completion of construction.

c. Base Period - The base period was a 4-8 year period preceding the announcement of construction of the facility. The exact

length of the base period was partially determined by the availability of sales information.

4. Property Identification:

Through use of city records, county maps, A.S.C. aerial photos and State right-of-way strip maps, each piece of property within each 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 from each legitimate sale. In cases where the actual consideration was not revealed, the median of the range as revealed by Federal Revenue Stamps was used. (These stamps are affixed in multiples of $ .55 per $500.) Since most of the study area properties were located outside the city limits, city tax records, showing evaluations for land and improvements separately, were not available for use. This meant that it was not possible to deduct improvement valuations from total sales prices in most instances. For this reason only unimproved properties were used outside the city limits. Fortunately most of the sales had been made without improvements.

6. Control Areas:

Specific control areas were selected for both the Austin and Temple study areas. These control areas were selected as representing properties similar to those prevalent in the study area prior to construction of the Interstate system. Entire land surveys were used as control areas, and all land sales

within each survey were recorded. In the Rockwall area the entire county was used as a control area. All land sales within the county were recorded for comparison with study area sales.

7. Statistical Treatment of Sales:

   a. To remove the effect of general inflation over the large number of years studied, each sale 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.

   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.

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 was investigated and recorded for each piece of property within the study areas. This use was then compared to the present land use as shown by determinations for 1957.

2. Properties were grouped into eight 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.

(3) May be either inside or outside city limits.

c. Rural Residence

(1) Used primarily as a dwelling place. Must have occupiable 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.).

3. Changes in land use are shown graphically by means of before and after land use maps.

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 price.

4. The relationship between the changes in land use and land value are shown both graphically and in tabular form.

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 personlly interviewed by members of the research staff.

A concerted effort was made to obtain gross sales figures for both the last year of the study period (1957) and the last year prior to opening the new facility. 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 1957 sales was obtained. Since the new routes were located on a new location, businesses were not established on them until after the new routes had been opened for business.

5. All businesses were classified into homogeneous groups such as service stations, motels, etc. These groups were then classed as traffic-serving or nontraffice-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 six combinations of businesses were used for comparison of each group of 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) New businesses - new route

      (6) All businesses - both routes

b. Business Grouping

The purpose in grouping the businesses in this manner was to allow an inspection of the effects on businesses from several viewpoints. We are interested in the influences 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).

AUSTIN AREA

General

Austin, the capitol of Texas, is a city with an estimated population of about 185,000 located in Travis County, in sourtheastern-central Texas. The city has a diversified economy based on State Government payrolls, educational and eleemosynary institutions, industry, agriculture and tourist trade. Since its economy is well diversified, the city and its surrounding areas have shown a more stable pattern of growth than has been evidenced in many other cities of the State. Its rate of growth, however, has been substantial, as evidenced by an estimated population increase of over 50,000 between 1950 and 1957.

Austin is served by four major U.S. Highways. U.S. 290, carrying traffic between Houston and El Paso, traverses the city from east to west. U.S. 183, extending from Refugio near the coast through western Oklahoma, runs through the city from north to south. U.S. 79 comes from Shreveport, Louisiana, and joins with U.S. 81 about 25 miles north of Austin. Interstate Highway 35 (U.S. 81) is a major traffic artery between Laredo on the Mexican border and Texarkana in the extreme northeast. It also serves San Antonio to the south and Dallas to the north. U.S. 81 extends through Austin from north to south.

STUDY AREA

The Austin study area is located along a 5-mile section of U.S. 81, beginning at the intersection with U.S. 290 and extending north to Walnut Creek. Because of the irregular nature of the city limits, only the first 1.2 miles of this area are wholly within the city. The next 1.6 miles are partially within the city, and the most northern 2.2 miles are completely outside the city limits

Figure 1. The area included in this study averages slightly over one mile in width. The exact boundaries were determined by existing property lines and the proximity to Old U.S. 81. A total of 3,250 acres of land are included within the area.

This section of roadway was not originally constructed as a part of the Federal Interstate System. The section near Austin was planned and constructed as a relocated four-lane divided expressway-type highway, designed to facilitate the movement of north-south traffic into and through the city. Its new location was considerably east of the old highway.

Purchases of rights-of-way for the new facility were begun in late 1948. The City of Austin furnished all rights-of-way within the city limits, and Travis County furnished those outside the city. Rights-of-way purchases were largely completed in 1951. The 300-foot, minimum-width right-of-way was acquired at an estimated cost of about $500,000 for the 5-mile section included in this study.

Construction was begun in late 1951, and the entire section was officially completed in June, 1954. The completed facility consists of four traffic lanes divided by a median strip, with two-lane frontage roads along either side. Full control of access has not yet been achieved, since several crossovers and at-grade crossings are still in use. Complete control of access will be achieved, however, as this section is brought to Interstate standards.

CONTROL AREAS

In order to isolate the influence of the new facility on surrounding property values from general price appreciation because of the normal expansion of the city, it was necessary to select control areas. Ideally, a control area

should have all the characteristics of the study area, with the exception of the facility. The differences in price movements between the study and control areas would then reflect the net influence of the facility on property values. It is, of course, impossible to find a perfect control area. A concerted attempt was made, however, to locate control areas with the same general characteristics of land ownership, use, quality and accessibility as the study area. To do this, it was necessary to select several different sections of land--each with slightly differing characteristics.

Technical considerations in the field made it necessary to select entire land surveys as controls. Property transactions are carried in the records of abstract companies by surveys, and all sales within a given survey are recorded by years. By using these records, it is possible to obtain all the property transactions within a given area for a number of years without tracing individual land owners through the county deed books.

Six different land surveys were finally selected as a control for the Austin study area. These were the Mariquita Castro and William Caldwell survey northeast of the study area; the James Burleson and Phillip McElroy surveys to the east and southeast; the William Lewis Sr. survey to the south and the Theodore Dissel survey to the southwest (Figure 1:1). These surveys were each approximately one Spanish League in size and collectively included over 27,000 acres of land.

The land included in these surveys was quite similar to that in the study area during the base period. It was all outside the city limits, but fairly near the city. Most of the land was open, much of it was being used in agricultural production, and very little commercial or industrial development had taken place.

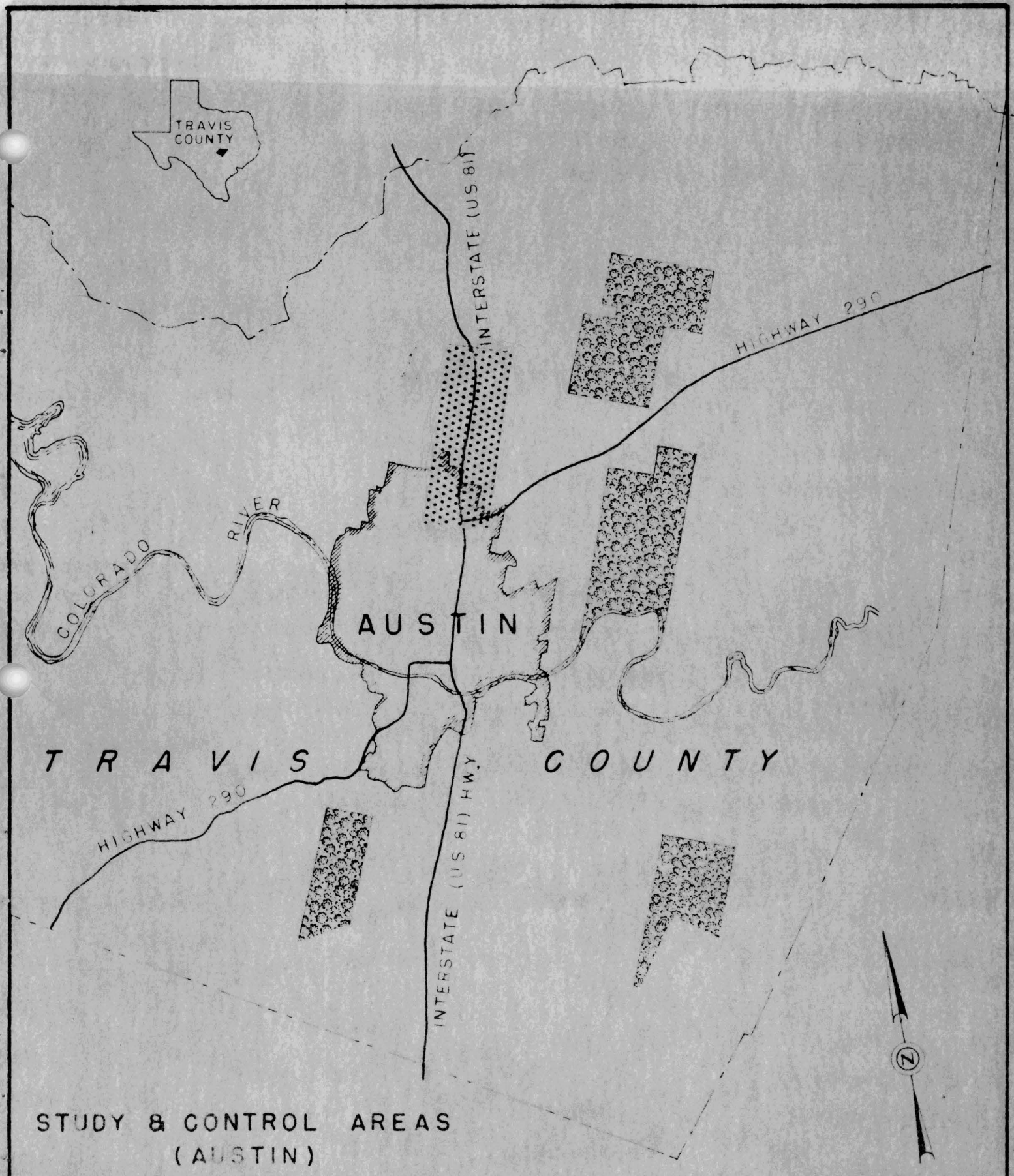

TRAVIS COUNTY
INTERSTATE (U.S. 81)
HIGHWAY 290
COLORADO RIVER
AUSTIN
TRAVIS COUNTY
HIGHWAY 290
INTERSTATE (U.S. 81) HWY
N
STUDY & CONTROL AREAS
(AUSTIN)
- STUDY AREA
- CONTROL AREAS
0 1 2 3 4 Miles

Figure 1:1

Land Values

The comparative method of analysis was used in this part of the report to show changes in land prices between the three periods under study. Prices within the study area were compared with control area prices, and certain interior classifications were compared within the study area proper. The interior classifications were devised so as to relate changes in value to the proximity of the land to the facility (abutting and nonabutting) and proximity to the central business district of Austin (section 1 and section 2).

As was mentioned previously, the seventeen-year period under study was divided into three separate periods. The first period covered the years 1941-1948 inclusively and served as the base period in determining changes in land values. Property values during this period are not considered to be influenced by the facility. The second period, years 1949-1953 inclusive, was the period during which rights of way were purchased and construction work performed. Changes in land values during this period measure, to a large degree, the extent to which realtors and land owners within the area expect land values to be effectuated as a result of the new facility. Price changes within the third period, years 1954-1957 inclusive, reflect changes that have occurred since completion of the new facility.

The tables in this section of the report present the land value data by two methods. First, the actual or unadjusted per acre prices and changes in prices per acre are shown. Then these per acre prices and changes are adjusted and placed upon a common-dollar base. This adjustment has the effect of weighing each year's sales. The adjusted data will be used primarily in the following discussion of changes in land values.

All land prices referred to within this section of the report relate to unimproved land. In the cases where the sale included the cost of improvements, such improvement costs were eliminated, so as to reflect only unimproved land values. In most instances the improvement costs or values were segregated by application of applicable adjusted tax valuation data or by other methods deemed applicable under the circumstances.

TOTAL LAND VALUES

Table 1:; presents the adjusted data relative to period sales within the study area and control area. Land within the study area increased an average of $1,104 per acre between the first and last periods, as opposed to an increase of only $185 per acre for land situated within the control area. This leaves an adjusted net change of $919 per acre for the study area over the control area.

Of the $1,104 per acre increase in the study area between the base and last periods, 56.7 percent occurred between the middle and last periods. During this same time period, however, 83.8 percent of the $185 per acre increase in the control area occurred. This difference can be partially explained by the fact that many realtors and land owners realized or at least surmised that land values would in all probability increase within the study area after construction of the new facility. As a result there was certain degree of speculative buying involved during the period after the public was informed of the new highway. This type of purchasing caused the land prices to increase at a greater rate during the 1949-1953 period than they normally would have done in the absence of any knowledge that the new expressway was to be constructed.

Table 1:1

ADJUSTED TOTAL LAND PRICES FOR STUDY AND CONTROL AREAS IN AUSTIN
(Adjusted by Consumer Price Index - 1947-49 = 100)

Periods	Number Sales	Number Acres	Average Price Per Acre	Price Changes Per Acre Between Periods	Price Changes Per Acre Between 1st & 3rd Periods	Percentage Changes Between Periods	Percentage Changes Between 1st & 3rd Periods
	(Number)	(Acres)	(Dollars)	(Dollars)	(Dollars)	(Percent)	(Percent)
			STUDY AREA				
1941-48	110*	2,346	$ 307				
				$478		155.7%	
1949-53	47*	1,065	785		$1,104		359.6%
				626		79.7	
1954-57	67*	1,282	1,411				
			CONTROL AREAS				
1941-48	217	20,681	64				
				30		46.9	
1949-53	154*	10,824	94		185		289.1
				155		164.9	
1954-57	95*	3,607	249				

* Does not include number of sales within subdivisions

Table 1:1-A

ACTUAL TOTAL LAND PRICES FOR STUDY AND CONTROL AREAS IN AUSTIN

Periods	Number Sales	Number Acres	Average Price Per Acre	Price Changes for Acre Between Periods	Price Changes for Acre Between 1st & 3rd Periods	Percentage Changes Between Periods	Percentage Changes Between 1st & 3rd Periods
	(Number)	(Acres)	(Dollars)	(Dollars)	(Dollars)	(Percent)	(Percent)
			STUDY AREA				
1941-48	110*	2,346	$ 268				
				$629		234.7%	
1949-53	47*	1,065	897		$1,415		528.0%
				786		87.6	
1954-57	67*	1,282	1,683				
			CONTROL AREAS				
1941-48	217	20,681	52				
				78		150.0	
1949-53	154*	10,824	130		241		463.5
				163		125.4	
1954-57	95*	3,607	293				

* Does not include number of sales within subdivisions

Apparently the land owners' and realtors' expectations were fulfilled, since the land within the study area increased an average of $626 per acre during the years 1954-1957, while land within the control areas increased only $155 per acre during the same period.

Table 1:1-A presents the actual or unadjusted increases in price per acre between the three periods for both the study area and the control area.

NONSUBDIVIDED LAND

The previous section included a discussion of land values for properties in nonsubdivided land and in subdivisions. With certain exceptions, the values for the subdivisions were computed after deducting all improvement and development costs from the sales price of the lots. The exceptions were those subdivisions which were in existence before the year 1949 or before announcement of the proposed new facility. Since those subdivisions had established values during the base periods, it was not necessary to eliminate or segregate development costs in order to show a true picture of their percentage appreciation of value. Improvement values were deducted from the selling prices of lots within these subdivisions, however.

Since subdivision value variances are more pronounced between different sections, it seemed desirable to segregate subdivided land and make a comparison between nonsubdivided or "open" land in the study and control areas.

Table 1:2 shows the influence of the expressway on prices of nonsubdivided land within the study area. There is a difference of more than 300 percent between the increases of land prices in the study area and control areas. This percentage figure relates to an adjusted dollar increase of $960 net. This means

Table 1:2

ADJUSTED PRICES OF NONSUBDIVIDED LAND IN STUDY AND CONTROL AREAS IN AUSTIN
(Adjusted by Consumer Price Index - 1947-49 = 100)

Periods	Number Sales	Number Acres	Average Price Per Acre	Price Changes Per Acre		Percentage Changes	
				Between Periods	Between 1st & 3rd Periods	Between Periods	Between 1st & 3rd Periods
	(Number)	(Acres)	(Dollars)	(Dollars)	(Dollars)	(Percent)	(Percent)
			STUDY AREA				
1941-48	110	2,001	$ 211				
				$381		180.6%	
1949-53	47	675	592		$1,102		522.3%
				721		121.8	
1954-57	67	590	1,313				
			CONTROL AREAS				
1941-48	217	20,681	64				
				29		45.3	
1949-53	154	10,735	93		142		221.9
				113		121.5	
1954-57	95	3,480	206				

Table 1:2-A

ACTUAL PRICES OF NONSUBDIVIDED LAND IN STUDY AND CONTROL AREAS IN AUSTIN

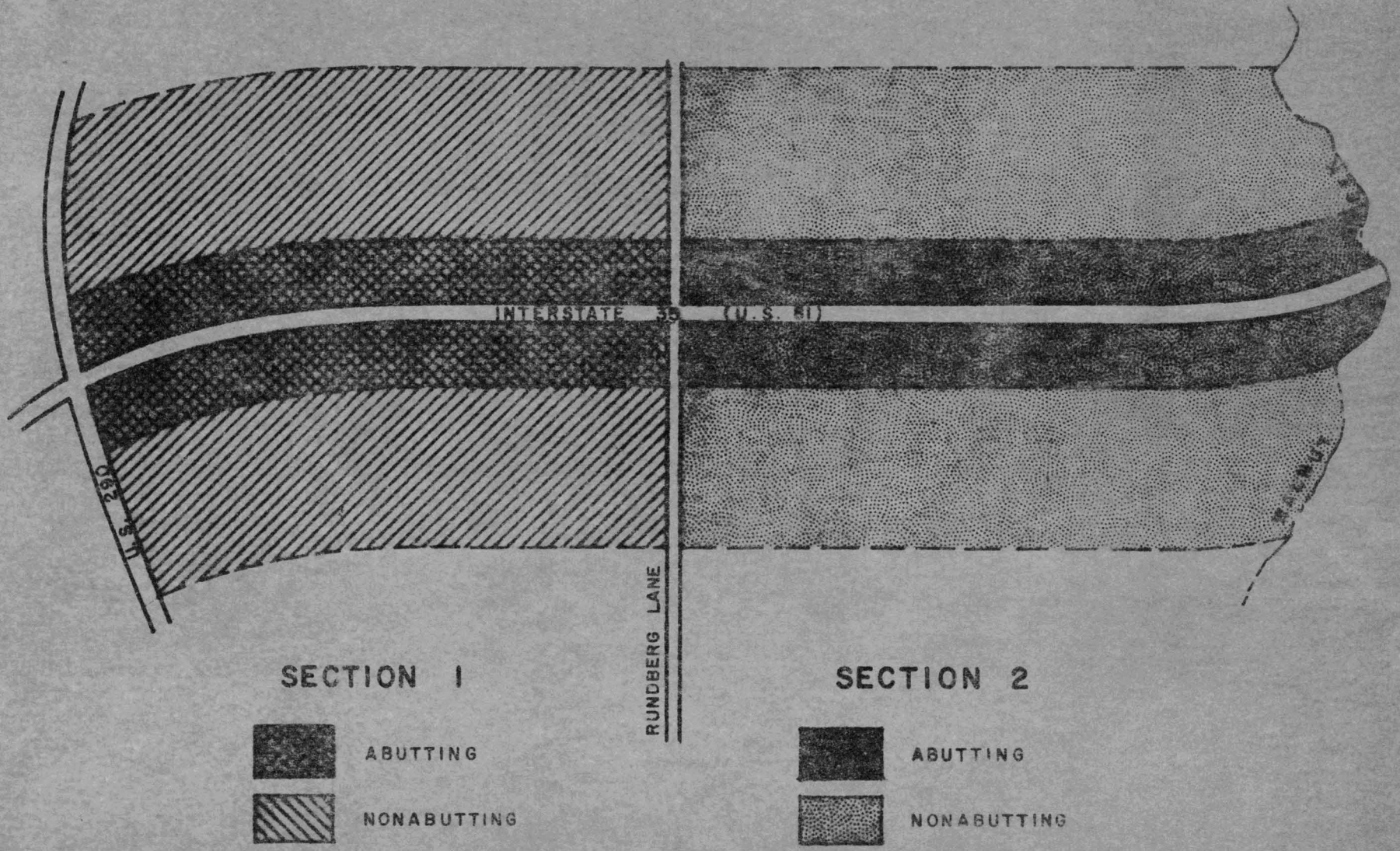
Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Changes Per Acre Between Periods (Dollars)	Price Changes Per Acre Between 1st & 3rd Periods (Dollars)	Percentage Changes Between Periods (Percent)	Percentage Changes Between 1st & 3rd Periods (Percent)
			STUDY AREA				
1941-48	110	2,001	$ 176				
				$484		275.0%	
1949-53	47	675	660		$1,340		761.4%
				856		129.7	
1954-57	67	590	1,516				
			CONTROL AREAS				
1941-48	217	20,681	52				
				52		100.0	
1949-53	154	10,735	104		190		365.4
				138		132.7	
1954-57	95	3,480	242				

that nonsubdivided land values were approximately 300 percent higher in the study area than they would have been in the absence of the new facility. The greater portion of this increase occurred within the last four year period. The percentage increase in nonsubdivided land prices between the second and third periods was almost the same for the study area and the control area. The land within the study area, however, increased an average of $721 per acre compared to an average increase of $113 per acre for land located in the control area.

COMPARISON OF SECTIONS 1 AND 2

Two of the interior classifications within the study area relate to proximity of the land to the central business district of Austin. The study area was divided into two sections for this proximity analysis. Section 1 includes all property from the intersection of U.S. 290 north to Rundberg Lane. (Figure 1:2). Section 2 includes those properties located north of Rundberg Lane and south of Big Walnut Creek. The division line between the two sections corresponds approximately with the present most northerly city limit line of the city of Austin.

It is apparent from a review of Table 1:3 that there were considerable differences in land values between the two sections during the base period of 1941-1948. One factor attributing to the value difference was the different land use in the two sections during that period. Section 1 had 345 acres of land that was subdivided during the base years. The values per acre for subdivided land were naturally greater than for the open land in section 2. The second factor involved can be surmised to be the distance factor. There was an actual dollar difference of $138 per acre between nonsubdivided lands in the two



MAJOR DIVISIONS OF STUDY AREA

FIGURE 1:2

Table 1:3

ADJUSTED LAND PRICES FOR SECTIONS 1 AND 2 IN AUSTIN

STUDY AREA
(Consumer Price Index - 1947-49 = 100)

Periods	Number Sales	Number Acres	Average Price Per Acre	Price Changes Per Acre Between Periods	Price Changes Per Acre Between 1st & 3rd Periods	Percentage Changes Between Periods	Percentage Changes Between 1st & 3rd Periods
	(Number)	(Acres)	(Dollars)	(Dollars)	(Dollars)	(Percent)	(Percent)
			SECTION 1				
1941-48	74*	1,781	$ 375				
				$445		118.7%	
1949-53	29*	708	820		$1,180		314.7%
				735		89.6	
1954-57	25*	583	1,555				
			SECTION 2				
1941-48	36*	565	94				
				620		659.6	
1949-53	18*	356	714		1,197		1,273.4
				577		80.8	
1954-57	42*	700	1,291				

* Does not include number of sales within subdivisions

Table 1:3-A

ACTUAL LAND PRICES FOR SECTIONS 1 AND 2 IN AUSTIN

STUDY AREA

Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Changes Per Acre: Between Periods (Dollars)	Price Changes Per Acre: Between 1st & 3rd Periods (Dollars)	Percentage Changes: Between Periods (Percent)	Percentage Changes: Between 1st & 3rd Periods (Percent)
			SECTION 1				
1941-48	74*	1,781	$ 330				
				$561		170.0%	
1949-53	29*	708	891		$1,478		447.9%
				917		102.9	
1954-57	25*	583	1,808				
			SECTION 2				
1941-48	36	565	75				
				834		1,112.0	
1949-53	18*	356	909		1,505		2,006.7
				671		73.8	
1954-57	42*	700	1,580				

* Does not include number of sales within subdivisions

sections. Since the nonsubdivided land in both sections was essentially the same type, and served by the same traffic facility, it may be generally concluded that the $138 difference in value was mainly an effect of the proximity factor.

After announcement of the proposed interstate route, land prices in general began to increase in the study area, but the prices in section 2 had greater increases than did section 1 land prices. The nonsubdivided land in section 1 increased an average of $184 per acre between the base and second periods, whereas prices in section 2 increased $673 per acre during the same period.

The over-all dollar increase in values per acre for all land were about the same for both sections, but the percentage figures show approximately four times as much increase for section 2 as for section 1.

With the placement of the new facility through this area, the distance from the central business district of Austin became less important. The travel time from many points within section 2 to in-city Austin became less than the previous travel time required from points within section 1. Obviously there are more factors involved in determining causes for the increased land values, but the primary ones seem to be the speed or decreased travel time and ease of accessibility furnished by the new highway. The accessibility feature provided or at least increased the opportunities available for land use changes and resulting land value changes.

Accepting the 289.1 percent increase in land values within the control area as a reflection of general land value increases in the Austin area, the new facility had a net influence on section 1 land prices of 25.6 percent and a net influence of 984.3 percent on section 2 land prices.

ABUTTING AND NONABUTTING PROPERTY

The proximity of lands within the study area to the new facility dictated a comparison on that basis. The separate properties were classified as "abutting" and "nonabutting" parcels. All parcels of land that touched the frontage roads were classified as abutting properties.

Table 1:4 illustrates the fact that there was a considerable difference in the effect on land prices between the abutting and nonabutting property. The abutting property increased in value more than twice as much as the nonabutting property. The adjusted results show that the abutting property received an increase in value of 705.7 percent, and the nonabutting property received an increase of 350.2 percent. This relationship closely paralleled the expected pattern of value increases for the two classifications. It is understandable and to be expected that property nearer the facility would receive maximum benefits in the form of value increases from the facility.

Because of its accessibility to the motoring public, property fronting on an expressway-type facility right of way understandably has a greater "value potential" than does property removed from the facility. Traffic serving enterprises need to be located where the motorists can see the establishments; therefore, locations on abutting properties are the natural choice for such businesses. Other commercial and industrial firms choose such sites because of factors such as ease of access for delivery trucks and employees, and the advertising that can be obtained by having the firm name displayed to passing motorists.

Since there was no distinction made between abutting and nonabutting properties during the base period of 1941-1948, the land values for the total area were used as the base period values in both Table 1:4 and Table 1:4-A.

Table 1:4

ADJUSTED PRICES OF ABUTTING AND NONABUTTING PROPERTIES IN AUSTIN STUDY AREA
(Consumer Price Index - 1947-49 = 100)

Nonsubdivided Land Only

Periods	Number Sales	Number Acres	Average Price Per Acre	Price Changes Per Acre: Between Periods	Price Changes Per Acre: Between 1st & 3rd Periods	Percentage Changes: Between Periods	Percentage Changes: Between 1st & 3rd Periods
	(Number)	(Acres)	(Dollars)	(Dollars)	(Dollars)	(Percent)	(Percent)
ABUTTING PROPERTY							
1941-48*	110	2,001	$ 211				
				$530		251.2%	
1949-53	28	260	741		$1,489		705.7%
				959		129.4	
1954-57	53	285	1,700				
NONABUTTING PROPERTY							
1941-48*	110	2,001	211				
				288		136.5	
1949-53	19	414	499		739		350.2
				451		90.4	
1954-57	14	305	950				

* Figures for this period represent the totals for each classification since there was no distinction made between abutting and nonabutting property during the base period of 1941-48.

Table 1:4-A

ACTUAL PRICES OF ABUTTING AND NONABUTTING PROPERTIES IN AUSTIN STUDY AREA

Nonsubdivided Land Only

Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Changes Per Acre: Between Periods (Dollars)	Price Changes Per Acre: Between 1st & 3rd Periods (Dollars)	Percentage Changes: Between Periods (Percent)	Percentage Changes: Between 1st & 3rd Periods (Percent)
			ABUTTING PROPERTY				
1941-48*	110	2,001	$ 176				
				$ 648		368.2%	
1949-53	28	260	824		$1,794		1,019.3%
				1,146		139.1	
1954-57	53	285	1,970				
			NONABUTTING PROPERTY				
1941-48*	110	2,001	176				
				382		217.0	
1949-53	19	414	558		916		520.5
				534		95.7	
1954-57	14	305	1,092				

* Figures for this period represent the totals for each classification since there was no distinction made between abutting and nonabutting property during the base period of 1941-48.

The expressway influence on abutting nonsubdivided property is computed at 483.8 percent, and the net influence on nonabutting, nonsubdivided property is computed at 128.3 percent. These net influence figures were determined by taking the algebraic difference between the respective percentage increases for abutting and nonabutting lands and the percentage increase in nonsubdivided land in the control area.

ABUTTING PROPERTIES IN SECTIONS 1 AND 2

Since the previous discussion of land values in section 1 as compared to land values of section 2 included all land within each section, it was deemed desirable to segregate the classes of land within each section according to their proximity to the new facility and make a comparison of land value changes in accordance with such segregation. Tables 1:5 and 1:5-A present the adjusted and actual data relative to land value changes for abutting nonsubdivided properties in section 1, as compared to similar properties in section 2. Since there was no distinction between abutting and nonabutting properties during the base period of 1941-1948, the totals for each section were used as the base period data.

It is apparent from Table 1:5 that the market prices of abutting land soared upward in both sections. The percentage increase, however, was much greater for section 2 than for section 1. This can be explained by the fact that average land prices were substantially lower for section 2 properties during the base period.

Notice, however, the similarity of the per acre prices for each section during the last period. This similarity indicates that there was little actual

Table 1:5

ADJUSTED PRICES OF ABUTTING PROPERTIES IN SECTIONS 1 AND 2 OF AUSTIN STUDY AREA
(Consumer Price Index - 1947-49 = 100)

Nonsubdivided Land Only

Periods	Number Sales	Number Acres	Average Price Per Acre	Price Changes Per Acre: Between Periods	Price Changes Per Acre: Between 1st & 3rd Periods	Percentage Changes: Between Periods	Percentage Changes: Between 1st & 3rd Periods
	(Number)	(Acres)	(Dollars)	(Dollars)	(Dollars)	(Percent)	(Percent)
ABUTTING PROPERTY - SECTION 1							
1941-48*	74	1,436	$ 258				
				$ 333		129.1%	
1949-53	15	172	591		$1,443		559.3%
				1,110		187.8	
1954-57	20	208	1,701				
ABUTTING PROPERTY - SECTION 2							
1941-48*	36	565	94				
				939		998.9	
1949-53	13	88	1,033		1,604		1,706.4
				665		64.4	
1954-57	33	77	1,698				

* Figures for this period reflect the totals for each section since no distinction was made between abutting and nonabutting property for the base period of 1941-48.

Table 1:5-A

ACTUAL PRICES OF ABUTTING PROPERTIES IN SECTIONS 1 AND 2 OF AUSTIN STUDY AREA

Nonsubdivided Land Only

Periods	Number Sales	Number Acres	Average Price Per Acre	Price Changes Per Acre: Between Periods	Price Changes Per Acre: Between 1st & 3rd Periods	Percentage Changes: Between Periods	Percentage Changes: Between 1st & 3rd Periods
	(Number)	(Acres)	(Dollars)	(Dollars)	(Dollars)	(Percent)	(Percent)
ABUTTING PROPERTY - SECTION 1							
1941-48*	74	1,436	$ 215				
				$ 430		200.0%	
1949-53	15	172	645		$1,758		817.7%
				1,328		205.9	
1954-57	20	208	1,973				
ABUTTING PROPERTY - SECTION 2							
1941-48*	36	565	75				
				1,099		1,465.3	
1949-53	13	88	1,174		1,885		2,513.3
				786		67.0	
1954-57	33	77	1,960				

* Figures for this period reflect the totals for each section since no distinction was made between abutting and nonabutting property for the base period of 1941-48.

market preference for property closer to the central business district after completion of the new highway than for property further removed from the downtown area. It should be remembered, however, that the south beginning point of the study area was a considerable distance from downtown Austin. This helps to explain why an additional mile or so more travel on a good traffic-serving facility is of small influence on market values of the land along the facility. After completion of the new route, abutting land prices almost equalized along the entire study area strip. The actual average prices per acre were $1,973 and $1,960 respectively for section 1 and section 2 during the 1954-1957 period.

Accepting the 221.9 percent increase in nonsubdivided land prices in the control area as representing the general increases in value of similar land around Austin, the new expressway-type facility had a net influence of 337.4 percent on abutting nonsubdivided property in section 1 of the study area and a net influence of 1,484.5 percent on abutting property in section 2.

NONABUTTING PROPERTIES IN SECTION 1 AND 2

The nonabutting, nonsubdivided land prices in section 2 increased 907.4 percent between the base and last periods compared to a 312.0 percent increase in land prices of nonabutting land in section 1. However, it is apparent from a glance at Table 1:6 or 1:6-A that the dollar increases in price per acre were not too different between the two sections. The nonabutting property in section 1 increased an average of $805 per acre, as compared to an average increase of $835 per acre for section 2. The unadjusted price data shows an even lower variance between sections---only $4 per acre.

Table 1:6

ADJUSTED PRICES OF NONABUTTING PROPERTIES IN SECTIONS 1 AND 2 OF AUSTIN STUDY AREA
(Consumer Price Index - 1947-49 = 100)

Nonsubdivided Land Only

Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Change Per Acre: Between Periods (Dollars)	Price Change Per Acre: Between 1st & 3rd Periods (Dollars)	Percentage Changes: Between Periods (Percent)	Percentage Changes: Between 1st & 3rd Periods (Percent)
			NONABUTTING PROPERTY - SECTION 1				
1941-48*	74	1,436	$ 258				
				$ 48		18.6%	
1949-53	14	191	306		$805		312.0%
				757		247.4	
1954-57	5	9	1,063				
			NONABUTTING PROPERTY - SECTION 2				
1941-48*	36	565	94				
				569		605.3	
1949-53	5	224	663		853		907.4
				284		42.8	
1954-57	9	296	947				

* Figures for this period reflect the totals for each section since no distinction was made between abutting and nonabutting property for the base period 1941-48.

Table 1:6-A

ACTUAL PRICES OF NONABUTTING PROPERTIES IN SECTIONS 1 AND 2 OF AUSTIN STUDY AREA

Nonsubdivided Land Only

Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Changes Per Acre: Between Periods (Dollars)	Price Changes Per Acre: Between 1st & 3rd Periods (Dollars)	Percentage Changes: Between Periods (Percent)	Percentage Changes: Between 1st & 3rd Periods (Percent)
NONABUTTING PROPERTY - SECTION 1							
1941-48*	74	1,436	$ 215				
				$110		51.2%	
1949-53	14	191	325		$1,009		469.3%
				899		276.6	
1954-57	5	9	1,224				
NONABUTTING PROPERTY - SECTION 2							
1941-48*	36	565	75				
				681		908.0	
1949-53	5	224	756		1,013		1,350.7
				332		43.9	
1954-57	9	296	1,088				

* Figures for this period reflect the totals for each section since no distinction was made between abutting and nonabutting property for the base period 1941-48.

The greater increase in section 1 occurred between the middle and last periods, whereas the greater increase in section 2 occurred between the first two periods. Because of the relatively small number of nonsubdivided land sales for these classifications during the lattter two periods, dogmatic conclusions cannot be drawn as to the reasons for and the significance of the increases between periods. It will be noticed, however, that the abutting nonsubdivided land in section 2 also increased more between the first two periods than did the abutting property in section 1. One possible explanation for the greater increase in values for section 2 between the base and middle periods is that the market overcapitalized values within that section during this time period. If this were the case, the smaller increase between the second and third periods would be more understandable. If the increased values between the first and second periods were premature, it stands to reason that such great percentage increases would be dampened until the prices paid and utility values came closer to an equalization level.

Many factors are involved in land value changes; therefore, the preceding statement of possible cause can be considered as only a possiblility, not a specific conclusive fact.

Land Use

This section of the report is devoted to a discussion of land use patterns both before construction of relocated U.S. 81 and during a period of time after completion of the new facility. A study of land use is beneficial in explaining land value changes, and also in developing a picture of the physical changes in land use that have occurred within the study area.

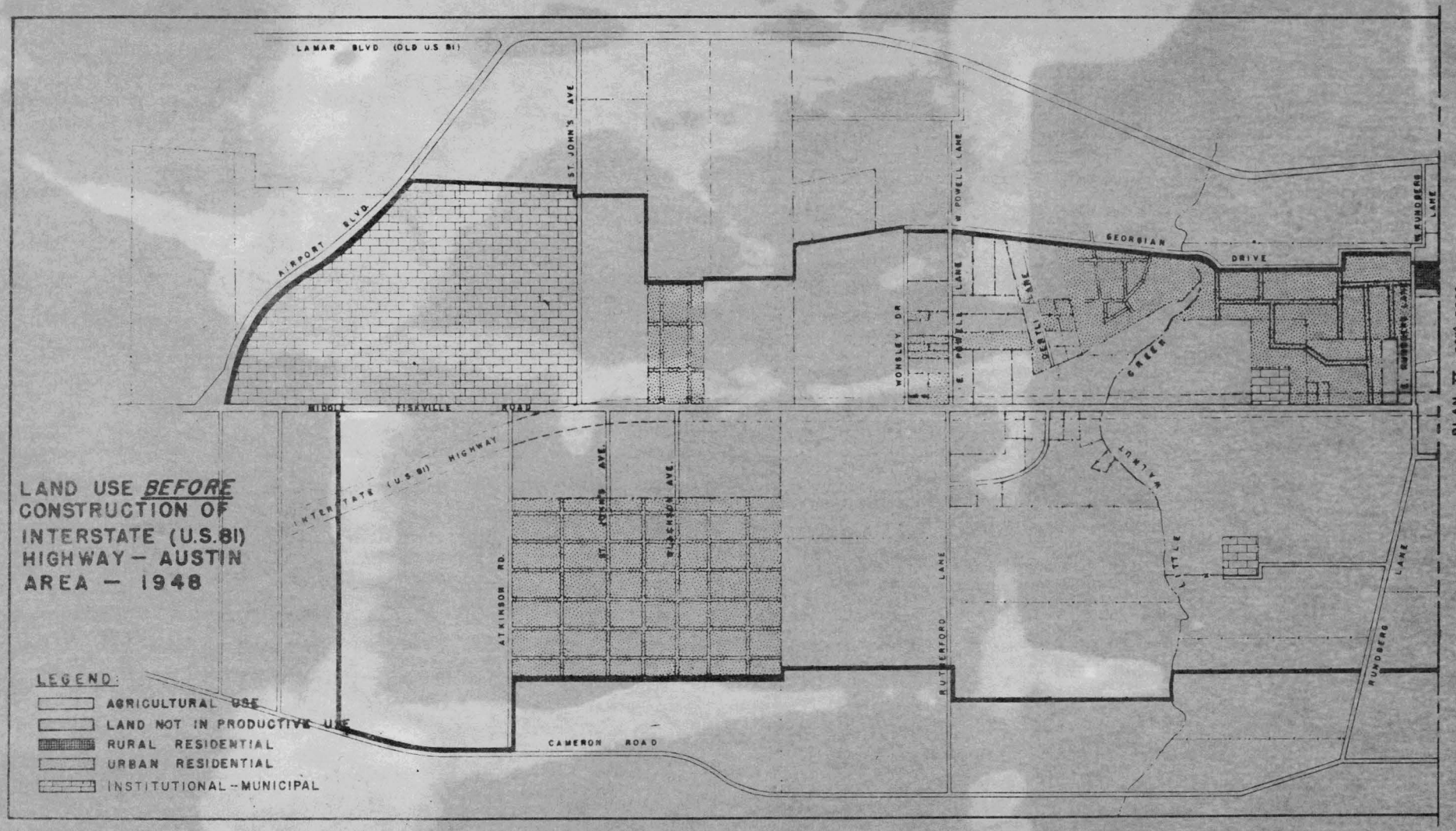


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FIGURE 1:3

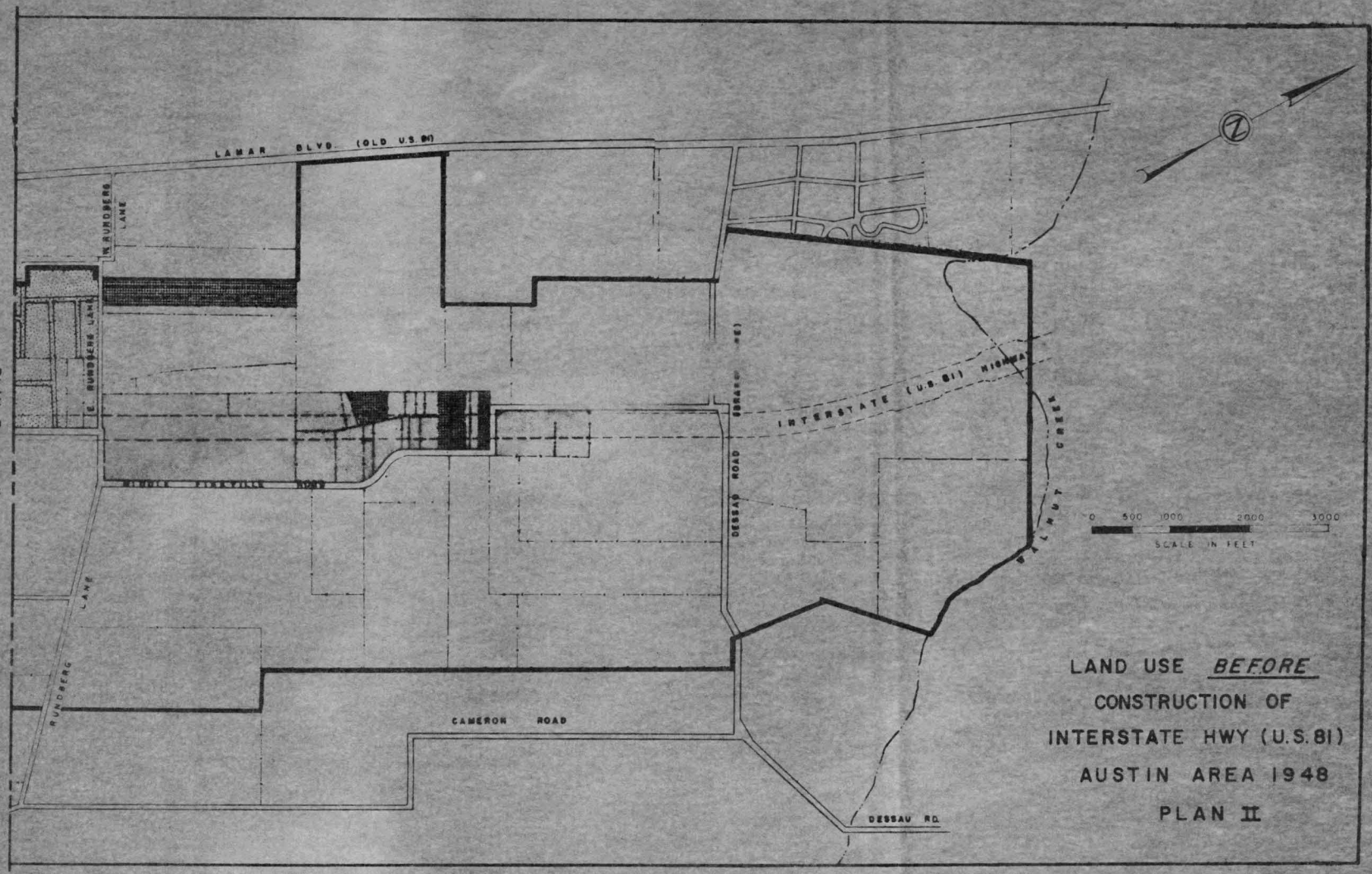

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FIGURE 1:3 cont.

The last year of the base period was chosen as the date for the "before" period. This was the year 1948 for the Austin study. The time used for the "after" period was as of the end of 1957, the close of the study period. This gave an interim period of nine years. The new facility had been opened to traffic for about three and one-half years of that time. The period of time from late 1948 to 1954 was the period of right of way purchasing and construction of the facility.

Information relating to land use in 1948 was obtained from several sources, the primary source being interviews with realtors, local residents and other individuals who were familiar with the study area at that time. Land use in 1957 was determined by visual inspection of the land, supplemented when necessary by conferences with property owners within the study area.

Two land use maps were prepared to facilitate the presentation of the land use data for the "before" and "after" periods. Each map shows the major property division lines as they existed in the respective years.

LAND USE IN 1948

During the year 1948, there were only five primary land uses apparent within the Austin study area. These included the following land use classifications: (1) agricultural land; (2) land held for future use; (3) rural residential; (4) urban residential; and (5) institutional-municipal land.

The largest portion of the total study area acreage was classified as "agricultural land" in the "before" period. Much of the land so classified was used primarily as pasturage rather than for other more intensified agricultural purposes. The second most prevalent land use type in 1948 was "urban residential" lands. This classification included the subdivisions located

within section 1 of the study area and other dwelling units (maximum size of five acres) located within the city limits.

By 1948 there were four subdivisions in the study area--all located within section 1. Two of these subdivisions were relatively low-priced areas, with graded streets which lacked surface treatment of any type. The improvements within these areas were, for the most part, substandard in both appearance and value. The remaining two subdivisions could be classed as middle-priced areas, with most improved lot sales being within a $6,000 to $9,000 price range.

Another prevalent land use type within the area was "land held for future use." Most of this land was originally agricultural land which was now idle. This land was generally considered to be held for future use rather than for its utility at the particular time.

The rural residential land areas were scattered and contained a relatively small amount of total acreage. This land type included those tracts which were being used primarily as places of dwelling, and were located outside the city limits.

The fifth land use type, "institutional-municipal," included three parcels of property in 1948. One parcel, containing more than 360 acres of land, was owned by the St. John's Orphans Home. The other two tracts were relatively small, each containing approximately five acres of land. One of these tracts, abutting the old Middle Fiskville Road, was owned by the State Department of Public Safety; and the other tract, located east of the Middle Fiskville Road, was used as a local cemetery.

LAND USE IN 1957

By the end of 1957 considerable changes in land use patterns had occurred within the study area. Whereas the "before" land use map (Figure 1:3) shows only five major classifications of land use, it will be noticed that eight major land use classifications are present on the "after" land use map (Figure 1:4).

The most noticeable change, of course, was the extent to which land previously used for agricultural purposes had decreased through changing to other uses. It can be assumed that the agricultural land was converted into other uses which had a higher utility value or price potential. Otherwise, it is doubtful that the land would have been retired from production. Much of the land that was previously used for agricultural purposes is now lying vacant and idle. The owners of such lands are simply riding the upswing in land values, waiting until they think the time is right to sell their properties. Other owners of similar properties are also holding the land primarily for furture use, but during the interim period they are farming or grazing the land.

The major percentage of the total acreage in the study area was classified as "land held for future use" on the 1957 land use map. This indicates that many of the landholders within this area believe that land values haven't yet reached their peaks.

Several new subdivisions have been opened since 1948. The majority of these have been located within section 2 of the study area. Section 2 was the most logical area for the new subdivisions, since open land values in that section were lower than in section 1. Two relatively small subdivisions, however, were opened in section 1 during the 1948-1957 period. Only one of

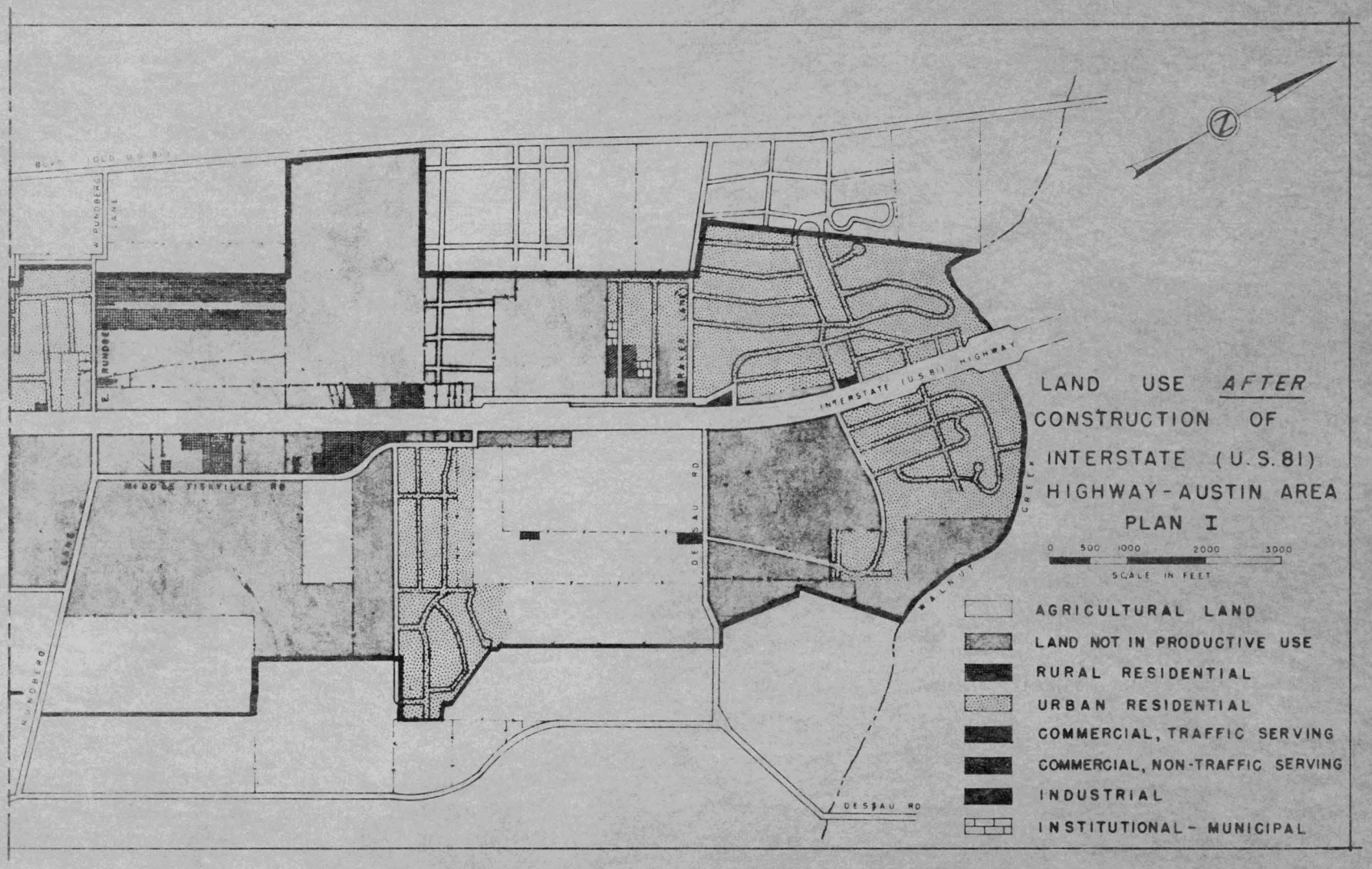

FIGURE I:4

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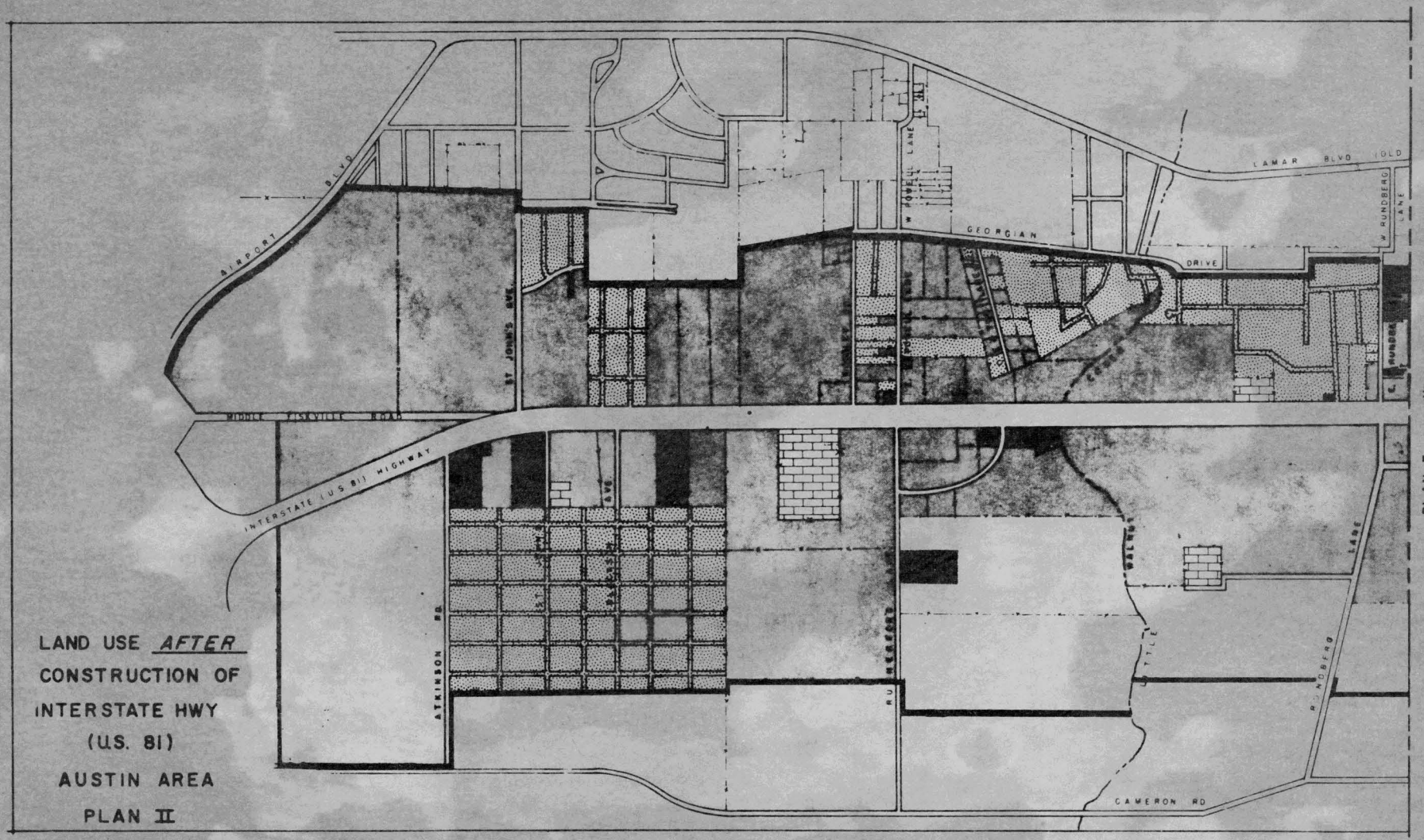

FIGURE 1:4 cont.

the newly-opened subdivisions is substandard in appearance and value of improvements. The other new subdivisions can broadly be classed as varying from "middle" price areas to "upper-middle" price areas. Prices of unimproved lots in this group of subdivisions varied between $12 to $27.50 per front foot at building set-back line.

A comparison between the "before" and "after" land use maps also reveals that there has been a considerable amount of land division since the end of 1948. A large amount of this land division has been for the purpose of providing residential size plots, but several other divisions have also occurred.

As expected, several commercial traffic-serving establishments have located along the frontage roads of the new facility. These include service stations, motels and cafes. Other businesses, including several commercial nontraffic-serving establishments and one industrial firm, have located on the new route.

Table 1:7 lists the types and number of business establishments located within the Austin study area as of January 1, 1958. None of these businesses were located within this area prior to 1948. Most of the concerns listed in the table have been established during the past two years, since the new facility has been opened to traffic.

Undoubtedly the next few years will show many more changes in land use patterns occurring along this facility. The development of commercial sites has just now become active and the rate of establishment of additional commercial establishments is expected to accelerate as the land development ripens.

RELATIONSHIP BETWEEN CHANGES IN LAND USE AND LAND VALUES

Since in theory every parcel of land has a highest and best use at a given point in time and under a given set of circumstances, it is obvious that there

Table 1:7

BUSINESSES LOCATED WITHIN THE
AUSTIN STUDY AREA AT END OF 1957

Abutting Expressway		Nonabutting Expressway	
Type Business	Number	Type Business	Number
Traffic-Serving		Nontraffic-Serving	
Service Stations	3	Electric Shop	1
Cafes	3	Sheet Metal Shop	1
Motels	2	Welding and Metalwork Shop	1
		Used Tire Yard	1
Nontraffic-Serving			
Small Office Building	2		
Motor Freight Line	1		
Truck and Machinery Sales and Service	1		
Light Manufacturing Concern	1		
Rest Home for Aged Women	1		
Junk Car Yard	1		
Lawn and Garden Shop	1		

is a relationship between land use and land value, and that changes in land use which progress toward the theoretical highest and best use for any given area should be reflected in land values.

In any area, of course, there are many factors which may be utilized in order to determine the highest and best use of a given tract of land. In urban and suburban areas, location is frequently a major factor, since, as has been indicated, tracts of land in urban or near-urban areas and abutting major traffic arteries tend to have higher values for commercial use than do tracts which are not so located.

If it can be assumed that in the majority of land transactions involving a change in use, the land transferred is to be put to a higher and better use, then it should logically follow that the values of the land transferred should rise. It is also logical, then, that the market prices of the property should move correspondingly. The purpose of this section of this study is to evaluate the changes in land use as these changes are reflected by changes in price.

An attempt has been made to view the relationship between land use and land prices from three different standpoints. First, all sales were grouped according to the use being made of the property at the time of the sale (sales of a particular class of land to all uses combined). Next, the sales were grouped according to the use to be made of the property after it was sold (sales from all uses combined to a particular land use). An lastly, sales were grouped to show price differences when specific use changes were made (sales from a specific use class to another specific use class).

Sales from specific use classes are shown graphically in Figures 5 and 6. These charts show the average adjusted price per acre paid for property within

each class. These prices are shown by study periods in order to portray graphically the movements between periods.

The most striking thing to be seen from Figures 5 and 6 is the almost uniform direction of price movements between time periods for each land use class. That is, sales of class 1 properties (agricultural land) increased in price from the first through the third period. Classes 2 and 3 (land held for future use and rural residential land), while differing in the imagnitude of their movement, changed in the same direction during each period. Only in class 4 properties (rural residences) was this pattern distorted. Rural residential sales during period II showed a decline from the first period. This could perhaps be due to the difference in the average size of parcels selling in the two periods. Sales in the second period were about five times larger and consequently included a greater amount of less desirable land in each transaction.

As to the difference in prices paid for land in different uses, period I sales showed a general increase in price as the land was bid away from the more intensive uses. Sales from class 4, for instance, averaged $945 per acre, while agricultural land sold for $150 per acre. Since values are based largely on a combination of present and future utilizations or use potentials, a substantial price differential was to be expected. During period I, future development prospects were uninfluenced by the prospect of the new facility. Consequently, values were determined largely by present or immediate future uses. Since urban residence is a more intensive or higher type land use than farming, the higher price was to be expected.

During period II, on the other hand, the location of the facility had become known and the anticipated future uses became much more important as a

SALES OF PROPERTIES FROM CLASS 1 and FROM CLASS 2 TO ALL USES COMBINED, BY PERIODS

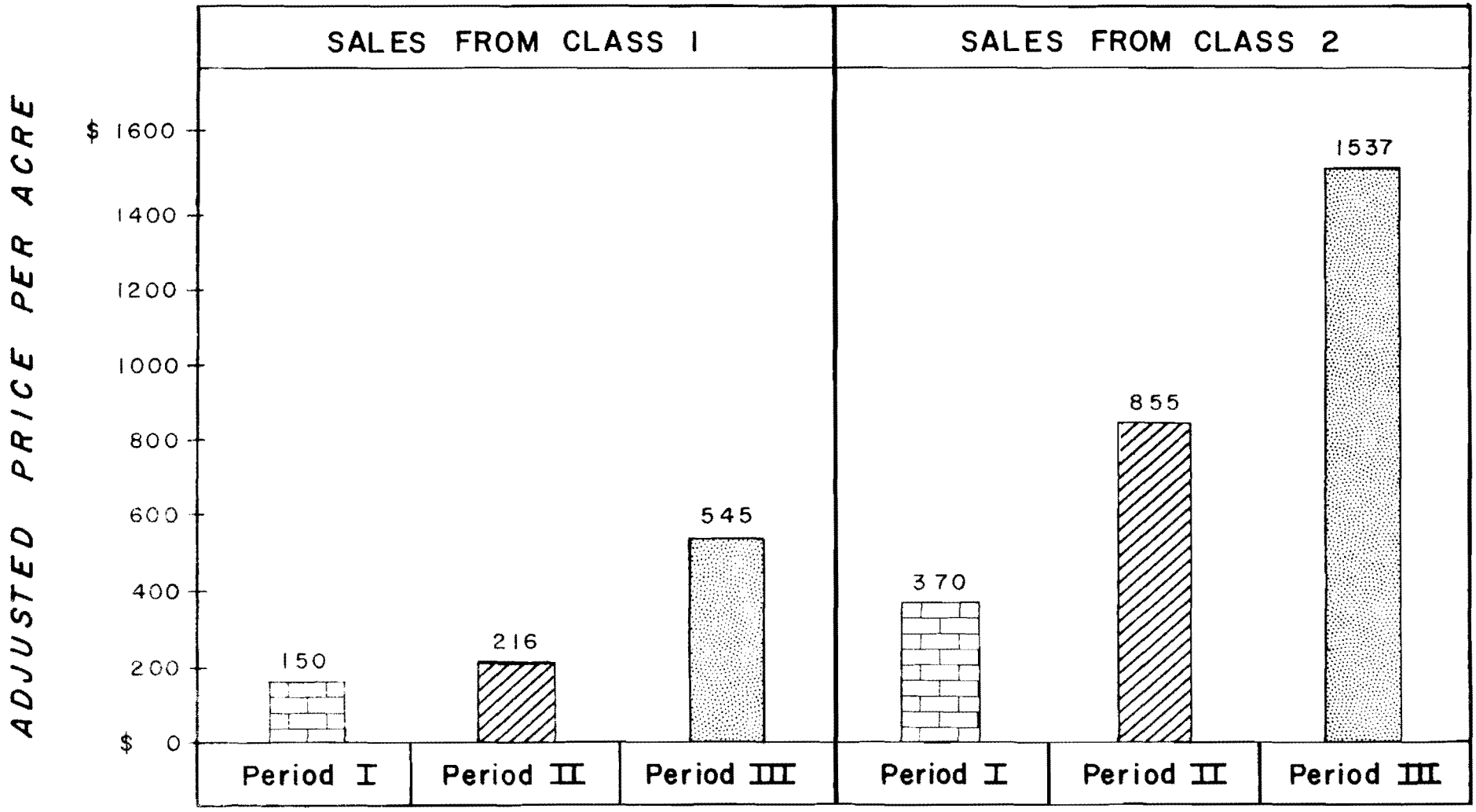

FIGURE 1:5

SALES OF PROPERTIES FROM CLASS 3 and FROM CLASS 4 TO ALL USES COMBINED, BY PERIODS

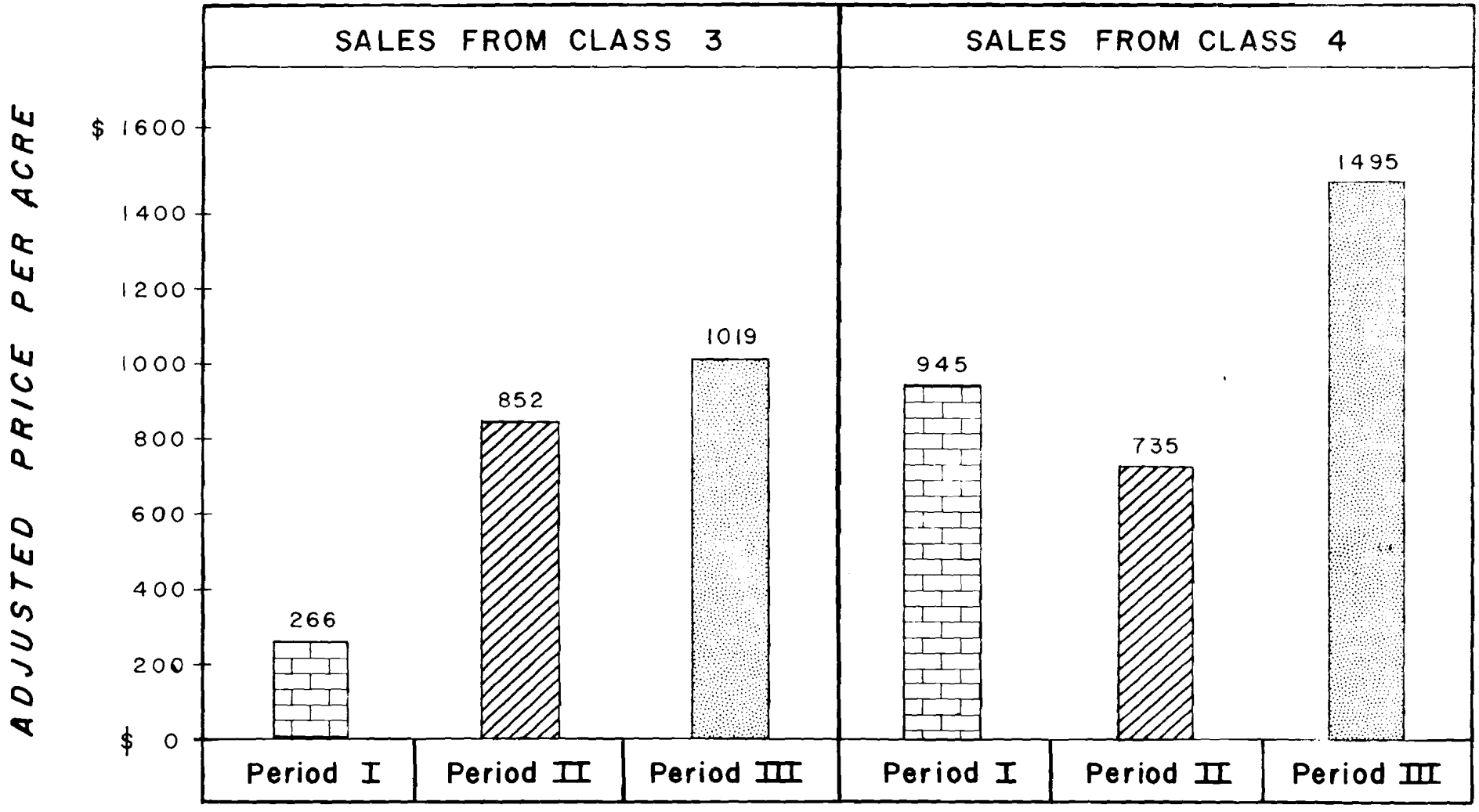

FIGURE 1:6

determinant of total value. With the exception of agricultural land, which included a much greater proportion of nonabutting and consequently less desirable land, the use to which a piece of property was devoted at the time of sale seemed to have little bearing on its sales price. During the waiting period the prices of all lands other than agricultural lands seemed to reach a common plateau. In general, these lands were fairly close to the faciltiy and probably had quite similar locational potentials. Their price level also appears to have been strongly influenced by the prices paid for class 2 lands. That is, all lands regardless of their use were competing on the basis of potential use as well as their present use. It was during period II that substantial changes in use (other than from class 1 or 2) first became prevelant.

Potential usage became even more important in period III. After the facility was constructed, it became possible for prospective buyers to view each piece of property in light of location or site potential. The value of sites in their old uses were, of course, vastly increased. Present usage became meaningful as a price determinant, however, mainly to the extent of providing a floor below which the price would not easily fall. This was specifically true of the higher type nonhighway oriented uses such as use classes 3 and 4. The level of the floor was determined in large part by the availability and price of alternative site opportunities in comparable areas removed from the expressway.

For example, a two acre tract classed as a rural residence in period I and priced at $500 competed in the land market with similarly located properties of similar characteristics throughout Austin. After the expressway was constructed, this piece of property became more desirable as a rural homesite. It no longer competed against its former competition but against rural homesites

located in more desirable and higher priced areas in Austin. In addition to its' newly acquired desirability as a homesite, it also became desirable for alternative uses such as a site for a commercial establishment (class 5) or an urban subdivision (class 4). The ultimate price which was paid for the property was determined not only by competition within one use class but also by competition between alternative uses.

The grouping of sales in accordance with the use to be made of the property after the sale, are shown in Figures 7 and 8. Here all parcels of land which are to be used for a particular purpose subsequent to the sale are grouped together regardless of the use to which they were previously devoted. Again the general increase in price between time periods is noted for all classes except one - rural residence. This deviation is probably explainable by the fact that all these sales were within the class and involved no change in use. They could be considered as selling on the present use floor rather than for higher type uses.

This method of viewing the sales highlights the difference in prices paid for land for each of the major uses. During period I the tracts of land being transferred to, or within, use class 4 sold at a much higher average price per acre than did lands in any of the other classes. However, the largest number of sales and acreages transferred occurred in use class 2. There were over 1,000 acres transferred to this latter class, whereas only 410 acres were transferred to the urban residential use.

During periods II and III highest prices were paid for land to be devoted to one of the commercial or industrial uses while urban residential uses remained the closest alternative use in each case. Again, the higher prices were paid for smaller quantities of land. Only about fourty acres were trans-

SALES OF PROPERTIES TO CLASS 2 and TO CLASS 3 FROM ALL USES COMBINED, BY PERIODS

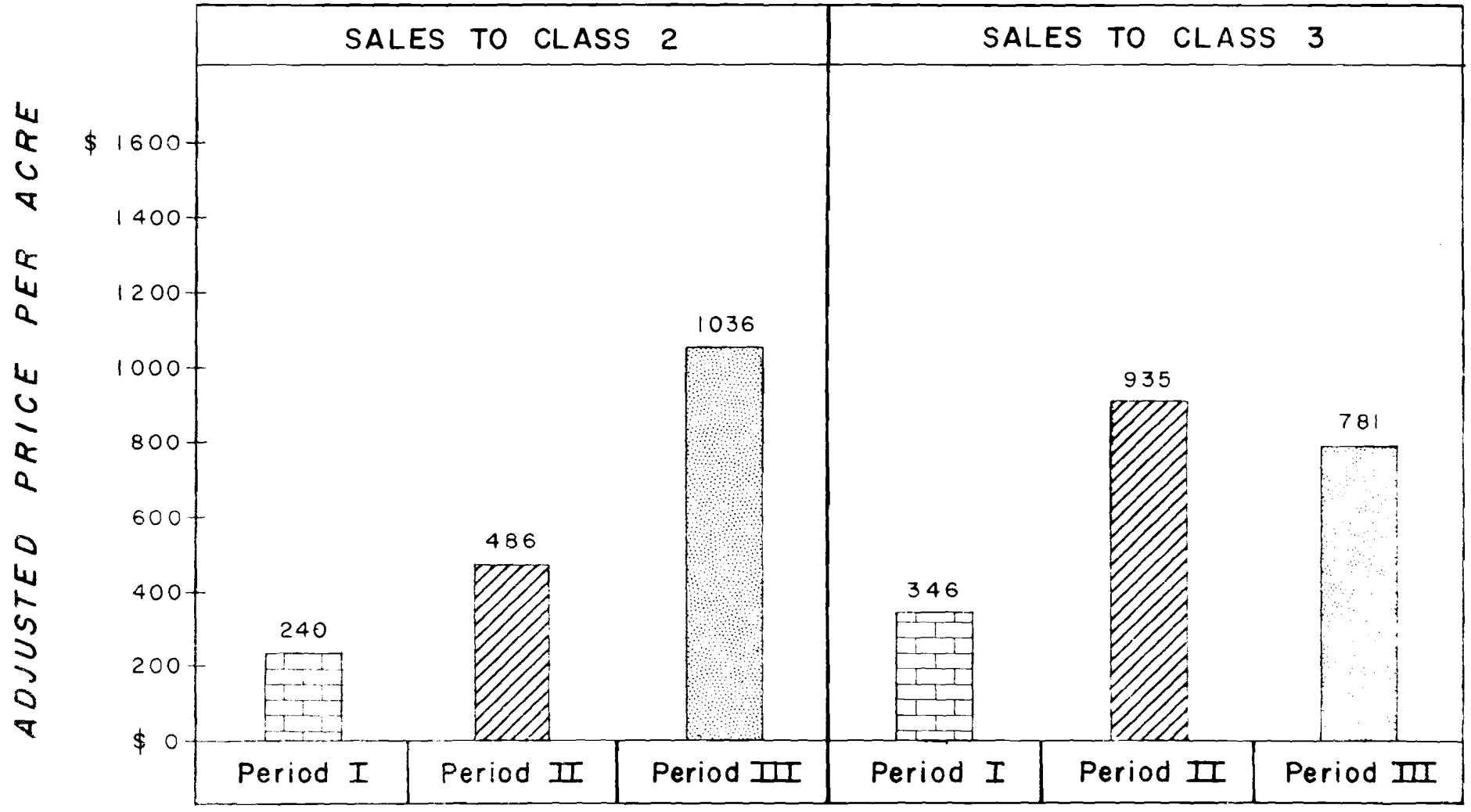

FIGURE 1:7

SALES OF PROPERTIES TO CLASS 4 and CLASSES 5, 6, & 7 FROM ALL USES COMBINED, BY PERIODS

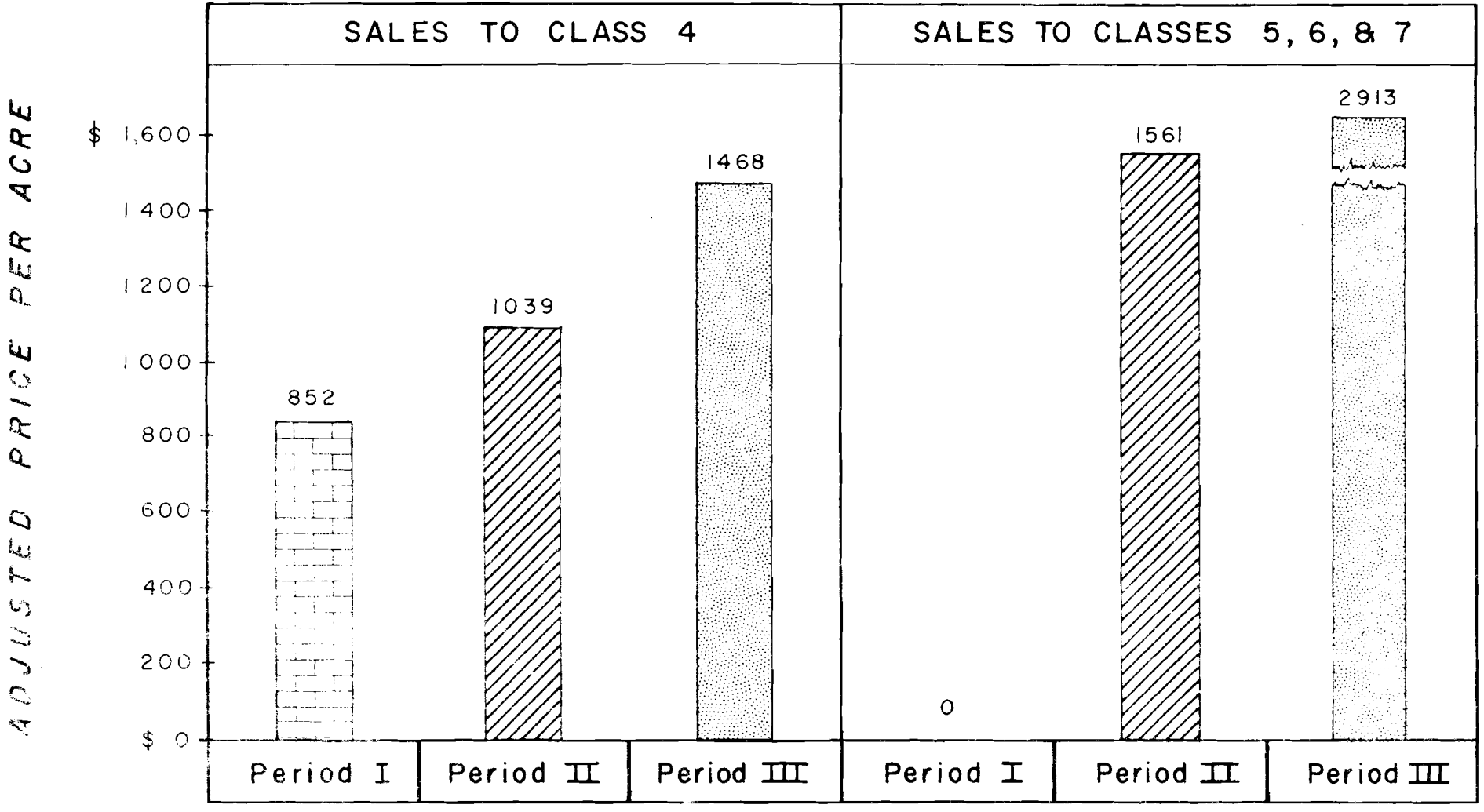

FIGURE 1:8

ferred to the commercial-industrial uses compared to some 1,430 acres tansferred to use class 4.

Figures 9, 10, and 11 show the breakdown of sales from specific uses to specific uses. Here the prices reflect market conditions applying to parcels within different uses as they are bid away for either the same or different specific uses. No attempt has been made to analyze or discuss each of these categories individually. Rather the discusstion is confined to general observations regarding the more typical relationship.

For example, when agricultural land was transferred to the class "land held for future use" in both periods I and II, the average price per acre was higher than the average price per acre of similar agricultural land which was transferred with no change in use (Figure 9). There are two apparently related reasons for the increased rate of appreciation of agricultural lands which are transferred to the category of land held for future use. First, the more desirable tracts of agricultural land (insofar as location with respect to the highway facility is concerned) were the first to be transferred to the class of lands held for future use. Second, realtors and land speculators were aware of the potential for appreciation in values of such tracts of agricultural land, and were willing to assume the higher costs and the risks incidental to the ripening period. Such buyers were willing to pay more than the average agricultural based price for desirable agricultural lands in order to obtain these parcels for future use. It must also be assumed that the open-market competitive bidding between such speculative purchasers also had some effect upon the prices paid for such tracts of agricultural land.

Actually, these realtors and land speculators acted as middlemen by temporarily holding nonproductive lands for future resale. When they sold

SALES OF CLASS I PROPERTIES TO SPECIFIC USES BY PERIODS

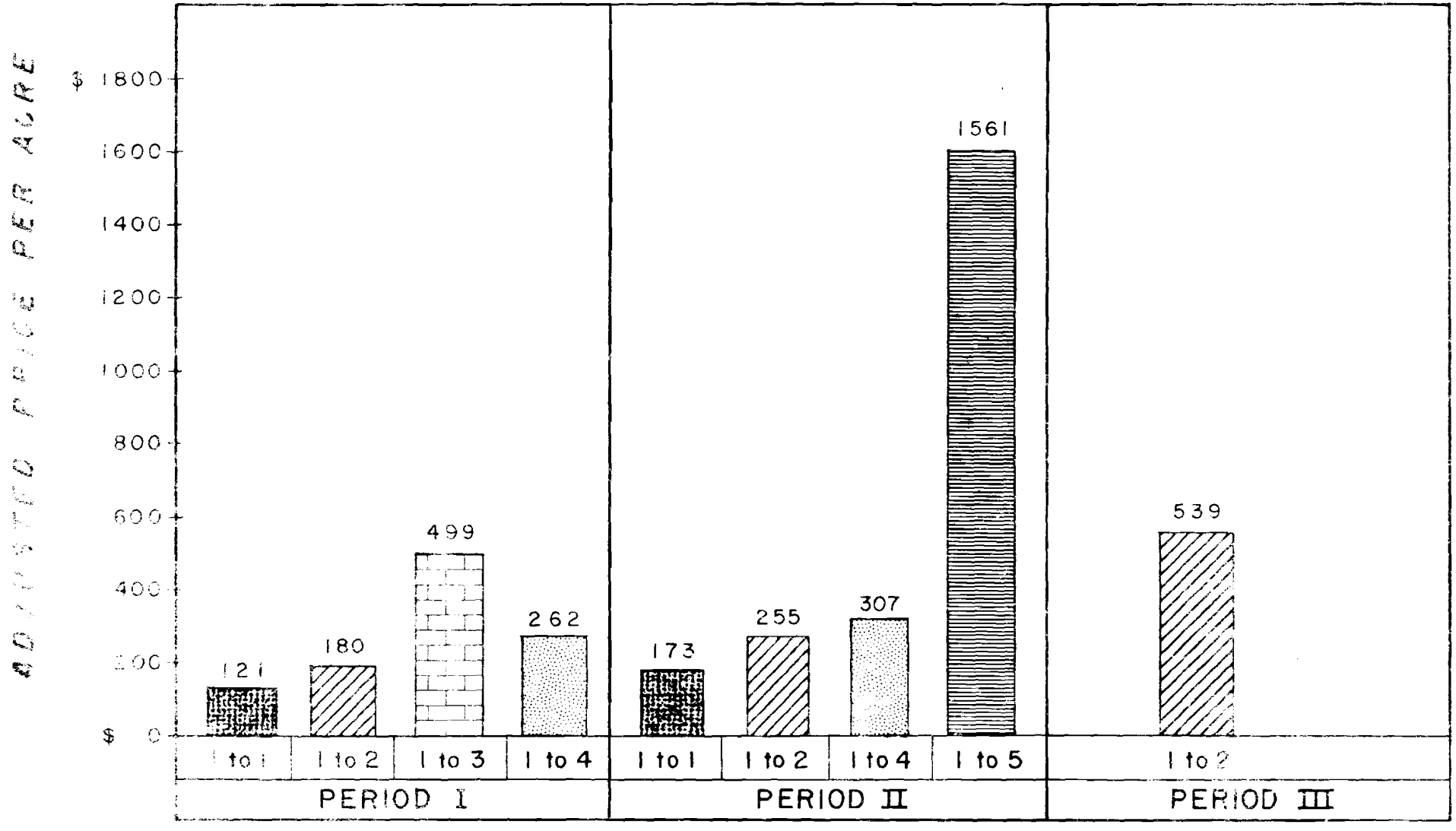

FIGURE 19

SALES OF PROPERTIES FROM CLASS 2 TO SPECIFIC USES, BY PERIODS

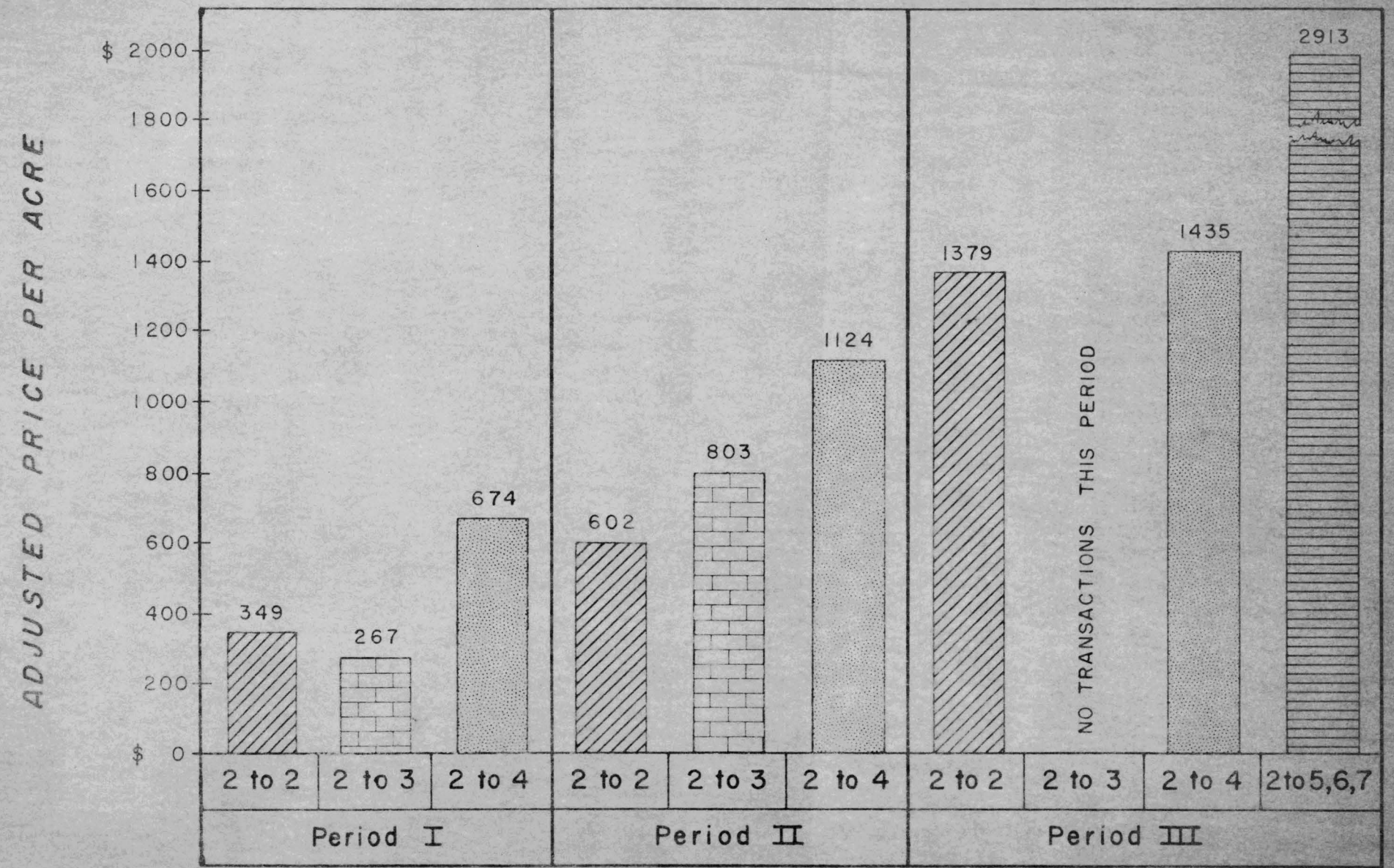

FIGURE 1:10

SALES OF PROPERTIES FROM CLASS 3 and FROM CLASS 4 TO SPECIFIC USES, BY PERIODS

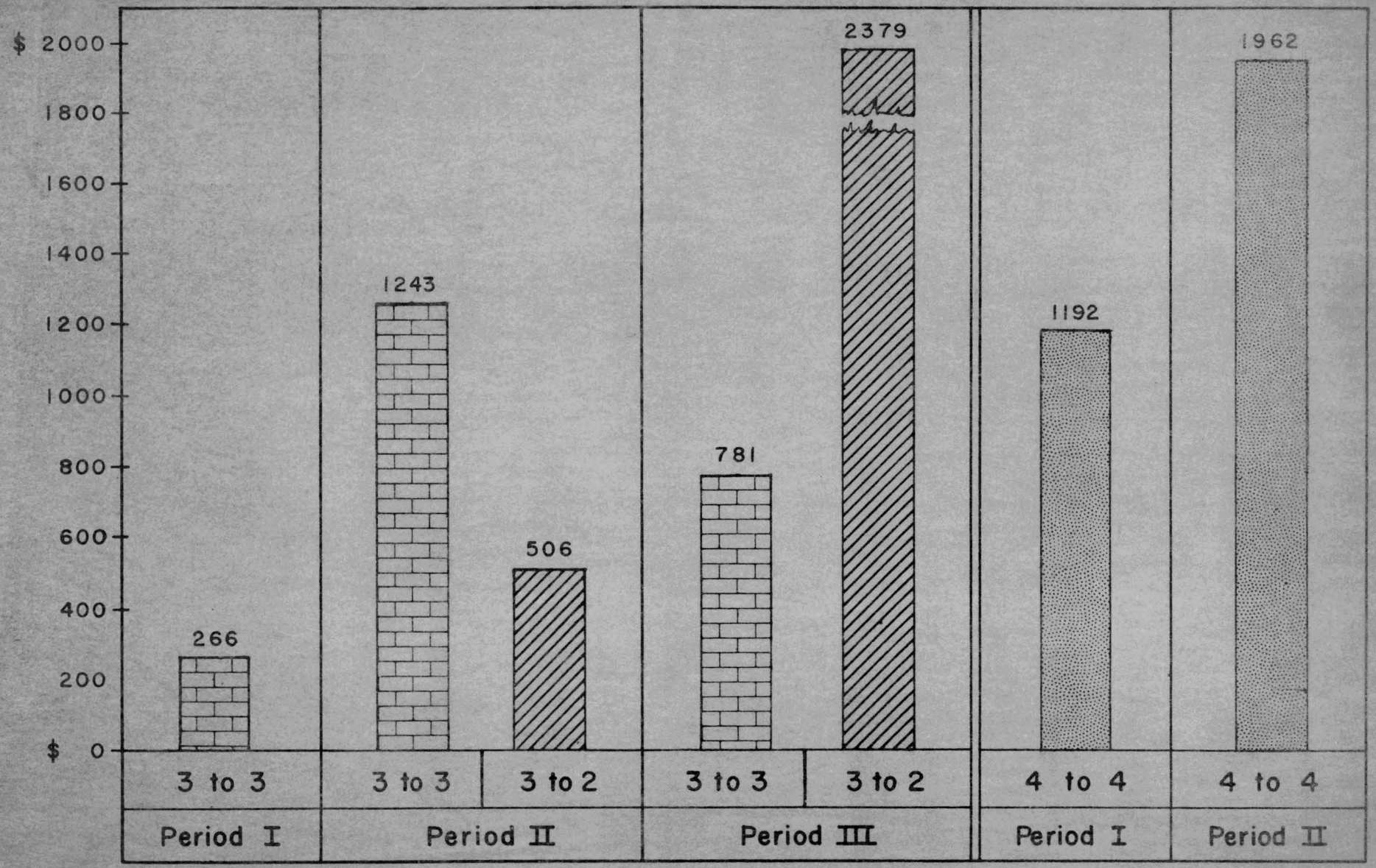

FIGURE 1:11

these lands, they commonly realized a gain on the transaction. Thus, as these land parcels were transferred to other uses by the middlemen, the prices paid for them tended to vary according to the use to which the land was to be put, and according to the economic utility potential of each parcel.

In Figure 10 it can be seen that the more intensive use of class 2 land for urban residential sites (use class 4, primarily urban subdivisions) was reflected in the higher prices paid for such land, as compared with similar land which was transferred to lower type uses. Further, lands of this class being transferred to commercial or industrial uses (class 5, 6, 7, and 8) commanded the highest prices per acre of all uses. This result is, of course, partically a normal product of the location and economic potential of the particular tracts of land put to such uses.

Sales from class 3 and 4 are shown in Figure 11. During period I, class 3 properties were not sold to any other use. In the construction period, however, some sales were made to land speculators, but at much lower prices. After the facility was completed rural residential properties were still sold to only those two uses. Sales to speculators, however, were made only at extremely high prices.

Urban residential properties were not sold to any other use in any of the three periods. Perhaps one reason is that this is already a high type land use and adequate sites were available from less intensively used properties. Another reason may be that the criteria for good sites for even higher type uses (class 5, 6, 7, and 8) are not necessarily the same as those for urban residences. For instance, most of the urban residence properties do not abut the facility and others have poor site distances for the traveling public.

If all these relationships are taken together, perhaps a generalization can be drawn - that in this area the price of land was influenced by the use to which it was devoted at the time of sale, but that except in the case of very high type or intensive uses, the potential use was an even more important factor in determining its ultimate price. The less intensive a property's present use the more its sales price depended on its' potential for a different use.

In an area such as this, where land is plentiful, largely undeveloped, and relatively inexpensive, land was bid away from the less intensive uses first. That is, the great majority of sales occurred as transfers from less intensive to more intensive uses. The exception, of course, is in use class 2 where the land is not put to a true physical use. In this case speculative activity can be considered as an intermediate stage in the movement of higher uses.

Business Activity

In addition to the previously discussed impacts upon land values and land development, the new interstate highways may also have a marked impact upon business activities within local areas.

The business activity benefits or disbenefits accruing to an area may be either a short-term effect or be of a more permanent nature. The short-term effects are primarily those that occur during the construction period. The benefits here would usually result from the expenditures of funds for construction labor, materials, and other local purchases created as a result of the construction process. The disbenefits would arise through constructing a new facility along an existing thoroughfare so that the existing route would be either closed or partially inaccessible to traffic during part or all of the construction period. This would be expected to result in a decrease in business activity for the establishments located along the route.

Since this facility had already been completed for a considerable period of time prior to the initiation of this study, no attempt was made to isolate and analyze the short-term effects resulting from the construction itself. Instead, it was decided to concentrate on categorizing and analyzing the longer term economic influences.

These longer-term effects may be either benefits, disbenefits, or both, depending upon the particular circumstances in each case. And, whether the construction of a particular facility will result in either a benefit or a disbenefit usually depends upon both the scope and point of view of the analyst.

If one limits his analysis to a particular business, as is usually the case with the individual businessman, then the effect can usually be definitely

categorized as either good or bad--a benefit or a disbenefit. It this viewpoint is broadened to include all the similar businesses within an area, such as all the service stations or motels along the bypassed road, it becomes much more difficult to determine both the direction and extent of the effect. Different businesses, even within the same class, will be affected differently and different business managers will react differently in their attempt to adjust to the changed conditions. This usually results in a mixture of benefits and disbenefits which must be carefully analyzed before conclusions can be drawn.

The expansion of scope to include similar businesses within the entire study area and finally to include all related businesses within the area further complicates the problem of analysis. In the first instance, businesses along the old roadway are combined with like businesses on the new route to determine the area-wide influence and, in the second instance, these groups are further combined to permit over-all area analysis.

In this study, the analysis of individual businesses was largely confined to determining the reasons for changes in business activity by each firm. The primary reason for this was to try to discover which of the changes were chargeable to the facility and which were chargeable to management practices or other exterior conditions. The results of these individual business analyses are not reported in detail. For the most part this report deals with the analysis of similar types and classes of firms located in the two sections of the study areas.

Businesses located in two separate areas were evaluated, in an effort to determine the effects upon business activity of the new highway facility. First, a study was made of the businesses located along the old route of U.S. 81.

This area began at the intersection of Guadalupe Street and Lamar Boulevard, and extended north about nine miles, to that point at which the old route joined the new route of U.S. 81. The second study area was the new route of U.S. 81, from its intersection with the old route of U.S. 81 (Lamar Boulevard) south along new U.S. 81 (Interregional Highway) to the intersection of U.S. 290, a distance of approximately eight miles (see Figure 1:12).

The business activity data was collected during the summer of 1958, by personal interview. Volume figures were obtained for two one-year periods, with 1953 serving as the period before construction of the new U.S. 81 facility, and 1957 serving as the comparable after period. It may be noted that 1953 was the business year immediately prior to the opening of the new facility, and 1957 the last year of the study for which volume data covering a full year of business operation could be obtained.

For the purposes of this study, businesses located along both the old and new routes of U.S. 81 were divided into two classifications--"traffic-serving" and "nontraffic-serving" businesses. The traffic-serving businesses were broadly subdivided into service stations (whose annual dollar volumes of business and gasoline gallonages provided a significant indication of the effects of traffic flow diversion upon traffic-serving businesses) motel, and restaurant and other food service establishments. All other retail business firms interviewed were classified as nontraffic-serving enterprises.

Old Route (U.S. 81)--Businesses Interviewed

Along the 9.1 miles of study area following the old route of U.S. 81 there are located 120 businesses of all types. Of these businesses, 43, because of the nature of the enterprise (architectural firms, construction companies,

BUSINESS STUDY AREAS

OLD & NEW ROUTES OF U.S. 81

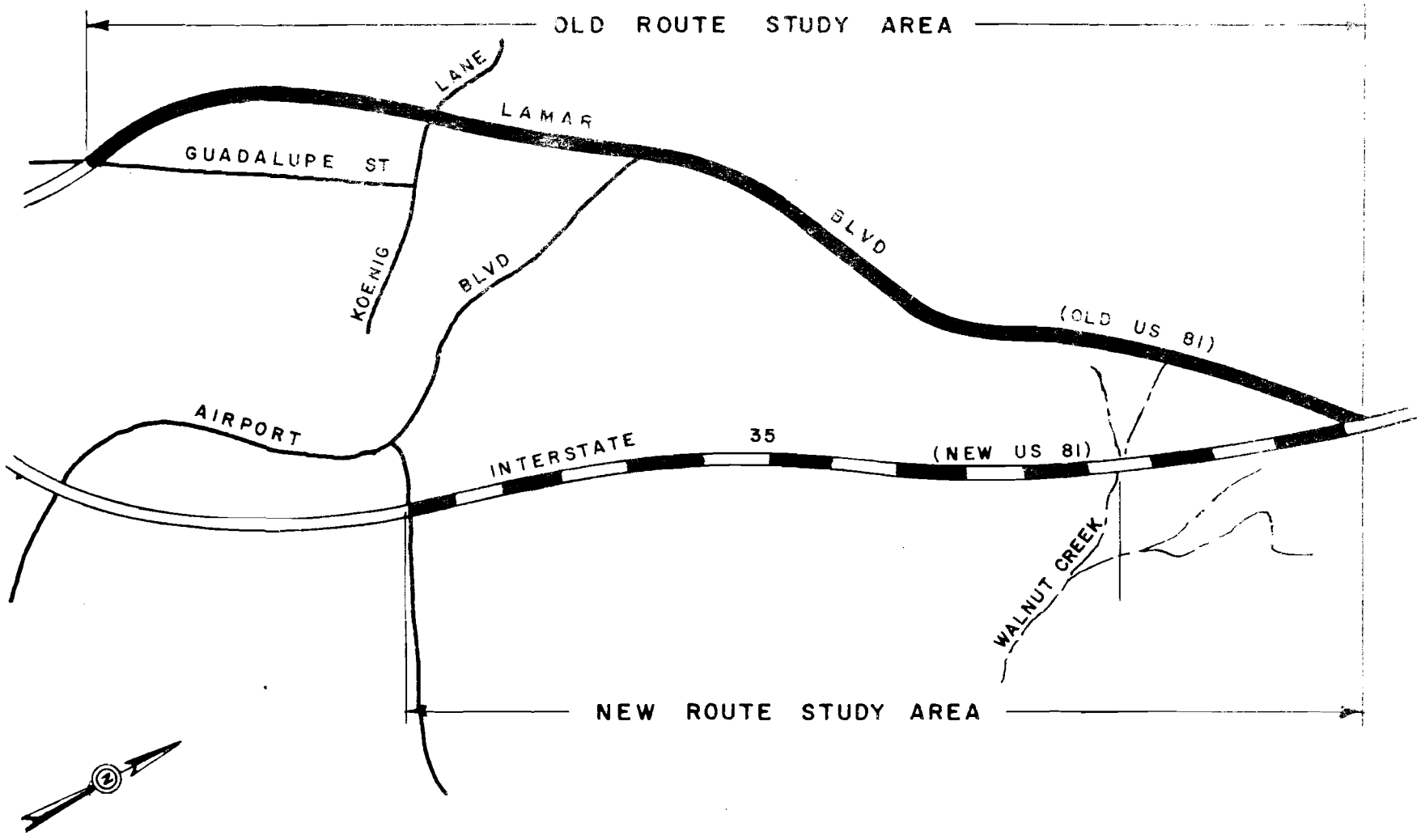

FIGURE 1:12

ventilating contractors, stone works, storage warehouses, etc.) were felt to be disassociated with the study, and were not interviewed. In addition, some 16 taverns, dance halls, drive-in movies, etc., while classed as retail businesses, were considered marginal insofar as this study was concerned because of the irregular hours of their operation. Of such establishments, those which were open for business during a reasonable number of daylight hours were interviewed, but those which opened at 4 p.m. or later were not interviewed

Of the 120 businesses, a total of 51 were classified as retail establishments whose gross operations were considered to reflect the influences of the opening of the new highway facility on U.S. 81, and were therefore held to be suitable subjects for interviews. Of the 51 businesses, 14 were for various reasons (change in management, poor bookkeeping methods, unwillingness to cooperate, etc.) unable to furnish all the information requested. However, such information as was available from these has been included in the tabular data.

TRAFFIC-SERVING BUSINESSES

Service Stations (Old Route)

Of the traffic-serving class of businesses, gasoline service stations are felt to reflect very accurately the effects of changes in traffic volumes and patterns. For that reason, the comparison of business done by stations along the old route in the two periods 1953 and 1957 and the relation of this business to that done by stations located along the new route of U.S. 81 was felt to be a valuable indicator of the effect of the new highway facility upon the general business of the area.

There were a total of 21 service stations located along the old route of U.S. 81 (North Lamar) within the boundaries of the study area. Three of these stations had been built after 1953 while the remaining 18 were in operation both in 1953 and 1957. In addition, one new station has been constructed since the study was completed. There were no stations in operation in 1953 which were not in operation in 1957.

Each of the 21 stations which was in operation in 1957 was personally interviewed. Two of the station owners refused to cooperate in the study, and the information obtained from one additional station was not considered reliable. In addition, 1953 dollar sales volume information was not available from three of the stations. Therefore, of the 18 stations which were in operation in both 1953 and 1957, all except dollar volume information was obtained from 15. The dollar sales volume data was obtained from 12 stations for both years.

The following observations concerning the economic and operational characteristics of the stations along Old U.S. 81 were considered to be of importance to the analysis of the economic impact on the area. Of the 18 stations in operation during the entire period, 16 were considered as "major oil company" affiliates, while 2 were classed as independents. One of the major oil company stations was remodeled during 1956. Prior to the remodeling, the station had sold gasoline at a 2¢ per gallon discount to all customers. After remodeling, it began selling at the established price for the Austin area. Two other major oil company stations sell gasoline at a 2¢ per gallon discount. One has been discounting gasoline prices for many years while the other started after the route change.

The 19 interviewed stations along the old route have changed hands a total of 20 times between 1953 and the end of 1957. These figures are somewhat distorted, however, since one station changed hands seven times during that time. Only one station changed brands of gasoline during the study period.

Eight of the stations were owned by the operators. Leases on the other ranged from 1¢ to 1 1/2¢ per gallon with the exception of two stations which paid a flat monthly rental. There were no significant changes in lease or rental arrangements observed during the study period.

Seven of the 19 stations operate some other business in addition to their service station front. Five of these seven are grocery store which have only limited service station facilities available. Of the remaining two, one has a cafe and the other operates a garage in addition to the service station.

During the course of the interview, information was requested regarding the dollar volume of business for the two one-year periods (1953-1957) gasoline gallonage for the two periods (as estimated by station operators and later correlated with jobber records) station facilities, hours of operation, lease rates, location of the service station relative to the downtown business district, and the direct opinion of station operators as to the effects upon their businesses of the new highway facility nearby.

In the course of analysis, some of these elements were determined to be of little or no significance in determining the effects of the new highway facility upon general area business. Others when examined in detail, were felt to reflect with considerable accuracy the effects which the new facility had upon the business of the area. Of the latter group, the most significant

are the findings regarding the dollar volumes of business done by the stations, and the comparable gasoline gallonages retailed by the stations.

Dollar Volumes of Business

Only 12 of the 21 service station operators interviewed were able to supply dollar volume figures for both the full operational years 1953 and 1957. There are no requirements, other than federal income tax regulations (which are not available for use in research) which require a station to keep gross sales information. As a consequence, whenever a station changes ownership, there is usually no way to check back on the previous operators' dollar sales records.

In spite of these restrictions, the comparative dollar volume information shown by comparing changes in gross dollar sales volumes permits some interesting general conclusions to be drawn. The unadjusted dollar volume of business done by the 12 reporting stations shows a gross of $820,000 during 1953. After traffic had been routed over the new highway, these same 12 firms recorded a gross of $730,900 for 1957. The distribution of the over-all 10.9 percent decrease among firms is shown in Table 1:8.

The extent of which this loss in business volume can be attributed to the decline in traffic volume is not readily discernible. Since this was an older section of town, many of the commercial establishments were not in the best position to compete with newer facilities which would have entered the area as a part of the normal competitive actions of a free-choice society. In fact, even with the prospect of sharply reduced traffic volumes, three new service stations were built within this area after 1953.

Table 1:8

CHANGES IN DOLLAR VOLUME OF TWELVE SERVICE STATIONS LOCATED ON OLD U.S. 81 BETWEEN 1953 AND 1957

Station *	1953 (Dollars)	1957 (Dollars)	Dollar Change (Dollars)	Percent Change (Percent)
1	$ 84,000	$ 36,500	$ -47,500	-56.5%
2	84,000	84,000		0.0
3	12,000	14,000	+ 2,000	+16.7
4	66,000	48,000	-18,000	-27.3
5	16,000	24,000	+ 8,000	+50.0
6	99,000	72,000	-27,000	-27.3
7	54,000	58,000	+ 4,000	+ 7.4
8	36,000	63,000	+27,000	+75.0
9	117,000	86,400	-30,600	-26.2
10	117,000	90,000	-27,000	-23.1
11	72,000	108,000	+36,000	+50.0
12	63,000	47,000	-16,000	-25.4
Total Stations	$820,000	$730,900	$ -89,100	-10.9%
Average Per Station	68,334	60,908	- 7,425	

* Numbers are used rather than station names in order to prevent identification of individual stations. The number are changed from table to table for the same reason.

Further study of Table 1:8 also indicates that not all service stations along the old route of U.S. 81 suffered business losses after the opening of the new facility. Of the 12 stations reporting dollar volume estimates for both 1953 and 1957, 5 reported increases in the gross dollar volume of their business for 1957 over that of 1953. Percentage of increases for these 5 stations ranged from just over 7 percent to 75 percent in dollar volume. One station reported no change in dollar volume for the two years in question. Six stations reported decreases in dollar volume of business in 1957 as compared to 1953, with percentages ranging from23.1 percent to 56.5 percent.

The seven old stations for which dollar volume information was not available were closely inspected by field interviewers who called on all stations in the Austin study area. In the opinion of the interviewers, these stations as a group were not significantly different in size or appearance from those from which dollar volume information was obtained. In addition, from talking to the present operators and others who were familiar with the particular businesses, it was concluded that these stations had suffered no greater losses in volume than had the others in the area. In fact, three of the station managers indicated that their 1957 dollar volume was better than in 1953 while one indicated no change. Information gathered from other sources indicate that only one of the remaining three stations suffered a severe dollar volume decline, while losses at the other two were considered to be only moderate.

Of the three new stations built along the old route, 1957 dollar volume information was available from two. The other was able to furnish gallonage information only. For purposes of this analysis, dollar volume of this station was considered to be equal to the average of the other two new stations. In

order to show the over-all effects on all service station activity along the old route, the average volume per station was assumed to be the same for both reporting and nonreporting stations. Only in this way was it possible to calculate the net changes in total sales volumes for the two periods. Table 1:9 shows the calculated volumes for all stations in operation in 1953 and 1957 and the net percentage changes between the two periods. This comparison shows that the group of stations which were in operation in 1953 lost almost 11 percent of their business during the period covered. How much of this loss was due to the traffic moving to the new route and how much was due to increased internal competition from new stations is indeterminable. It can be seen, however, that the sales volume lost was more than compensated for by the sales of the new stations, and that the area as a whole showed an increase of 3.4 percent in total service station sales over the period studied.

It would appear from these figures that other factors besides the diversion of traffic to the new route of U.S. 81 entered into the picture of business operations of stations along the old route. A study of the hours of operation of the reporting stations (Table 1:10) and the relative locations of the stations from the downtown business area of Austin (Table 1:11) would indicate that these factors had no significant effect upon the gross dollar volume figures reported. Assuming that this is true, it would seem likely that such factors as increased competition, better-than-average management practices, the establishment of a local clientele as opposed to a clientele of primarily transient traffic, and discount selling may be reflected in the gross dollar volume figures reported by individual stations along the old route of U.S. 81 during the period studied.

Table 1:9

CHANGE IN CALCULATED DOLLAR VOLUMES OF ALL STATIONS
ON OLD U.S. 81 FOR PERIOD 1953-1957

Stations	Year 1953	Year 1957	Percent Change
	(Dollars)	(Dollars)	(Percent)
12 Reporting Old Stations--Actual	$ 820,000	$ 730,900	-10.9%
6 Nonreporting Old Stations--Calculated *	410,000	365,450	-10.9
Total 18 Old Stations	1,230.000	1,096.350	-10.9
2 Reporting New Stations--Actual		117,000	NA
1 Nonreporting New Station--Calculated *		58,500	NA
Total 3 New Stations		175,500	NA
Total All 21 Stations	$1,230,000	$1,271,850	+ 3.4%

* As explained previously, for purposes of this comparison the average of nonreporting stations was assumed to be equal to the average for reporting stations in both 1953 and 1957.

Table 1:10

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

Station	Daily Hrs. of Operation 1953 (Hours)	Days of Operation Per Week 1953 (Days)	Annual Hrs. of Operation 1953 (Hours)	Daily Hrs. of Operation 1957 (Hours)	Days of Operation 1957 (Days)	Annual Hrs. of Operation 1957 (Hours)	Percent Change in Annual Hrs. of Operation 1953-1957 (Percent)	% Change in Volume of Business 1953-1957 (Percent)
1	14	7	5,096	14	7	5,096		
2	17	7	6,188	17	7	6,188		+16.7%
3	14	7	5,096	14	7	5,096		-27.3
4	12	6.5	4,056	12	7	4,368	+ 7.7%	+50.0
5	16	7	5,824	16	7	5,824		+56.5
6	16	7	5,824	16	7	5,824		-27.3
7	15	7	5,460	14	6	4,368	-20.0	+ 7.4
8	16	7	5,824	16	7	5,824		+50.0
9	24	7	8,736	24	7	8,736		+75.0
10	14	7	5,096	14	7	5,096		-25.4
11	16	7	5,824	16	7	5,824		-26.2
12	24	7	8,736	16	7	5,824	-33.3	-23.1
Total 12 Stations	198	83.5	68,460	189	83	68,068	- 0.57	-10.9

Table 1:11

DISTANCE FROM DOWNTOWN BUSINESS AREA
IN RELATION TO CHANGE IN BUSINESS VOLUME

Distance	Station Number (Number)	Change in Dollar Business Volume 1953-1957 (Percent)
Under 4 Miles	1	-56.5%
	2	+50.0
4-5 Miles	3	+75.0
	4	-23.1
	5	-23.3
5-6 Miles	6	0.0
	7	-25.4
	8	+16.7
	9	-26.2
	10	+ 7.4
Over 6 Miles	11	+50.0
	12	-27.3

Gasoline Gallonage Sales

In studying the changes in the economic conditions of service stations, it was easier to obtain gasoline gallonage sales data than dollar volumes. Most jobbers keep a complete record of the gallons of gasoline delivered to each station within their sales territory. It was possible to get comparative 1953 and 1957 gallonage figures from 15 stations within the old study area. In addition, 1957 gallonage data was obtained from all three of the new firms which had been built since 1953.

The several comparisons of changes in gasoline gallonage sales are shown in Table 1:12. The 15 stations which had records available for both 1953 and 1957 showed a decrease in gallonage sales of just over 20 percent during the study period. This amounted to an average drop of over 33,500 gallons per station.

As was the case with dollar sales, however, the expansion of gallonage sales to include all old stations and the addition of the three new stations changed the picture considerably. By estimating the volume sold by the three nonreporting stations to be equal to the average of the 15 reporting stations, a total gallonage figure for the 18 old stations was calculated as shown in Table 1:13. Total volume figures for the area were then derived by adding in the volumes sold by the three new stations in 1957. Using this basis of comparison, which seems to be most appropriate under the circumstances, it is shown that the total gasoline gallonage volume for the area increased slightly during the study period.

It also appears evident from a study of Table 1:12 that other factors besides the diversion of traffic to the new route operated to affect the business

Table 1:12

CHANGES IN GASOLINE GALLONAGE SALES OF 15 SERVICE STATIONS
IN OPERATION ALONG OLD U.S. 81 DURING 1953 AND 1957

Station	Gasoline Volume 1953 (Gallons)	Gasoline Volume 1957 (Gallons)	Gasoline Volume Change 1953-57 (Gallons)	Percent Change 1953-57 (Percent)
1	164,040	148,620	-15,420	- 9.4%
2.	201,744	247,560	+45,816	+22.7
3	264,011	220,865	-43,146	-16.3
4	246,407	185,332	-61,075	-24.8
5	166,255	134,345	-31,910	-19.2
6	158,962	167,247	+ 8,285	+ 5.2
7	122,785	166,000	+43,215	+26.0
8	19,655	19,655		0.0
9	26,323	19,101	- 7,222	-27.4
10	166,000	78,000	-88,000	-53.0
11	24,000	208,383	+184,383	+768.0
12	267,537	241,043	- 26,494	- 9.9
13	491,000	42,373	-448,627	-91.3
14	25,310	12,642	- 12,668	-50.1
15	133,716	84,025	- 49,691	-37.2
Total 15 Stations	2,477,745	1,975,191	-502,554	-20.3
Average Per Station	165,183	131,679	-33,504	

Table 1:13

CHANGE IN CALCULATED GASOLINE GALLONAGE SALES OF ALL STATIONS ON OLD U.S. 81 FOR PERIOD 1953-1957

Item	Year 1953 (Gallons)	Year 1957 (Gallons)	Percent Change (Percent)
15 Reporting Old Stations--Actual	2,477,745	1,975,191	-20.3%
3 Nonreporting Old Stations Calculated	495,549	395,037	
Total Old Stations	2,973,294	2,370,228	-20.3
3 Reporting New Stations--Actual		648,720	
Total All 21 Stations	2,973,294	3,018,948	+ 1.5

volume of individual stations. The fact that four of the stations showed increases in volume between the two periods and one showed no change, indicates the importance of management in adjusting to newly created conditions. Of particular significance also is the fact the three of the 18 stations for which jobber records of gasoline gallonage sales were available for 1957 opened for business after the development of new Route 81 was assured. It is evident that the operators of these stations did not feel that the existence of the new facility would in itself inhibit the successful operation of a service station located on Old U.S. 81.

Service Stations (New Route)

In the study of the "after" conditions which were in effect in 1957, all retail businesses along the Interregional Highway from the intersection of U.S. 290 north to intersection with the previous route of U.S. 81 (Lamar Boulevard) were interviewed (Figure 1:12). Since this is a new roadway location, all these businesses were necessarily built after the new facility was completed in 1954. Their business volumes are included in the study in order to complete the picture of area-wide influences.

Three service stations were built within the study area along the new facility prior to 1957. The operators of the stations were interviewed and all three furnished complete dollar and gallonage volume data for the year 1957.

Except for their newer appearances, the physical facilities of these stations were not significantly different from those of stations along the route of Old U.S. 81. Their gross dollar and gasoline gallonage sales volumes were also very similar to the stations on the old highway. Each

operator indicated, however, that the primary reason for locating on the new facility was the anticipation of good traffic volumes and the prospect of eventual residential development in the area.

Service Stations (New Route and Old Route)

Tables 1:14 and 1:15 present a consolidation of the dollar volume and gasoline gallonage figures for all service stations along both routes for the two years under study. Of significance primarily is the fact that the over-all figures indicate a net increase of 21.5 percent in total dollar volume of business done, and a corresponding 22.4 percent increase in retailed gasoline gallonage of all stations in 1957 over 1953.

These tables indicate that although individual operators along the old route may insome cases have been adversely affected by the divergence of traffic to the new Interregional, the gross service station business of the combined areas has shown a solid growth between 1953 and 1957. In addition, it is believed that those operators who have located along the new facility have not yet reaped the full rewards of thelocation, inasmuch as the anticipated residential development of the area is still in its infancy.

The operators of stations along the old route of U.S. 81 have been forced by the shift of transient traffic to the new facility to utilize more efficient and aggressive management practices, to concentrate on the development of a local clientele, and to rely upon the build-up of nearby residential areas to compensate for the loss of transient traffic to the new facility.

Remarks by service station owners during interviews in 1957 support these beliefs. Some operators felt that their losses in volume was due to the fact that 1957 was a poor business year. Others felt that increases in business

Table 1:14

COMPARISON OF DOLLAR VOLUME SALES FOR ALL
SERVICE STATIONS IN AUSTIN STUDY AREA 1953-1957

Item	Year 1953 (Dollars)	Year 1957 (Dollars)	Change From 1953 to 1957 (Percent)
18 Old Stations on Old Route	$1,230,000	$1,096,350	-10.9%
3 New Stations on Old Route		175,500	
Total Old Route	1,230,000	1,271,850	+ 3.4
3 New Stations on New Route		222,000	
Total All 24 Stations Within Study Area	$1,230,000	$1,493,850	+21.5

Table 1:15

COMPARISON OF GASOLINE GALLONAGE VOLUMES FOR ALL SERVICE STATIONS IN AUSTIN STUDY AREA, 1953-1957

Item	Year 1953 (Dollars)	Year 1957 (Dollars)	Change From 1953 to 1957 (Percent)
18 Old Stations on Old Route	$2,973,294	$2,370,228	-20.3%
3 New Stations on Old Route		648,720	
Total Old Route	2,973,294	3,018,948	+ 1.5
3 New Stations on New Route		618,989	
Total All 24 Stations Within Study Ares	$2,973,294	$3,637,937	+22.4

volume for 1957 over 1953 reflected improved management and bookkeeping practice Some made a point of the fact that there is probably more traffic on North Lamar Boulevard now than during 1953, but said that the traffic is now composed primarily of local people living in nearby residential areas.

Complaints regarding the new facility dealt mainly with the approach to old route 81 from the Interregional. Some operators felt that this approach was unappealing, not marked properly, and was often overlooked by traffic, some of which originally intended to use the old route.

Motels (Old Route)

Like service stations, motels are a type of traffic-serving establishment which is very sensitive to changes in traffic volumes and patterns. Hence changes in dollar volume of annual motel business, and increases or decreases in property values exculsive of improvement or addition values, tend to reflect very accurately the effect of the new highway facility upon the areas under study.

A total of 13 motels are located along the old route of U.S. 81. All were called on for interviews, but of the 13 calls, only 10 yielded usable interviews. One of the smaller motels had gone out of business some time before, one had been recently closed by the State Health Department (after 1957) and one had just changed hands and no information was available. All of the 10 motels on which data was gathered were constructed prior to the completion of the new route of U.S. 81.

Of the 10 motel operators interviewed, 9 supplied dollar volume figures, 7 supplied property value figures, and 8 supplied data regarding average nightly occupancy and type of occupancy (i.e. local, tourist, commercial, etc.). Of the motels themselves, 7 of the 13 along the old route of U.S. 81 are classified as average, 4 as modest, and 2 as poor. None is classified as a luxury type motel. Present room rentals for a single room range from $2.50 to $4.00 per night. One rents rooms at present on a monthly basis, rather than overnight, but it is considered to be legitimately classified as a motel.

Dollar Volume of Business (1953 and 1957)

Nine motels located on the old route of U.S. 81 (Lamar Boulevard) reported dollar volumes of business for the years 1953 and 1957. These figures are tabulated in Table 1:16. The nine motels reported a gross volume of $183,500 in 1953, and of $125,800 in 1957, a net decrease in gross volume of business of 31.4 percent over the period studied.

A study of Table 1:16 indicates that the diversion of transient traffic to the new facility has had a serious negative effect on motels along the old route of U.S. 81. Percentages of change in dollar volume of business reported by the nine motels ranged from no change in one instance to a maximum of 60.8 percent decrease. No motel reported an increase in dollar volume of business for 1957 over 1953.

The fact that all motels reporting dollar volume of business showed a decrease in 1957 over 1953, and that the average decrease in dollar volume of business per motel was over 31 percent, would indicate that factors such as management or motel quality as such had relatively little influence on dollar volume of business as compared to the more vital factor of traffic volume in the area. Three of the motel operators indicated that they had lowered both rates and standards in order to stay in business after the route change. Whether improvements of the luxury type would have counteracted the negative effects of traffic loss owing to the divergence of transient traffic to new U.S. 81 is open to question.

It is also possible, however, that without substantial improvements the motels in question would have experienced a decline in volume even without the new facility. This possibility is indicated by the fact that new luxury

Table 1:16

CHANGES IN DOLLAR VOLUME OF NINE MOTELS ALONG OLD U.S. 81 DURING PERIOD 1953-1957

Motel Number	Dollar Volume 1953 (Dollars)	Dollar Volume 1957 (Dollars)	Change in Dollar Volume 1953-1957 (Percent)
1	$ 4,000	$ 4,000	0.0%
2	40,000	35,000	-12.5
3	38,000	27,000	-28.9
4	14,500	13,000	-10.3
5	20,400	8,000	-60.8
6	21,600	9,000	-58.3
7	14,000	10,000	-28.6
8	22,000	14,000	-36.3
9	9,000	5,800	-35.6
Total	$183,500	$125,800	-31.4%

motels which were in competitive locations were attracting more than their proportionate share of total customers even before the new facility was opened. This conforms also to the national trend of upgrading motel accomodations--a practice conformed to by only one of the 13 motels.

Property Values (1953 and 1957)

Seven of the motels along the old route of U.S. 81 reported changes in estimated property values (see Table 1:17). Of the seven motels reporting, only one indicated an increase in property values in 1957 as compared to 1953, and this reported increase included estimates made of the value of considerable improvements and remodeling. A second motel owner reported no change in the property value of his motel. Over-all, the seven motels reported estimates of total gross property value of $850,000 in 1953, as opposed to a total gross property value of $690,000 in 1957, a net decrease of 18.8 percent during the period under study.

Estimated dollar losses in property value reported by the five motels estimating losses ranged from $10,000 to $60,000, and percentage losses in property values estimated by these five motel operators ranged from 13.3 percent to 54.5 percent.

It is clear that motels, as a group, suffered much more from the divergence of traffic from old U.S. 81 to the new Interregional expressway than did service stations. This appears to be due largely to the fact that motels are more dependent proportionately on transient traffic than are service stations, whose operators may concentrate on the development of a local clientele in the absence of transient trade.

Table 1:17

CHANGES IN ESTIMATED PROPERTY VALUE OF SEVEN MOTELS LOCATED ALONG OLD U.S. 81 DURING PERIOD 1953-1957

Motel Number	Property Value 1953 (Dollars)	Property Value 1957 (Dollars)	Changes in Property Value 1953-1957 (Percent)
1	$110,000	$ 50,000	-54.5%
2	175,000	200,000	+14.3
3	175,000	125,000	-28.6
4	100,000	85,000	-15.0
5	115,000	115,000	0.0
6	100,000	50,000	-50.0
7	75,000	65,000	-13.3
Total	$850,000	$690,000	-18.8%

Occupancy (Types and Comparative Averages)

The importance of transient traffic to motel operations is borne out by the reports of the eight motels along old route U.S. 81 which were able to supply data concerning occupancy (see Table 1:18).

A study of this table indicates a total loss in average nightly occupancy of 102 individuals by the eight reporting motels. This represents a percentage decrease in average nightly occupancy of 34.2 percent between 1953 and 1957. As the reporting motels were operating at an average of 89.9 percent capacity in 1953, this decrease lowered the entire base of operation in 1957 to 59.2 percent of capacity.

Not only did the motels suffer an over-all loss of business in 1957 as compared to the business of 1953, but the type of occupancy varied considerably, indicating the effect of the divergence in transient traffic to new U.S. 81. As may be seen from Figure 1:18, tourist or transient trade made up 41.3 percent of all occupancy in 1953, but only 23.3 percent in 1957. There was little variance in local type patrons (semi-permanent residents, weekly patrons, etc.) as to relative percentage of total occupancy in 1953 and 1957, but the motels showed some slight gain in the percentage of total occupancy of commercial customers (salesmen, agency representatives, etc.). In 1953, commercial patrons comprised 40 percent of the total occupancy of the reporting motels, while in 1957 they comprised 55.6 percent. This is an apparent gain of 15.6 percent in total occupancy for commercial type patrons. This, however, is misleading in that the base (total occupancy) in 1957 represented only 59.2 percent of total motel capacities, whereas the base in 1953 represented 89.8 percent of total motel capacities. Since the total capacities did not change

Table 1:18

CHANGES IN OCCUPANCY OF EIGHT MOTELS ALONG
OLD U.S. 81 DURING PERIOD 1953-1957

Number	1953		1957		1953-1957
	Normal Capacity (Number)	Avg. Nightly Occupancy Rate (Percent)	Avg. Nightly Occupancy Rate (Number)	Avg. Nightly Occupancy Rate (Percent)	Avg. Nightly Occupancy Rate (Number)	Change From 1953-1957 (Percent)
1	49	95%	46.6	60%	29.4	-35%
2	47	95	44.7	60	28.2	-35
3	36	87	31.3	40	14.4	-47
4	30	85	25.5	75	22.5	-10
5	33	95	31.4	65	21.5	-30
6	49	92	45.1	40	19.6	-52
7	54	90	48.6	75	40.5	-25
8	35	75	26.2	60	21.0	-15
Total	333	89.9%	299.4	59.2%	197.1	-34.2%

between 1953 and 1957, the apparent percentage gain in commercial-type motel patrons represented an actual numerical loss of such patrons!

Motels (New Route)

At the time of the survey in 1957, two motels were located within the limits of the study area of the new route of U.S. 81 (Interregional expressway).

One of these motels, while new and modern with respect to facilities, is of the "good"--but not "luxury" classification. It was built on the Interregional highway in anticipation of heavy traffic and ready access to the travelling public. This particular site was originally chosen by the builder because the preliminary plans had indicated that a crossover would be built near that point on the Interregional. However when the highway was constructed, the crossover was located some 400 yards south. The owner indicated that in his opinion the motel had not done as well in 1957 as had been anticipated because of the change in crossover location plus the fact that traffic was somewhat lighter than had been anticipated. No other site was considered for the construction of the motel.

The second motel is of the "luxury" class, and the operator holds the Austin area franchise for use of the trade name of a nationally-known motel chain. This motel is located on the Interregional highway just north of its intersection with U.S. 290. The location was chosen because of the modern highway facility and the type and anticipated volume of traffic. A crossover is located in front of the motel, and the site was deliberately chosen for its close proximity to the U.S. 290 intersection. The motel is felt by the manager to have done as well in 1957 as was anticipated. This motel is much

larger than any other within the study area and had the largest dollar volume of business reported by any of the motels surveyed.

Motels (New Route and Old Route)

Motels along the old route of U.S. 81, as has been noted, showed a net decrease of 18.8 percent in gross property values in 1957, as compared to 1953 property values. It was not possible to obtain property value for one of the motels located on new U.S. 81. Consequently, no combined valuation figures are available. It is believed, however, that if the information were available, it would show the valuation figures following the income data. Table 1:19 presents a consolidation of the dollar volume of business of all motels for the years under study, 1953 and 1957. Of primary interest here is the fact that even though motels along the old route of U.S. 81 showed a loss in dollar volume of 31 percent from 1953 to 1957, when figures from the two motels on the new route of U.S. 81 were added, the combined dollar volume showed an increase of 34.4 percent during the period.

This simply means that although those motels on old U.S. 81 did suffer general and often severe losses through the shift in traffic patterns and volumes caused by the opening of the new facility, the Interregional stimulated sufficient new motel business to bring about a large over-all gain for the combined study areas, insofar as motel business was concerned. It is obvious that in this type of traffic-serving establishment, a relatively heavy volume of transient-type traffic is essential to successful business operation.

Comments by motel operators on both routes bear out this observation. The chief complaints of the operators of motels on old U.S. 81 had to do with

Table 1:19

COMPARISON OF DOLLAR VOLUMES FOR ALL MOTELS
IN AUSTIN STUDY AREA, 1953-1957

Item	Year 1953 (Dollars)	Year 1957 (Dollars)	Change From 1953 to 1957 (Percent)
9 Reporting Motels On Old Route--Actual	$183,500	$125,800	-31.4%
4 Nonreporting Motels On Old Route--Calculated*	64,500	45,300	-29.8
Total All 13 Motels On Old Route	248,000	171,100	-31.0
2 Motels on New Route		162,200	
Total All 15 Motels Within Study Area	$248,000	$333,300	+34.4%

* Dollar volumes for nonreporting motels were calculated as follows:

1. Number of units were determined for each and 1953 volume per unit was assumed to be equal to the average of reporting motels.

2. 1957 volume of one motel was estimated by owner as unchange from 1953. One motel was out of business, so had no volume in 1957. The other two were estimated to have per unit volumes equal to the reporting stations in 1957.

the approach to the old route from the Interregional highway. Like some service station operators, several of the motel operators felt that the approach was poorly marked, and was therefore often overlooked by traffic which had originally intended to follow the old route. It was felt also that marking the old route as the most direct approach to the Department of Public Safety and in particular to the State Hospitals would secure some business for the motels along the old route. By and large, however, the deciding factor in determining growth or decline of the dollar volumes of the motels' businesses appears without question to be the flow and volume of transient-type traffic.

Restaurants and Food Service Establishments (Old Route)

Restaurants and food service establishements, like service stations and motels, may be expected to be relatively sensitive to changes in traffic volumes and patterns.

A total of 11 such establishments are located within the study area along the old route of U.S. 81. All were called on for interviews, but only five offered much useful information. Of the 11 establishments, four are primarily restaurants, two are drive-in restaurants, four are drive-in taverns, and one is primarily a tavern. Of those reporting, two are primarily restaurants one is drive-in restaurant and two are drive-in taverns.

Of the six establishments for which data were not available, one, located in the same building as a service station, was closed before 1957. One restaurant owner refused to cooperate in the study and information concerning the operation in either 1953, 1957, or both was either insufficient or nonexistent for the other four.

In the interviews of those restaurant and food service establishment owners who provided information, data were taken regarding the dollar volumes of business for 1953 and 1957, and changes in type of clientele (classified as "local" or "transient") served in the establishments in 1953 and 1957.

Dollar Volume of Business (1953 and 1957)

Table 1:20 indicates that the five reporting establishments presented as estimated dollar volume of business of $594,600 for 1953, and of $392,800 for 1957, an over-all decrease in dollar volume of business of 34 percent.

An examination of these losses would indicate that the restaurant and food service establishments were seriously affected by the route change. However, several of the operators of these establishments were of the opinion that not all of the loss could be directly attributed to the change in traffic flow and patterns. Other factors such as "a bad business year for the Austin area," "change in customer habits," and "poop management" were suggested as explanations for a portion of the decrease in dollar volumes of business.

In the light of the fact that dollar volume losses were common to all restaurants along the old route of U.S. 81, as well as to other traffic-serving businesses such as service stations and motels, it is debatable as to the degree that traffic based losses are augmented by the factors mentioned above. It is certainly true, of course, that such factors as "poor management," etc., are worth consideration. Some explanation such as this is needed to explain the loss in local patronage. Logically, the highway relocation itself should not affect local trade.

Table 1:20

CHANGES IN DOLLAR VOLUME OF RESTAURANTS ON OLD U.S. 81, 1953-1957

Restaurant Number	Year 1953 (Dollars)	Year 1957 (Dollars)	Change From 1953 to 1957 (Percent)
1	*	*	-30.4
2	*	*	-44.4
3	*	*	-45.7
4	*	*	- 8.2
5	*	*	-14.9
Total	$595,600	$392,800	-34.0

* Individual volumes are not shown in order to reserve the anonymity of individual firms.

Changes in Clientele (1953 and 1957)

Changes in the type of clientele served by the restaurants and food service establishments may be of some significance in evaluating the effect of the relocation on such businesses. Table 1:21 indicates that of approximately 10,300 customers served per week by the reporting establishments in 1953, 73.7 percent were felt by owners to be "local" customers, while the remaining 26.3 percent were considered "transients."

In 1957, on the other hand, after the construction of the new Interregional expressway, the reporting establishments indicated that of an estimated 7,550 customers served per week, only 712, or 9.4 percent could be classified as transients. The decrease from 2,712 transient customers served weekly in 1953 to 712 such customers served weekly in 1957 amounts to a 77.4 percent decrease in this type of customer. The corresponding change in local customers was only 9.9 percent.

It would appear that restaurants and food service establishments along old U.S. 81 did receive negative effects from the route change, particularly to the degree that through and tourist traffic was diverted to the new facility.

Restaurants and Food Service Establishments (New Route)

Only two establishments of this classification were located within the study area along the new route of U.S. 81 by 1957. Both were restaurants. Of these, one was located in the "luxury" type motel previously described, and the other was located next to a truck stop. The two establishments reported a gross dollar volume of business for 1957 of $234,000. No other data of significance was taken.

Table 1:21

CHANGES IN PROPORTION OF LOCAL AND TRANSIENT CUSTOMERS SERVED BY STUDY AREA RESTAURANTS IN 1953 AND 1957

Restaurant Number	1953			1957			Change From 1953 to 1957		
	Total Weekly Customers (Number)	Percent Local (Percent)	Percent Transient (Percent)	Total Weekly Customers (Number)	Percent Local (Percent)	Percent Transient (Percent)	Total Weekly Customers (Percent)	Number of Local Customers (Percent)	Number of Transient Customers (Percent)
1	3,500	70%	30%	2,550	85%	15%	-28.2%	-12.8%	-64.1%
2	1,800	75	25	1,000	90	10	-44.4	-33.3	-77.8
3	750	75	25	600	90	10	-20.0	- 4.1	-67.9
4	2,500	80	20	2,000	95	5	-20.0	- 5.0	-80.0
5	1,700	70	30	1,400	95	5	-17.6	+11.8	-86.3
Total	10,300	73.7	26.3	7,550	90.6	9.4	-26.7	- 9.9	-73.8

Restaurants and Food Service Establishments (New Route and Old Route)

Table 1:22 presents a consolidation of the dollar volume of business of all reporting restaurants and food service establishments in the two study areas along the old and new routes of U.S. 81 for the years 1953 and 1957.

The five reporting establishments along the old route of U.S. 81 showed a net dollar loss of $202,800 for the period under study, or a net decrease of 34 percent. The six nonreporting businesses were assumed to have had volumes comparable to reporting businesses in both periods. Therefore, the total loss for all of this class business along the old route is estimated to have been $446,160 or the same 34 percent. However, the dollar volume of business reported by the two new establishments on the new route of U.S. 81 added $234,000 to the combined 1957 dollar volume for the two study areas. This reduces the loss for the area as a whole to $212,160 or some 16.2 percent.

This percentage loss in the reported dollar volume of business of these restaurants and food service establishments might well be felt to indicate a gross negative effect of the route change on such businesses in the area. The probability is, however, that although there has indeed been a negative effect upon those establishments along the old route of U.S. 81, the new route has not been in existence long enough to develop its potential in this line. Another survey in five to seven years might well develop altogether different data.

In general, owner comments tend to bear out this thinking, at least that concerning the negative effects of the route change on those restaurants and food service establishments along old U.S. 81. One owner of a restaurant which suffered a very substantial decrease in dollar volume between 1953 and

Table 1:22

CALCULATED CHANGES IN DOLLAR VOLUMES OF ALL RESTAURANTS IN THE AUSTIN STUDY AREA IN 1953 AND 1957

Item	Year 1953 (Dollars)	Year 1957 (Dollars)	Percent Change (Percent)
5 Reporting Old Restaurants--Actual	$ 595,600	$ 392,800	-34.0%
6 Nonreporting Old Restaurants--Calculated*	714,720	471.360	-34.0
Total Old Restaurants	1,310,320	864,160	-34.0
2 New Restaurants On New Route		234,000	
Total All 13 Restaurants In Study Area	$1,310,320	$1,098,160	-16.2

* Nonreporting firms are estimated to have volumes equivalent to reporting firms in both 1953 and 1957.

1957 attributed only one-fourth of his losses to the route change. Another, whose business loss was almost as great, attributed only one-fifth of his losses to the route change. Both of these and a large part of the other restaurant owners on the old route expect to regain a large part of their losses within the immediate future.

Complaints of restaurant and food service establishment owners, like those of service station and motel owners, centered around the maintenance of the old route, the approach from new U.S. 81, and unsatisfactory marking of the approach to old U.S. 81 from its intersection with the new Interregional expressway.

Traffic-Serving Establishments (New Route and Old Route)

It will be noted from a survey of Table 1:23 that along the old route of U.S. 81, all traffic-serving establishments showed decreases of varying degrees in dollar volume of business in 1957, as compared to their dollar volumes of business of 1953. Restaurants and food service establishments along the old route showed the greatest decrease (34 percent); motels showed a considerable percentage of decrease (31 percent); and service stations showed a small increase (3.4 percent). Grouped together, all types of traffic-serving businesses along the old route of U.S. 81 showed a 17.3 percent decrease in dollar volume of business in 1957, as compared to 1953. This decrease of over one-sixth of the total dollar volume of business must in all probability be attributed primarily to the change in traffic volume and traffic patterns brought about by the route change on U.S. 81.

This conclusion is substantiated by the consideration that of the three groups of traffic-serving establishments, those types which are most dependent

Table 1:23

CHANGES IN TOTAL DOLLAR VOLUME OF ALL TRAFFIC-SERVING BUSINESSES IN THE AUSTIN STUDY AREA IN 1953 AND 1957

Item	Year 1953 (Dollars)	Year 1957 (Dollars)	Change From 1953 to 1957 (Percent)
Service Stations:			
Old Route	$1,230,000	$1,271,850	+ 3.4%
New Route		222,000	
Total	1,230,000	1,493,850	+21.5
Motels:			
Old Route	248,000	171,100	-31.0
New Route		162,200	
Total	248,000	333,300	+34.4
Restaurants:			
Old Route	1,310,320	864,160	-34.0
New Route		234,000	
Total	1,310,320	1,098,160	-16.2
Total Traffic-Serving Businesses:			
Old Route	2,788,320	2,307,110	-17.3
New Route		618,200	
GRAND TOTAL	$2,788,320	$2,925,310	+ 4.9%

for business on transient traffic ("motels" and "restaurants and food service establishments") showed substantial decreases in dollar volumes of business. The service stations, which received a larger share of local trade, and which were positively affected by local residential area buildup (as opposed, for example, to motels), actually increased.

When the influences of new traffic-serving establishments on the new route of U.S. 81 are considered, it is seen that in the combined areas, traffic-serving establishments as a whole showed a small total increase in dollar volumes of business for 1957 over 1953 (Table 1:23). This increase of 4.9 percent compares quite favorably to the increase of 4.3 percent in total retail sales in Austin during the same period.(Table 1:24).

Of the three types of establishments, motels showed the largest percentage of increase (34.4 percent) in 1957 over 1953. This may be at least partially explained by the existence in 1957 of the large luxury type motel on the new route -- a business frankly attracted by the existence of the new highway facility. The service stations in the combined areas showed a gross increase in dollar volume of business of 21.5 percent in 1957 over 1953. Their increase was at least assisted by the build-up of residential areas in the vicinity. Restaurants and food service establishments, on the other hand, showed a net loss in dollar volume of some 16.2 percent. This may be attributed in part to the fact that to date only two restaurants have been located on the new facility. As the area continues to develop, additional new restaurants will probably be located along with the other developments on the new route.

Of primary significance, however, is the fact that when all the traffic-serving establishments along both routes within the study areas are taken together, they experienced a gross increase of 4.9 percent in dollar volume.

Table 1:24

INDEX OF RETAIL SALES * AUSTIN, 1953 THROUGH 1957

Year	Index	Percent Change From 1953
1953	100.00	-0-
1954	100.00	-0-
1955	110.00	+10.00
1956	102.30	+ 2.30
1957	104.35	+ 4.35

* Constructed from data supplied by the Bureau of Business Research, Austin, Texas

From the broad point of view, this fact would indicate that the negative effects of the new highway facility upon the traffic-serving establishments of old route U.S. 81 were offset by the positive effects of the development of new businesses along the new facility. For the whole area, traffic-serving establishments showed a slight increase in total dollar volume of business done, and this increase took place within four years after the development of the new facility.

NONTRAFFIC-SERVING BUSINESSES

Nontraffic-Serving Businesses (Old Route)

Along the old route of U.S. 81 there are 22 businesses which were classified as nontraffic-serving retail businesses. These businesses were interviewed, but with only limited success. Dollar volumes of business for 1953 and 1957 were available from only four of the businesses interviewed. Therefore, interpretations of the effect of the new highway facility on nontraffic-serving businesses along the old route of U.S. 81 must be made from a small number of firms. To be most meaningful, this data should be compared to similar data obtained from nontraffic-serving businesses along the new route. The total dollar volume of business reported by these four nontraffic-serving businesses was $981,000 in 1953 and $1,728,000 in 1957, a gain of 76.1 percent.

Although field interviewers could discern no significant differences between those businesses which furnished dollar volume information and those which did not, it is felt that the number of responding firms is too small to be used as a true sample. It is the feeling of the researchers concerned that, if available, nontraffic-serving retail sales figures would follow the

pattern established by these four firms rather closely. That is, that sales would have increased significantly during the study period. Because of the lack of factual information, however, the data from these firms is not expanded to a total for the nontraffic-serving retail group.

However, a number of pertinent owner-comments may be reported. In only two cases did an owner or operator of a nontraffic-serving business associate a change in his business with the route change. One operator of a drive-in grocery estimated a 15 percent loss in dollar volume attributable to the route change, and one drugstore owner felt that the route change had hurt the volume of his business, but could not accurately judge the extent of the damage. Since this operator had changed location during the study period, however, it was felt that he could not present accurate date -- particularly since the dollar volume of his business showed an estimated net increase of over 47 percent during the period.

Most operators and owners of nontraffic-serving businesses seemed indifferent toward the route change. They attributed changes in dollar volumes of their businesses primarily to such factors as increases in stock, change in location, increased residential build-up in the area, and increased competitic

If the opinions of the owner-operators of these businesses as to the effects of the route change on their businesses are assumed to be reasonably sound, and if the limited data available as to dollar volume changes is indicative of over-all nontraffic-serving business patterns, then it appears that in the aggregate the route change had little or no adverse effect on the business activities of nontraffic-serving establishments. In fact, this change would have to be considered as an economic stimulant to these businesses. This

conclusion is supported in logic by the fact that most establishments of this sort depend on local trade and prosper with the general growth of the community.

The only complaint relative to traffic made by owner-operators of nontraffic serving establishments along the old route of U.S. 81 had to do with parking facilities. Relatively heavy traffic along Lamar Boulevard, limited entry spaces, and inadequate depth in parking areas made customer parking difficult and the over-all parking situation hazardous. No statistical data other than the reported dollar volume changes of the four businesses here discussed were taken.

Nontraffic-Serving Businesses (New Route)

In the study area along the new route of U.S. 81 only three retail businesses of the nontraffic-serving type were located prior to 1957. All had been previously located at other points in Austin; one was formerly located on the old route of U.S. 81. All moved to their present locations on the new route of U.S. 81 in order to obtain more space, better parking facilities, easier access for truck transportation, etc. One had moved to its location because of industrial zoning requirements in its previous location. All of the operators of these businesses reported that the location on the new route was proving to be as favorable as had been anticipated.

Dollar volume of business figures were available from only two of the three nontraffic-serving businesses interviewed. Since these figures will not be compared to sales on the old route or developed into gross estimates, the actual figures will not be revealed. It is sufficient to say that the average per firm is quite close to that of the firm on the old route.

Nontraffic-Serving Businesses (New Route and Old Route)

Because of the paucity of data, estimates of total combined dollar volume changes are not presented in tabular form. Of particular significance, however, is the fact that all the available evidence indicates that nontraffic-serving retail sales increased in both the old and new sections of the study area. Granting that the data is limited, the indication is nevertheless clear that the route change had no adverse effects on nontraffic-serving businesses along the old route of U.S. 81, and actually stimulated such business activity along the new route.

TEMPLE AREA

General

Temple is located about 65 miles north and slightly east of Austin in the Blackland Prairies of Central Texas. It is an industrial and distribution center of approximately 35,000 population. The economy of the city is well balanced by farm income from surrounding crop and livestock areas and the growth of light industry within the city. In addition, Temple serves as the distribution center for a large area of central Texas, and is a major medical hospital center. The City of Temple has had a period of rapid growth within the last few years, with an estimated population increase of around 40 percent from 1950 to 1957. Some of this increase may be accounted for, however, by the fact that the city limits have been expanded considerably within recent years.

Temple is adequately served by a network of U.S. and State Highways. U.S. 190 carries east-west traffic through the city, while U.S. 81 serves the north-south traffic. In addition, State Highway 36 and 53 carry a large amount of traffic to and from nearby points. The major traffic artery, however is U.S. 81. It is one of Texas major north-south highways, and has been designated as a part of the Interstate System of Highways.

STUDY AREA

The Temple study area consists of almost the entire U.S. 81 bypass area around the main business district of Temple. It is a section of land approximately 3 miles long and from 1 to 1 3/4 miles in width. It extends from the intersection with State Highway 36 on the south to near the rejoinder with old U.S. 81 on the north (see Figure 2:1). The Eastern boundary of the study

area was determined by the city limits which were in effect during the base and construction periods. The western boundary was a county road about a mile from the facility. There are about 2,380 acres of land included within this area.

Until the new bypass was opened in early 1955, U.S. 81 went through the main business district of Temple. Traffic congestion became quite heavy in the downtown area, and it was decided to relocate that section of the highway. This new location was to be north and west of the main business district.

The City of Temple began acquiring rights of way for this section in 1948. Purchases of rights of way were completed in 1952, and construction began in 1954. The 300-feet minimum width right of way was pruchased at an estimated cost of $195,000 by Bell County. Construction was completed and the facility was opened to traffic in April, 1955.

With the exception of one at-grade crossing near the north end, the facility meets all the Interstate construction standards. It has four divided traffic lanes over the entire length, and full frontage roads over all but one short stretch near the north end. Construction costs for the three-mile section were as follows:

Engineering Costs (T.H.D.)	$ 62,631
Grading, Base and Structures	987,057
Illumination	92,503
Total	$1,142,191

CONTROL AREAS

The control area was selected for the Temple study by the same method that was used in Austin. That is, entire land surveys were selected. These, in the opinion of the research staff, contained properities with base period

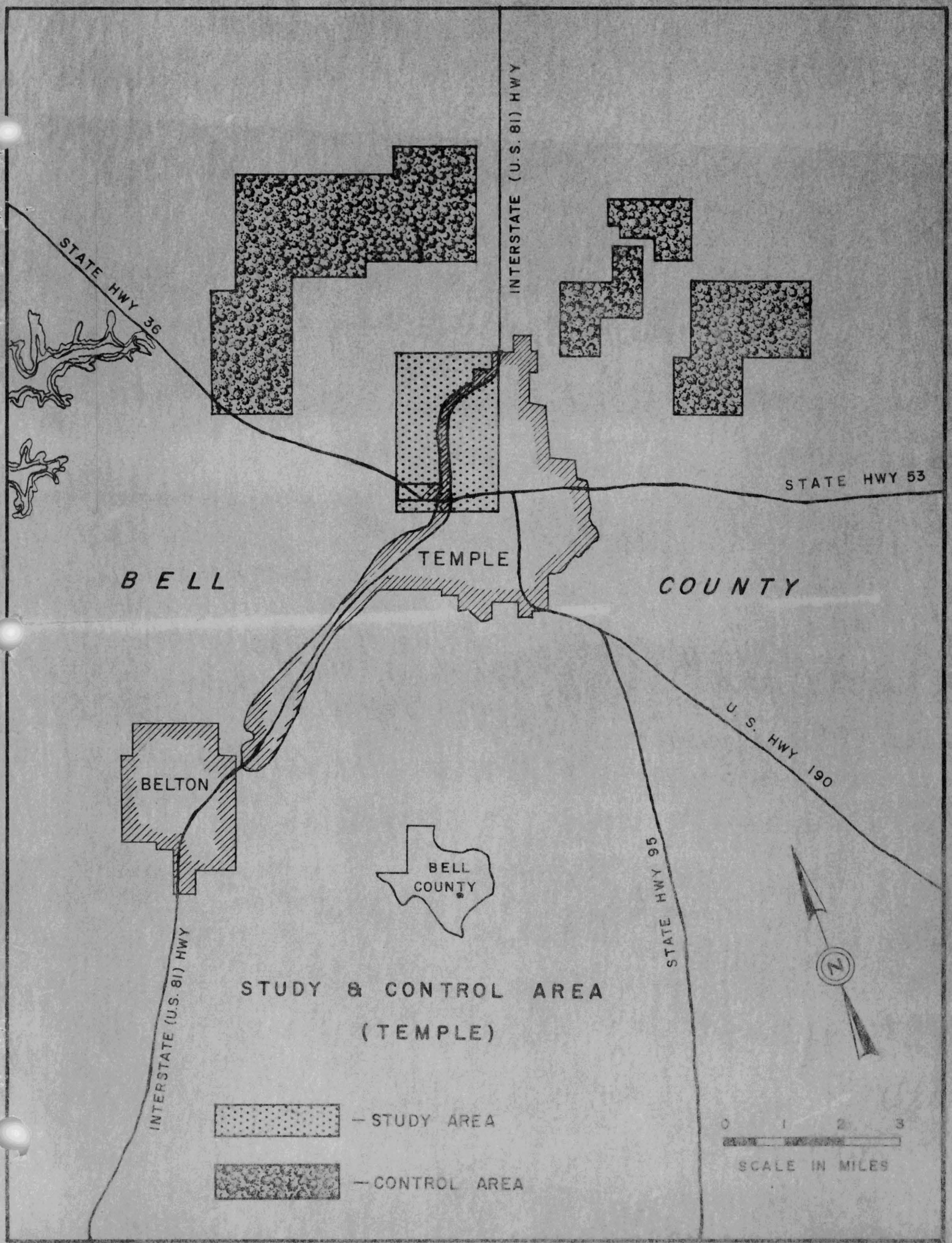
INTERSTATE (U.S. 81) HWY
STATE HWY 36
STATE HWY 53
TEMPLE
BELL
COUNTY
BELTON
U. S. HWY 190
STATE HWY 95
BELL COUNTY
INTERSTATE (U.S. 81) HWY
STUDY & CONTROL AREA
(TEMPLE)
— STUDY AREA
— CONTROL AREA
0 1 2 3
SCALE IN MILES
N

FIGURE 2.1

characteristics similar to those in the study area. To assure a sufficient number of sales of comparable property, it was necessary to select ten rather small surveys. The surveys selected and the number of acres of land in each are listed below:

Survey	Acres
Henry Millard	2,402
William Gilmore	2,392
P. M. Mercer	1,497
C. S. Masters	498
Cris Adams, Jr.	635
Alex Smith	331
Sarah Christopher	496
Garnett S. Hardcastle	372
I & G N Railroad Co.	674
Walter W. Davis	1,721
Total	11,018

The location of these surveys in relation to the City of Temple and the study area are shown in Figure 2:1. Since the land in the study area was outside the city limits until the last period of the study, the control areas were selected from surveys which were also outside the city limits. As a whole, however, the control areas are further removed from the city than would be desired. This selection was dictated by the fact that most of the land closer in to the city was in one large survey which included the city itself. While control sections closer in to the city would have been preferr these control areas are considered to reflect accurately the general land appreciation in the vicinity of Temple.

Land Value

The comparative method of analysis was used to measure the changes in land prices between the three designated time periods for both the study and control areas. This method permits an analysis of both gross and net value changes between the periods.

The three time periods include a total of fourteen years. The first period, 1943-1948 inclusive, is used as the base period in determining subsequent changes in land values. The second period, years 1949-1954 inclusive is the period during which the right of way for the facility was acquired and the actual construction of the facility was performed. The third and last period, years 1955-1957, is regarded as the study period. This period covers the time that has lapsed since the bypass was first opened to through traffic movement. Changes in prices between the first and second periods largely measures the amount of early speculative interest in the area, while total changes through the third period will more nearly reflect changes in land utility after completion of the facility.

The study area near Temple is divided into only two general classifications "abutting" properties and "nonabutting" properties. Since the entire section is only about three miles in length and curves around the main business district of Temple, distance from the downtown area was not considered to be a major influencing factor. For this reason no attempt was made to divide the area into separate sections, as was done in the Austin study.

Two methods were employed in the analysis of the land value changes. The actual or unadjusted sales data was collected and presented in tabular form. Then, in order to remove the effect of the general price inflation during

the fourteen-year period, the actual prices were adjusted to a common dollar base by application of the Bureau of Labor Statistic's Consumer Price Index (1947-49 = 100).

TOTAL LAND VALUES

The influence of the new highway on land prices near the facility is reflected by comparing real estate sales prices in the study area to those in the control area. Table 2:1 presents the adjusted land prices per acre for each of the three time periods used in the study and control areas. Table 2:1-A shows the actual land prices for the three periods. The per-acre prices are based upon fifty property transactions in the study area and ninety-four transactions in the control area.

Land within the study area increased from an average of $58 per acre in the base period to $822 per acre in the last period--an increase of $764 per acre--while the control area land prices increased only $31 per acre. In terms of percentage change, land prices in the study area increased 1317 percent as compared to a 40 percent increase in the control area.

Most of the $764 per acre increase in land prices within the study area occurred between the last two periods. The increases between the first two periods, while less dramatic than those that followed were still substantial. Land values increased 168 percent during this time. This increase, since it occurred before construction of the new facility was completed, must be largely attributed to speculative interest by realtors and landowners. It was generally anticipated within the area that land would become more valuable after the facility was completed. Those expectations appear to have been fully justified by the additional 430 percent increase in land prices that occurred between the last two periods.

Table 2:1

ADJUSTED LAND PRICES FOR TEMPLE AREA, STUDY AND CONTROL AREA

Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Changes Per Acre: Between Periods (Dollars)	Price Changes Per Acre: Between 1st & 3rd Periods (Dollars)	Percentage Changes: Between Periods (Percent)	Percentage Changes: Between 1st & 3rd Periods (Percent)
			STUDY AREA				
1941-48	16	1,594	$ 58				
				$ 97		168%	
1949-54	22	460	155		$764		1,317%
				667		430	
1955-57	12	72	822				
			CONTROL AREA				
1941-48	53	4,809	77				
				35		45	
1949-54	29	2,170	112		31		40%
				-4		-4	
1955-57	12	1,035	108				

Table 2:1-A

ACTUAL LAND PRICES FOR TEMPLE STUDY AND CONTROL AREA

Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Changes Per Acre: Between Periods (Dollars)	Price Changes Per Acre: Between 1st & 3rd Periods (Dollars)	Percentage Changes: Between Periods (Percent)	Percentage Changes: Between 1st & 3rd Periods (Percent)
			STUDY AREA				
1941-48	16	1,594	$ 45				
				$122		271%	
1949-54	22	460	167		$906		2,013%
				784		469	
1955-57	12	72	951				
			CONTROL AREA				
1941-48	53	4,809	64				
				60		94	
1949-54	29	2,170	124		63		98
				3		2	
1955-57	12	1,085	127				

ABUTTING AND NONABUTTING LAND

Land within the study area was classified as either "abutting" or "nonabutting" properties. All parcels of land that touched the frontage roads of the facility were classified as abutting properties, and the land not touching the facility right of way was classified as nonabutting. The depth to which the abutting property extended depended primarily upon existing property lines.

The prices of abutting land increased substantially because of the relocations of the new facility. The nonabutting land prices increased also, but at a much slower rate than did the prices of the abutting properties. As shown in Table 2:2, the abutting property prices increased from an average of $58 per acre in the base period to $290 per acre in the last period--a net increase of $862. The prices of nonabutting land increased on $156 per acre during the same period. In terms of percentage increase, the abutting properties showed a price gain of 1486 percent as opposed to a 286 percent increase for the nonabutting land. Assuming that the 40 percent price increase in the control area lands reflects the general increase in land prices arcund Temple, it may be assumed that the new facility had an influence of 1446 percent on abutting property values within the study area, and a 229 percent influence on nonabutting properties.

Table 2:2-A, showing the unadjusted data, presents an even more dramatic picture. Abutting land had a price increase of 2284 percent between the base and last periods. Such spectacular increases illustrate the combined effects of changes in basic land utility and the speculative interest that accompanies the construction of a new expressway-type facility.

Table 2:2

ADJUSTED LAND PRICES FOR ABUTTING AND NONABUTTING PROPERTY IN TEMPLE STUDY AREA

Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Change Per Acre: Between Periods (Dollars)	Price Change Per Acre: Between 1st & 3rd Periods (Dollars)	Percentage Changes: Between Periods (Percent)	Percentage Changes: Between 1st & 3rd Periods (Percent)
			ABUTTING LAND PRICES				
1943-48 *	16*	1,594	$ 58				
				$382		659%	
1949-54	9	85	440		$862		1,486%
				480		109	
1955-57	9	62	920				
			NONABUTTING LAND PRICES				
1943-48 *	16*	1,594	58				
				33		57	
1949-54	13	375	91		156		269
				123		135	
1955-57	3	10	214				

* Base period sales were not divided into abutting and nonabutting properties.

Table 2:2-A

ACTUAL LAND PRICES FOR ABUTTING AND NONABUTTING PROPERTY IN TEMPLE STUDY AREA

Periods	Number Sales (Number)	Number Acres (Acres)	Average Price Per Acre (Dollars)	Price Changes Per Acre: Between Periods (Dollars)	Price Changes Per Acre: Between 1st & 3rd Periods (Dollars)	Percentage Changes: Between Periods (Percent)	Percentage Changes: Between 1st & 3rd Periods (Percent)
ABUTTING LAND PRICES							
1943-48 *	16*	1,594	$ 45				
				$433		96%	
1949-54	9	85	478		$1,021		2,267%
				588		123	
1955-57	9	62	1,066				
NONABUTTING LAND PRICES							
1943-48 *	16*	1,594	45				
				52		116	
1949-54	13	85	97		200		444
				148		153	
1955-57	3	10	245				

* Base period sales were not divided into abutting and nonabutting properties.

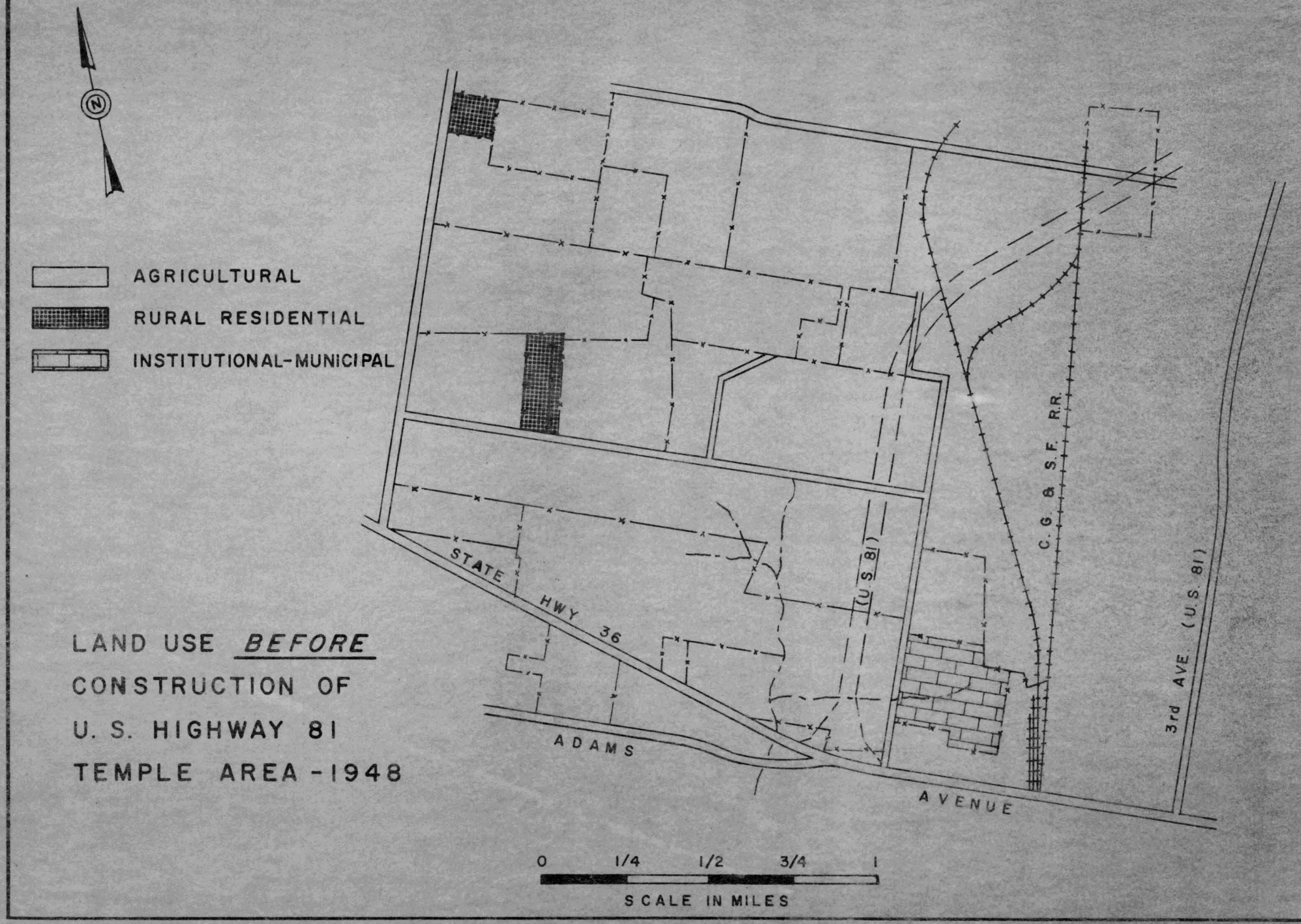
AGRICULTURAL
RURAL RESIDENTIAL
INSTITUTIONAL-MUNICIPAL
STATE HWY 36
ADAMS AVENUE
(U.S. 81)
C. G. & S. F. R.R.
3rd AVE. (U.S. 81)
LAND USE BEFORE
CONSTRUCTION OF
U. S. HIGHWAY 81
TEMPLE AREA - 1948
0 1/4 1/2 3/4 1
SCALE IN MILES

FIGURE 3-2

Land Use

The analysis of land use change along the three-mile section of U.S.81 near Temle was undertaken to supplement findings regarding changes in land values and to present a picture of land use changes within this study area. Land use maps are used to depict land use within the study area as of certain selected years. The "before" land use map shows the land use patterns as of 1948, the last year of the base period. The "after" map shows the land use pattern at the end of 1957.

The information used in determining land use in 1948 was obtained through interviews with local residents and realtors who were familiar with the study area in 1948. Visual inspection and interviews with property owners within the study area furnished the necessary information relative to land use patterns at the end of 1957.

LAND USE IN 1948

The major portion of the total acreage lying within the study area boundaries was being used for agricultural purposes in 1948. The soil in this area is rich and fertile, thereby making it highly suitable for agricultural production in the absence of demands for more intensive use.

Even though the residential area of the City of Temple had expanded westward to the eastern boundary of the study area, the railroad line seemed to act as a curb to further expansion in that direction. The residential areas were expanding primarily to the north and south with some eastward expansion. However, there seemed to be no great tendency for these areas to expand west beyond the railroad. As a consequence, the land in the study area had little utility except for agricultural activity.

During 1948 there were only a few scattered tracts of land classifiable as "rural residential" land. These rural residences were located near the western boundary of the study area near a county road. The majority of the improvements on the farms within this area were below average in both appearance and condition.

The American Legion owned the tract of land shown on the "before" map as the "institution-municipal" land.

LAND USE IN 1957

Agricultural activity was still the most prevalent land use in the Temple study area as late as 1957. Practically none of the nonabutting properties had changed land uses except for a small number of residential plots.

The most significant changes in land use patterns occurred within a relatively narrow strip on either side of the expressway. Much of this land changed to "land held for future use" or "commercial" land. A comparison of the two land use maps shows the various land use changes as well as the property divisions that occurred during the 1948-1957 period.

New construction activity within the study area has been fairly limited. The precise reason or reasons for this limited activity are difficult to determine. Perhaps the study was made too soon since the facility had been opened for only a two-year period.

Another possible explanation for the limited number of traffic-serving establishments locating along the new bypass is the fact that U.S. 81 follows its old location for a considerable distance just south of the study area. Numerous traffic-serving establishments located along the old route were already in existence before construction of the new bypass. It is possible that the

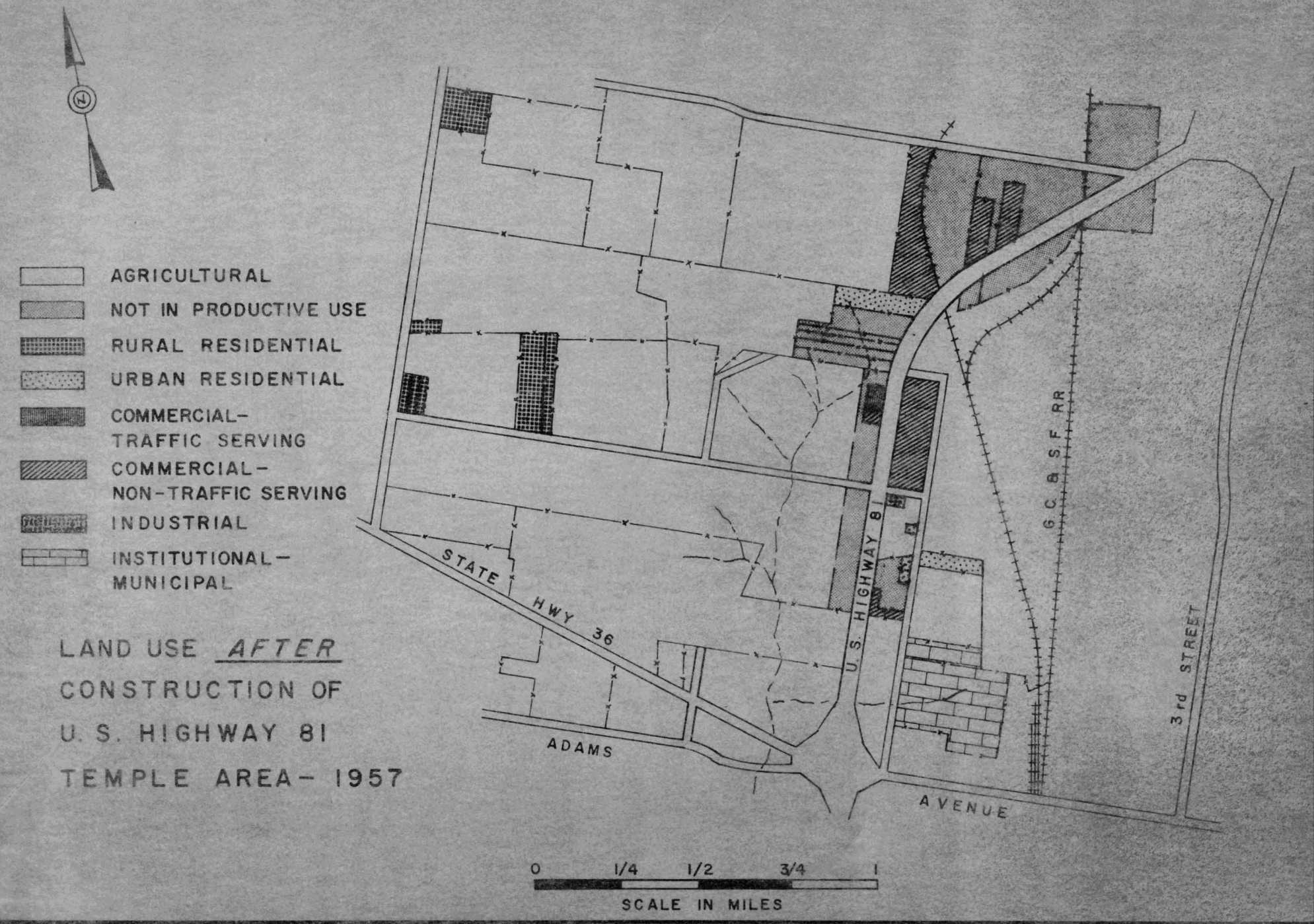
AGRICULTURAL
NOT IN PRODUCTIVE USE
RURAL RESIDENTIAL
URBAN RESIDENTIAL
COMMERCIAL–
TRAFFIC SERVING
COMMERCIAL–
NON-TRAFFIC SERVING
INDUSTRIAL
INSTITUTIONAL–
MUNICIPAL
LAND USE AFTER
CONSTRUCTION OF
U. S. HIGHWAY 81
TEMPLE AREA– 1957
STATE HWY 36
U.S. HIGHWAY 81
G.C.&S.F. RR
3rd STREET
ADAMS
AVENUE
0 1/4 1/2 3/4 1
SCALE IN MILES

FIGURE 2:3

local businessmen feel that the area is already saturated with such previously established businesses. The next few years should reveal more conclusive evidence regarding the cause of the limited development of traffic-serving businesses.

It will be noticed on the "after" land use map (Figure 2:3) that several nontraffic-serving enterprises have begun to move into the area. These include one air conditioning firm, one general wholesale firm, two softdrink beverage warehouses, one grain storage firm with several large storage buildings, and one general merchandise warehouse.

In terms of frontage area, the abutting land along the bypass has a good potential for land use changes during the future. Activity during the first half of 1958 revealed additional commercial establishments locating within this area.

RELATIONSHIP BETWEEN CHANGES IN LAND USE AND LAND VALUES

The methods used in gathering and assembling data to show the relationship between changes in land use and land value were essentially the same as those used in the Austin study.

The study of land value in relation to its use in the Temple study area is based on 50 property transactions involving sales from three major land use classes. These major land use classes were: (1) agricultural land, (2) land held for future use, and (3) rural residential land. During the period under study all properties that sold within this area were classed in one of these three categories at the time of sale. Their use subsequent to sale could have remained unchanged or have changed to any one of the eight use classes listed below:

1. Agricultural land
2. Land held for future use
3. Rural residential
4. Urban residential
5. Commercial - traffic-serving
6. Commercial - nontraffic-serving
7. Industrial
8. Municipal

Perhaps the most significant information to be seen by comparing prices paid for land in different use classes by periods (as shown in Figures 4, 5, 6, and 7) is that as the area as a whole ripened, prices for all types of uses of land advanced materially. The differences in the timing and extent of the advances are also revealed to a certain extent. Prices of land in use for agricultural purposes, for example, advanced by only $65 per acre between the base and construction periods and then jumped over $1,400 after the facility was completed. Class 2 land (that being held for future use) on the other hand, revealed significant speculative increases at a much earlier date. The increases here were almost evenly split between the different time periods. Rural residential lands (Class 3) had a much slower turnover and more sedate price advances than did either of the other two classes.

Not all land sales were transfers into a "higher and better" use class. For example, of the 27 transactions involving agricultural land during the 15-year study period, only 10 parcels were transferred to "higher and better" land use classes. The 17 remaining sales of agricultural land were merely transfers in ownership which involved no change in basic use. It is also interesting to note, however, that all of these land sales occurred during

SALES OF PROPERTIES FROM THREE MAJOR LAND USE CLASSES TO ALL USES COMBINED, BY PERIODS

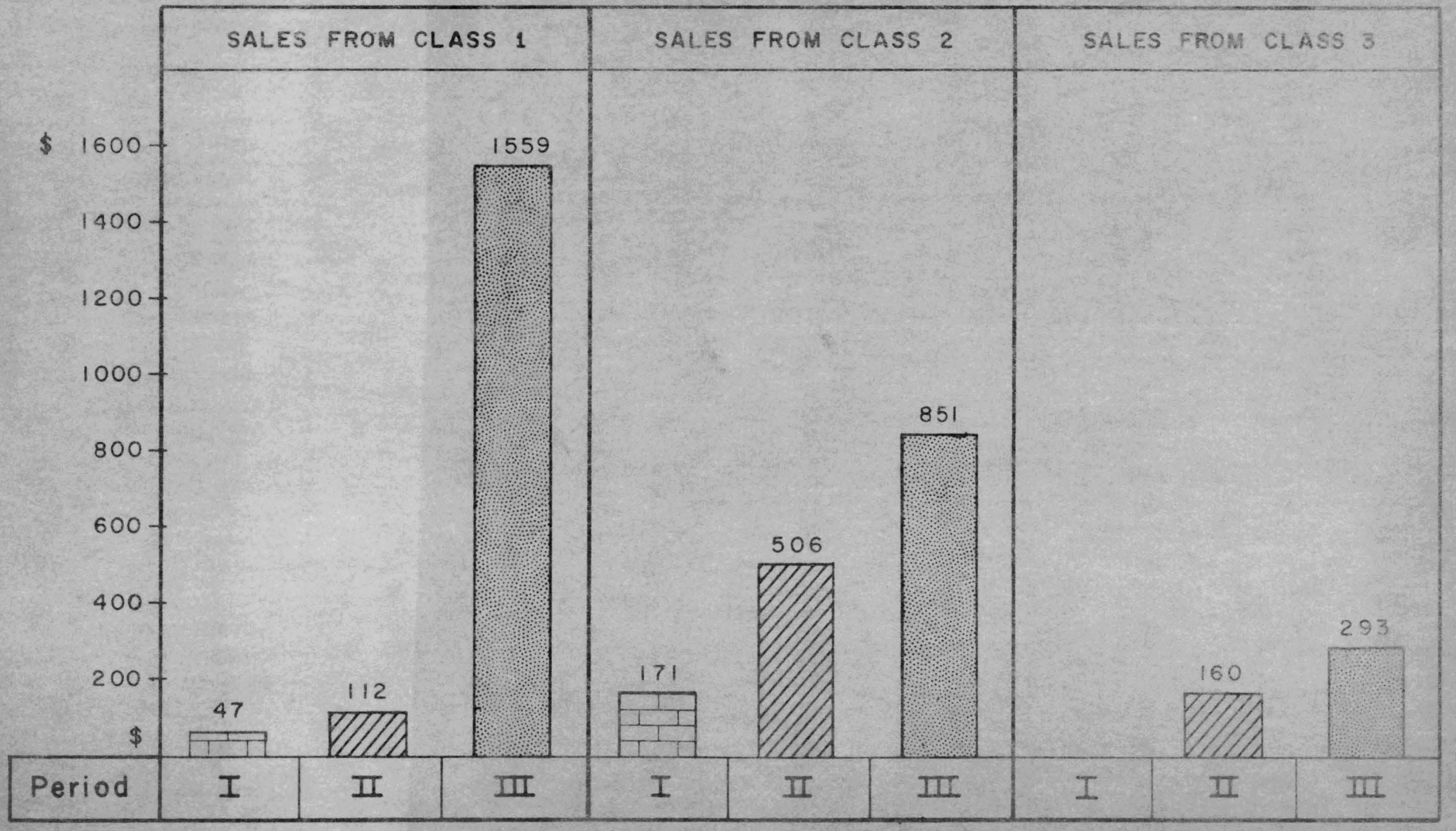

FIGURE 2:4

the first and second periods (1944-48 and 1949-51). All agricultural land tracts selling in the third study period (1952-54) were transferred to a "higher" use class. This would seem to indicate that the ripening process had reached the point where agricultural use had been forced out of the market as an active participant in land purchases.

Of the sales of agricultural land to other use classes, the transfers to rural residential uses (Class 3) were most common. During the study periods, sales of seven such parcels of land were recorded. The prices paid for land destined for this use, while considerably higher than those paid for land for agricultural purposes, were modest when compared to priced paid for other uses (Figure 2:5). Each parcel of this class of land is, by definition, destined for a rural home site. As such, it is basically nonproductive in nature and must complete price wise, with other rural and, to some extent, urban sites, which in most areas of Texas are still plentiful. Consequently, rural residential uses are able to compete for land during the later stages when higher alternative uses begin to appear.

Since the land in the Temple study area is good farm land, some of the owners continue to farm the land until such time as they can sell it directly for commercial or industrial uses. This is not true in all cases, however, since a few parcels of agricultural land have been sold to speculators and land developing firms with a resulting change in its use to Class 2. As can be seen, the highest price paid for agricultural land in each of the last two time periods was for this purpose (Figure 2:5).

In many cases, too, land does not necessarily have to change ownership in order to change in use. This fact is reflected in tracts of land which have been retired from agricultural production by the orginal owners. Such acts.

SALES OF CLASS 1 PROPERTIES IN ACCORDANCE WITH SUBSEQUENT USES, BY PERIODS

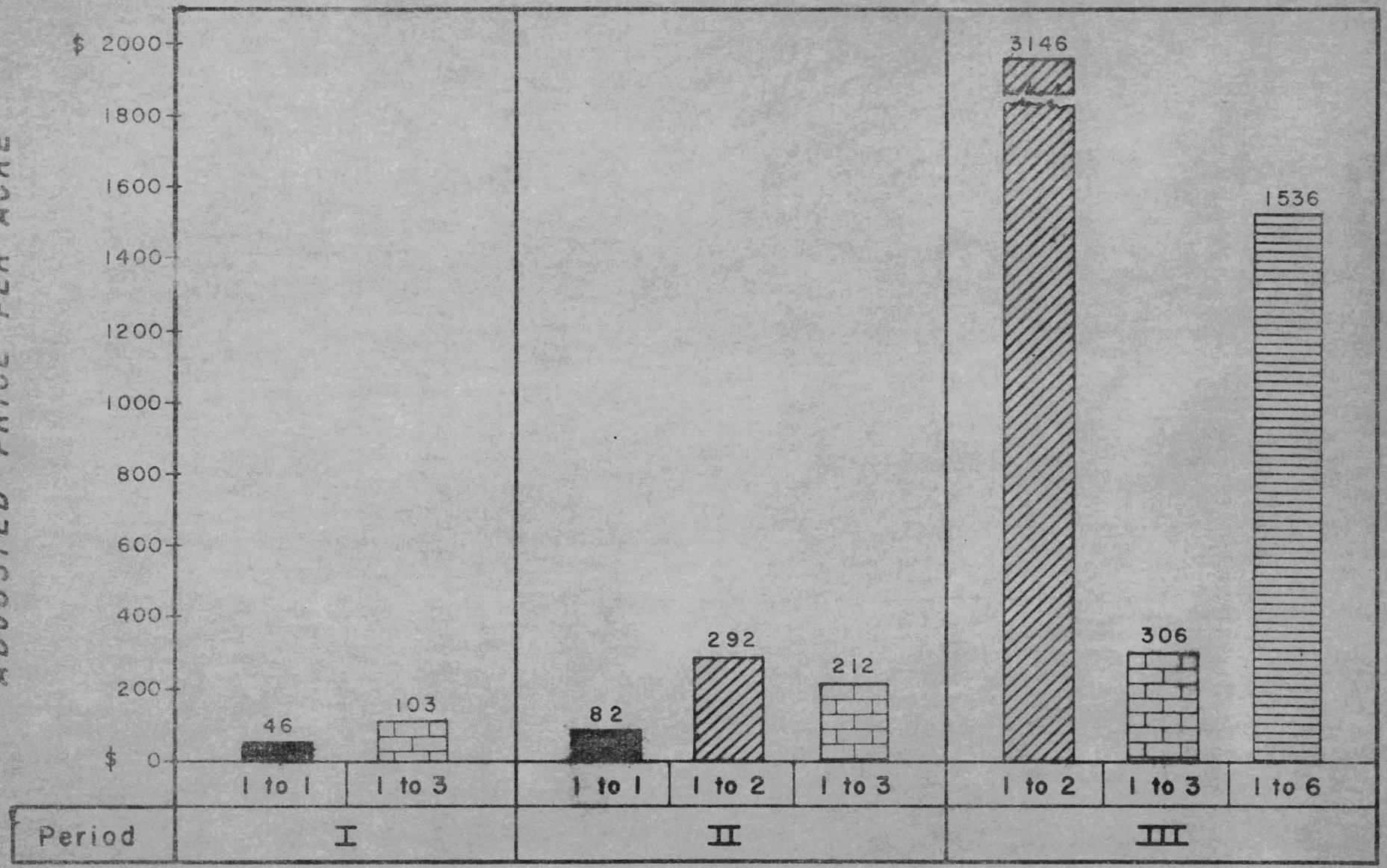

FIGURE 2:5

according to the definitions on which these studies are based, automatically transfer these tracts to the class of land "held for future use." In most instances, such properties abut the facility and are desirable locations. One owner, for instance, has erected a "for sale" sign on his originally farmed land abutting the facility. He offered small tracts of land for sale as commercial or industrial sites. When these tracts are sold, they will be recorded as sales from Class 2.

In one instance, a tract of agricultural land was transferred directly to a commercial use. This sale resulted in a much higher price per acre than was the case for the agricultural lands sold for rural residential purposes (the only other direct use to which agricultural land was put). However, this particular tract happened to abut the new facility. Because of its economic potential such land is therefore ideally suited to commercial use and may be expected to command a premium price when assigned to this use. Had it been sold for a rural residence, it would have had practically no economic potential in a productive sense, and would probably have brought a much lower price.

Sales prices of "land held for future use" (Class 2) increased substantially during the 15-year period (Figure 2:6). It is also very interesting to notice the development and distribution of sales from Class 2 during the different periods. In the period before news of the location of the new facility was released, the economic development of this area progressed at a very slow rate. As a consequence, there was little incentive to take land out of agricultural production in the hopes of later selling it for a different use. The only sales of Class 2 land occurring in the first period were sales for institution-municipal use.

SALES OF CLASS 2 and CLASS 3 PROPERTIES IN ACCORDANCE WITH SUBSEQUENT USES, BY PERIODS

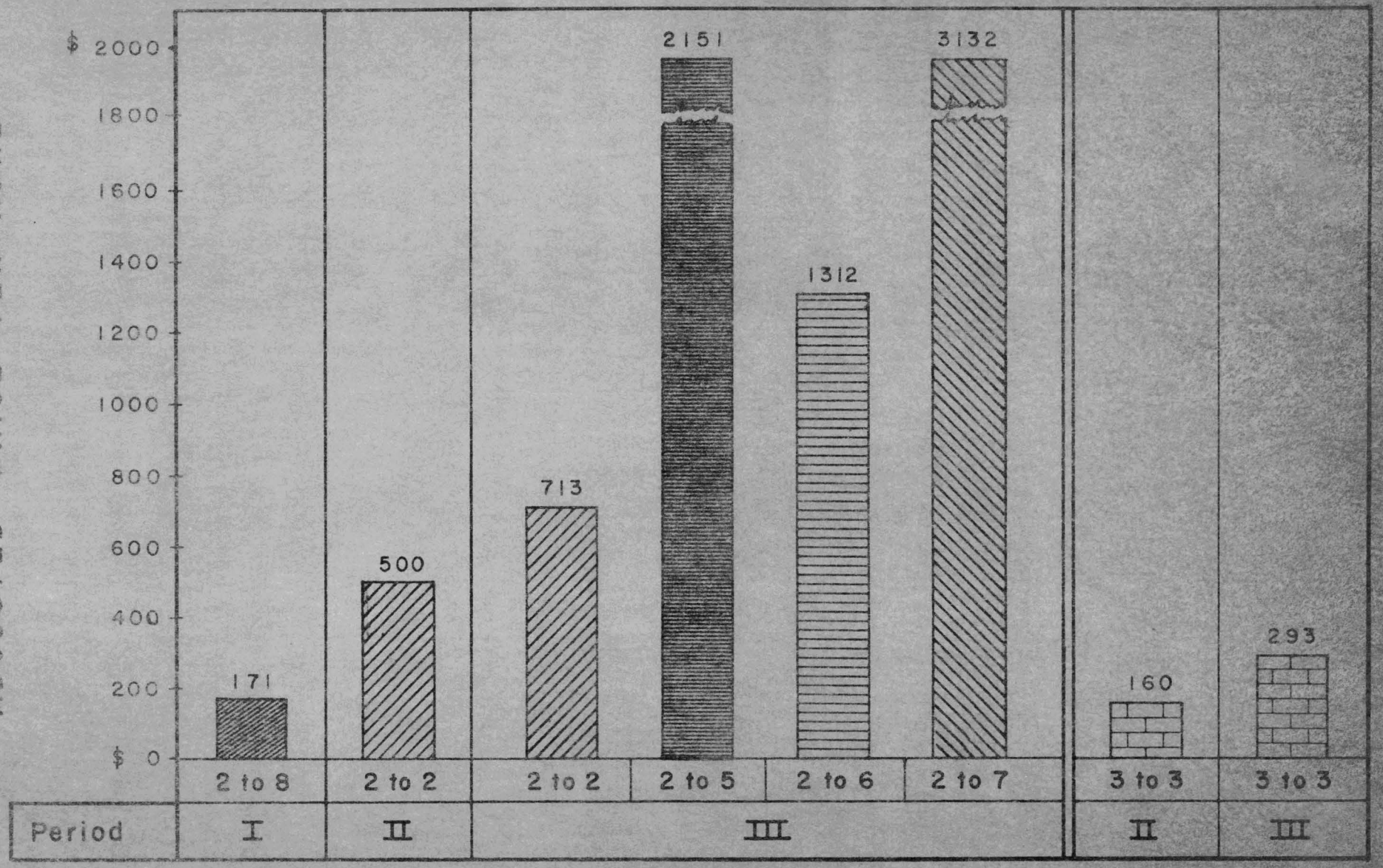

FIGURE 2:6

During the second study period interest in land developing quickened considerably. Because the area was still relatively inaccessible during this period, however, sales to industrial or commercial firms were still non-existent. All of the sales of Class 2 land during this period were to other realtors or speculators and resulted in no change in land use. It is assumed that these sales were between speculators or realtors who were aware of the potential for appreciation of these tracts. This also assumes that the buyers were willlng to assume the risks incidental to the waiting or "ripening" period, while the sellers were satisfied with the gains they had earned as their part of the holding and developing process.

Only in the last period did the sales of Class 2 land result in change in use. During this period sales resulted in changes to three other land use classes in addition to the sales within use Class 2. This reflects, to a certain extent, the stage of development present within the area during this period. Land that had been bought or otherwise acquired earlier and held for future use was now being sold to its final use. These sales were also made at a much higher price per acre than were any other sales. It is difficult ot draw conclusions from the limited number of sales available here, but from these data it appears that land sold for industrial use brought a substantial premium over that sold for commercial purposes. Futhermore, land use for traffic-serving commercial purposes appeared to demand a higher price than that used for nontraffic-serving establishments. This could be explained by the practical necessity for a traffic-serving business being located adjacent to the facility.

Figure 2:6 also shows sales from Class 3-rural residential land to other uses. This was the only reamining land use from which sales were made in the Temple

study. It is also interesting to note that all rural residences that sold retained their original land use. Through 1957, no rural residences had been sold to a higher use class. This would seem to indicate that the demand for land, or sites, had not developed to the point that rural home sites were being bid out of the market. Or, to put it another way, that the demands for land by higher type uses were still being adequately filled by properties of an even lower use class. This too, would infer that the development of this particular area is still in its early stages.

In addition to the sales from specific uses to other uses, the shift to specific uses was also examined. Figure 2:7 shows a summary of the sales from all use classes to each specific use class by time periods. Two general conclusions can be drawn from these comparisons. First, that the price per acre increased consistently and substantially from one time period to the next within the same use class. Secondly, it can be concluded that as the land is put to more intensive uses, the price increases accordingly.

From the standpoint of the over-all analysis, it is perhaps unfortunate that sales were not made to each land use during each time period of the study. On the other hand, the fact that sales were made to certain uses only during certain time periods is in itself indicative of the development of land use. For instance, the fact that no land was sold for agricultural use during the last period is evidence that the demand from other uses was pricing agriculture out of the land use market. The same type of reasoning can be applied to sales to Class 2. The fact that no sales were made during the first period to buyers whose only purpose was to hold the property for use at a later date, is a strong indication of the lack of land development during that period. Not until after the location of the new facility had been announced was there

SALES OF PROPERTIES FROM ALL USE CLASSES TO SPECIFIC USE CLASSES, BY PERIODS

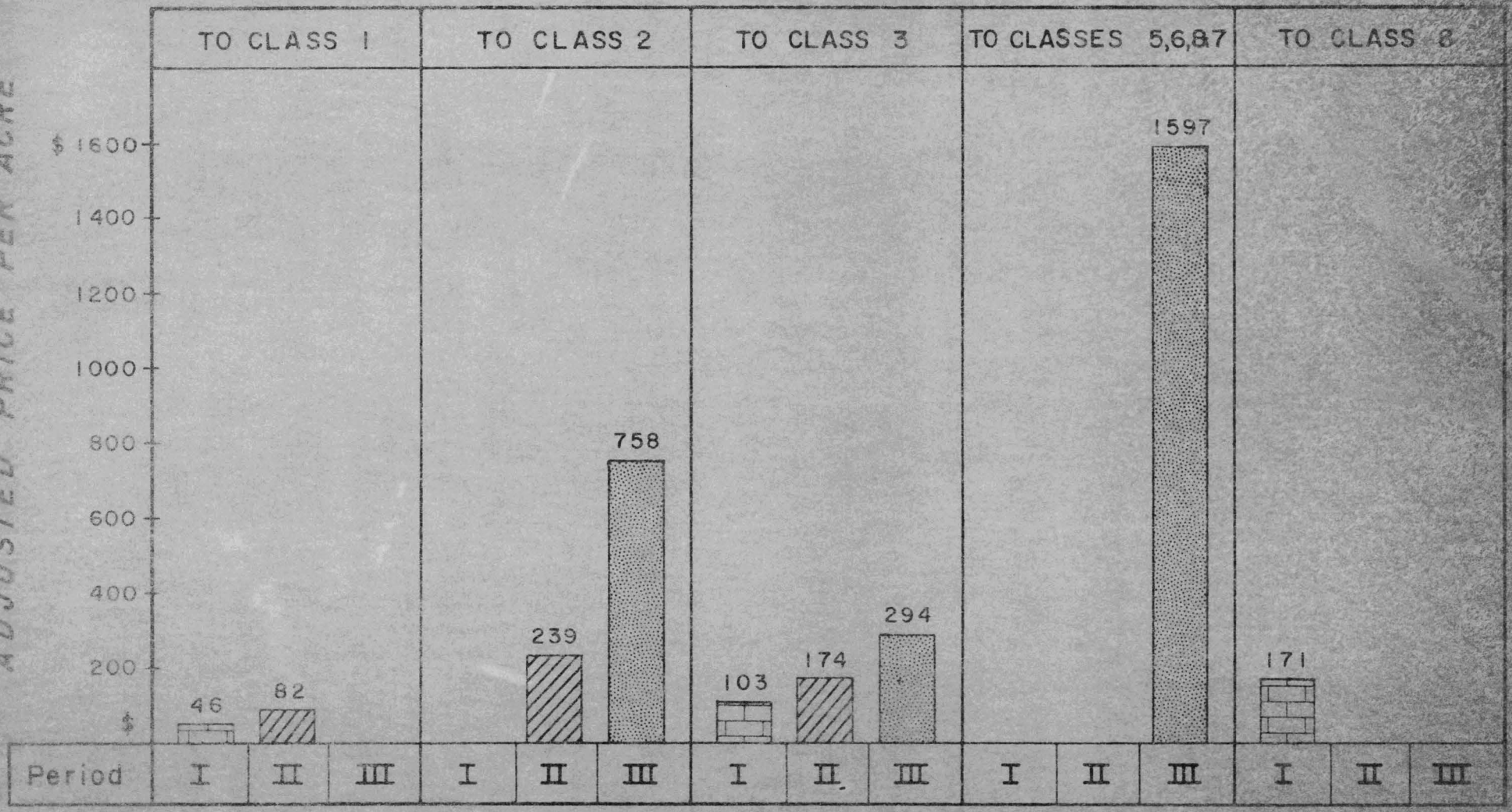

FIGURE 2:7

evidence of buying land only with the purpose of reselling it at a later date. And, not until the facility was completed was there interest in the newly created sites for commercial and industrial purposes.

In order to learn as much as possible about the factors which might influence retail sales of study area frims in Temple, information was sought pertaining to total retail sales for the city. The Bureau of Business Research in Austin gathers retail sales information from a large number of cities in Texas. While this information was sketchy, an index constructed from it indicated a decline in sales of over 11 percent for the period 1954-1957 (see Table 2:15).

One of the most concrete factor which could be considered as contributing to this loss in sales is the reduction of manpower at nearby Ft. Hood. Over the past 4-year period their manpower has fluctuated as shown below:

Year	Military	Civilian	Total	Percent Change From 1954
1954	21,820	1,759	23,579	-0-
1955	35,590	2,037	37,627	+59.6
1956	24,658	2,103	26,761	+13.5
1957	17,385	1,882	19,267	-18.3

The 18.3 percent decrease in manpower between 1954 and 1957 should not be considered as the only or even major factor responsible for the 11 percent decline in sales. It is, however, probably a contributing factor and should be kept in mind as the reports from study area businesses are analyzed.

Business Activity

As was the case in the Austin study, an attempt was made to determine the effects of the Temple bypass on Temple area businesses.

Procedures were essentially the same as those used in the Austin study. Business data for the year 1954, the year "before" the opening of the bypass to traffic, was compared with similar data for the year 1957, the "after" period. Comparative findings were then related to the general business index for the Temple area.

The two areas used in the survey of business activity were the old and new routes of U.S. 81 through Temple. More specifically, businesses along the new route (General Bruce Drive) from its intersection with Avenue H south of Highway 36 to its intersection with North Third Street, north of Highway 36 were considered to be in the new area. Those abutting the old route were considered to be in the old study area. The old route proceeds east along Avenue H from its intersection with General Bruce Drive south of Highway 36, thence north along South Twenty-fifth Street to its intersection with West Adams Avenue, thence east along West Adams Avenue to its intersection with North Third Street, thence north along North Third Street to rejoin General Bruce Drive (Figure 8).

Businesses in the two areas of study were classified, as in the Austin study, as "traffic-serving businesses" and "nontraffic-serving businesses." Changes in business activity was largely measured by changes in dollar volumes of sales for the years 1954 and 1957. Other factors were evaluated for some of the sub-classifications of businesses when data was sufficient to warrant such evaluations.

STUDY AREAS

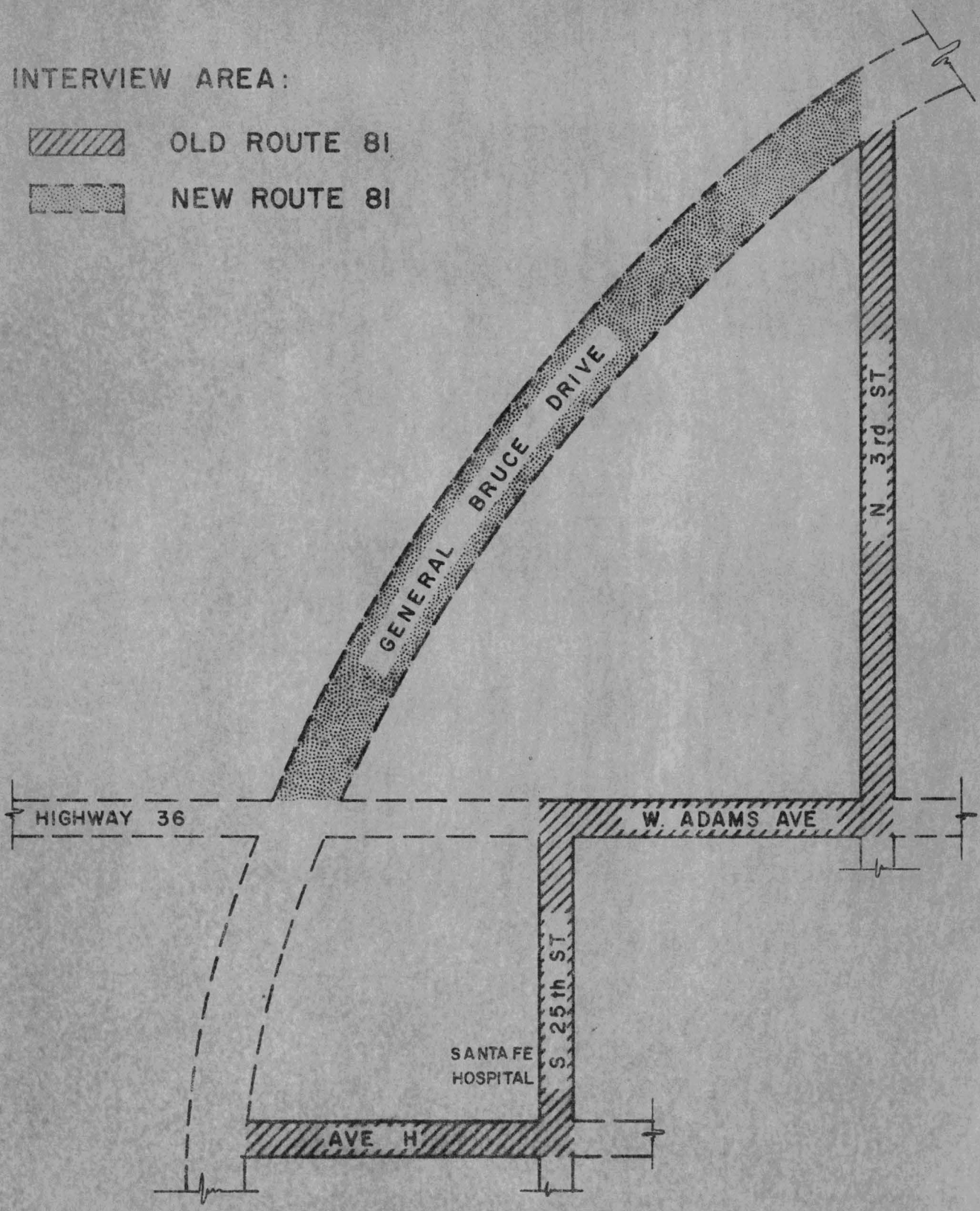

FIGURE 2:8

Businesses Interviewed

As can be seen from Figure 8, the old route of U.S. 81 went through the main downtown business area of Temple. There were, therefore, a considerable number of business establishments located on this route. Within the previously outlined limits of the study area there were a total of 123 businesses abutting old U.S. 81. Of these, 39 were considered to be outside the scope of this study because of the nonretailing nature of the business carried on. They were not included in the group of businesses to be interviewed. An additional 13 businesses were considered "marginal" to the study because of the divergent natures of their businesses (late hour taverns, frozen food lockers, etc.). They were not interviewed.

A total of 71 businesses along the old route of U.S. 81 were considered to be suitable for inclusion in a study of retail businesses and each of these businesses was called on by a staff member. In 18 cases, however, it was impossible to conduct an interview due to the uncooperativeness of the owner or the lack of sufficient data.

A total of 53 interviews were actually conducted. Most were relatively complete, but a few yielded only partially complete data because of lack of available information, unwillingness of owners to release data, etc. All data judged to be relatively complete is included in the tabular presentations.

Along the new route of U.S. 81 there are ten businesses located within the study area. All of these businesses were called on for interviews, but in 2 instances interviews could not be made. Of the 8 interviews completed, only 1 was of a traffic-serving establishment. Data from these 8 completed interviews is included in the tabular presentations; however, it might be noted that only 3 establishments of the 8 interviewed could furnish complete dollar volume figures for 1957.

TRAFFIC-SERVING BUSINESSES

Service Stations (Old Route)

A total of 23 service stations are located on old route U.S. 81. Of these 4 were closed at the time of the survey, and 5 had been constructed along old U.S. 81 since the opening of the new highway facility in 1955. Of the 4 stations not in operation at the time of the survey, 2 had been constructed since the opening of the new facility. This may be seen more clearly as follows:

Old Stations (Built Prior to 1954)		
Operating at end of 1957	16	
Closed at end of 1957	2	
Total Old Stations	18	
New Stations (Built after 1954)		
Operating at end of 1957	3	
Closed at end of 1957	2	
Total New Stations	5	
Total Stations Operating at end of 1953		19
Total Stations		23

A total of 19 interviews were made with service station operators between June 4 and July 10, 1958. Dollar volume of business figures were reported by 15 of the operators, 13 of whom were able to report dollar volume figures for both 1954 and 1957. Dollar volume of business figures for 1957 only were reported by the operators of the 2 reporting stations which had been constructed since 1955.

Gasoline gallonage figures were reported by 18 of the 19 operators interviewed. These figures, as in the Austin study, were checked against jobber records, and sharp discrepancies were noted. For purposes of the study, jobber records of gasoline gallonage for 1954 and 1957 were utilized as basic data, rather than the operators' estimates of gasoline gallonages retailed.

Dollar Volume of Business (1954 and 1957)

Table 2:3 presents the dollar volume of business figures reported by the 13 service station operators who had data available for both the years 1954 and 1957.

It may be noted that, as in the Austin study, most of the reporting operators indicated decreases in dollar volumes of business in 1957, as compared with the volumes of business done in 1954. Ten of the 13 reporting operators reported such decreases. Percentage of decreases ranged from 4.4 percent to 83.3 percent.

As in the Austin study, however, not all operators reported decreases in over-all dollar volumes of business. Three operators who were in business during both of the years under study reported increases in dollar volumes of business ranging from a low of 5.7 percent to a high of 204 percent. The operator of this station, it may be noted, attributed this sharp increase partly to a new building and partly to more aggressive management methods.

Of primary significance is the fact that in 1954 the dollar volume of the 13 reporting service stations located on the old route. In 1957, the dollar volume of business for these same stations along the same route was $637,900. A comparison of these figures reveals an over-all decrease of 27.2 percent in dollar volume of business done by these 13 service stations in 1957, as compared to the total dollar volume of business done in 1954.

Table 2:3

CHANGES IN REPORTED DOLLAR VOLUME OF 13 SERVICE STATIONS LOCATED ON OLD U.S. 81 IN TEMPLE BETWEEN 1954 AND 1957

Stations *	1954 (Dollars)	1957 (Dollars)	Dollar Change (Dollars)	Percent Change (Percent)
1	$140,900	$ 72,300	$- 68,600	-48.7%
2	81,000	34,000	- 47,000	-58.0
3	97,500	81,000	- 16,500	-16.9
4	27,000	14,000	- 13,000	-48.1
5	45,000	36,000	- 9,000	-20.0
6	108,000	54,000	- 54,000	-50.0
7	25,000	76,000	+ 51,000	+204.0
8	35,000	37,000	+ 2,000	+ 5.7
9	45,000	43,000	- 2,000	- 4.4
10	72,000	12,000	- 60,000	-83,3
11	25,000	16,600	- 8,400	-33.6
12	72,000	89,000	+ 17,000	+23.6
13	103,000	73,000	- 30,000	-29.1
Total 13 Stations	$876,400	$637,900	$-238,500	
Average Per Station	$ 67,415	$ 49,069	$- 18,346	-27.2%

* Numbers are used rather than station names in order to prevent identification of individual stations. The numbers are changed from table to table for the same reason.

When this comparison is extended to cover all 23 service stations which were located along the old route, the picture changes somewhat. Five of the stations that were in operation in 1954 could not furnish dollar sales information for 1957. Two were closed during the year of 1957 and the other 3 did not have reliable data available. In order to compare the changes in these stations as a group, dollar volumes were estimated for these five stations as shown in Table 2:4. The estimated volumes for these stations showed a considerably larger decline over the study period than did the group as a whole. The volume of the 3 nonreporting old businesses declined by over 50 percent while that of the 2 old stations which closed during 1957, dropped almost 88 percent. The 18 old stations as a whole lost about 32 percent of their gross dollar sales during the three-year study period.

During this period, however, five new stations were built along this route. Three of these were still in operation at the end of 1957, while two, because of insufficient volumes closed before the year was over. When their volume is added to that of the stations already established, the total should represent the over-all effect on service station business along the old route. The net effect of the five new stations was to add some $233,300 to the 1957 gross sales of the area. This in turn reduced the decline shown for all service stations along the old route to less than 11 percent. As will be explained in more detail later, the retail sales for all Temple retail business declined by about this same amount from 1954 to 1957.

Various explanations for the decrease in dollar volume of business were offered by service station operators, but in almost all instances the existence of the new bypass facility (General Bruce Drive) was mentioned as a significant factor. They felt that its diversion of much of the previous flow of traffic

Table 2:4

CHANGE IN CALCULATED DOLLAR VOLUMES OF ALL STATIONS ON OLD U.S. 81 IN TEMPLE FOR PERIOD 1954-57

Stations	Year 1954 (Dollars)	Year 1957 (Dollars)	Percent Change (Percent)
13 Reporting Old Stations - Actual	$ 876,400	$637,900	-27.2%
3 Nonreporting Old Stations - Calculated *	147,000	72,200	-50.9
2 Old Stations that closed during 1957 **	40,300	4,900	-87.8
Total 18 Old Stations	$1,063,700	$715,000	-32.8%
3 Operating New Stations ***	-0-	208,100	
2 New Stations that Closed during 1957 ****	-0-	25,200	
Total 5 New Stations on Old Route	-0-	$233,300	
Total 23 Stations on Old Route	$1,063,700	$948,300	-10.8%

* Estimates based on volumes of gasoline sold by these three stations and the average dollar return per gallon of gasoline sold for all reporting stations during 1954 and 1957.

** Estimates based on jobber records of gasoline volume and average returns per gallon as above.

*** Dollar sale figures were not available for one station. Estimate based on gasoline volume and average return per gallon for 1957.

**** Estimates for both stations based on gasoline volume and average return per gallon for 1957. Both stations were in operation during a part of 1957.

from the old route of U.S. 81 was one of the major reasons for their loss of business. Several operators complained of loss of truck traffic because of the bypass facility. On the other hand, some indicated that local traffic had replaced the traffic diverted to the bypass to some extent, and that better management methods might balance out losses attributable to the loss of through traffic. A few operators mentioned other factors, such as the loss of trade incidental to a reduction in personnel at nearby Fort Hood, and "a bad year for business in Temple" (1957).

Both Tables 2:3, and 2:4, however, would seem to indicate that the diversion of traffic to the new bypass had a definite negative effect on the dollar volume of business done by the service stations along the old route of U.S. 81.

Table 2:5, on the other hand, shows that the loss in volume has been accompanied by corresponding decreases in the hours of operation of most of the stations. The significance of these reductions in operational times is twofold: First they corroborate and confirm the previously shown dollar and gallonage sales data which shows a general decline in service station business. Secondly, they show the manner in which the operators have been meeting or adjusting to the losses in their business operations. It is outside the scope of this study to attempt to determine the possible effect on sales if such reductions in working hours had not been made. It is obvious, however, that the majority of operators in this group have considered that the possibilities for cost savings through reduced working hours outweigh the possibilities for greater sales volumes that may be brought about through longer operational hours.

Table 2:5

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

Station	Daily Hrs. of Operation 1954 (Hours)	Days of Operation Per Week 1954 (Days)	Annual Hrs. of Operation 1954 (Hours)	Daily Hrs. of Operation 1957 (Hours)	Days of Operation Per Week 1957 (Days)	Annual Hrs. of Operation 1957 (Hours)	Percent Change in Annual Hrs. of Operation (Percent)	Percent Change in Volume of Hrs.1954-57 (Percent)
1	24	7	8,736	13	7	4,732	-45.8%	-16.8%
2	15	7	5,460	12	6	3,744	-31.4	-87.5
3	24	7	8,736	14	7	5,096	-41.7	-30.8
4	14	7	5,096	13	7	4,732	- 7.1	-62.6
5	14	7	5,096	14	7	5,096		+89.3
6	16	7	5,824	13	7	4,732	-18.8	- 1.2
7	18	7	6,552	14	7	5,096	-22.2	-26.9
8	24	7	8,736	15	7	5,460	-37.5	-10.2
9	24	7	8,736	14	7	5,096	-41.7	-55.1
10	13	6	4,056	13	6	4,056		+ 9.1
11	16	7	5,824	13	6	4,056	-30.4	-79.1
12	15	7	5,460	14	7	5,096	- 6.7	- 1.4
13	24	7	8,736	24	7	8,736		-28.8
14	14	6	4,368	14	6	4,368		-14.7
15	14	7	5,096	13	7	4,732	- 7.1	-34.5
16	15	7	5,460	12	6	3,744	-31.4	-40.0
17	16	7	5,824	16	7	5,824		-46.7
18	15	7	5,460	16	7	5,824	+ 6.7	-67.5
Total 18 Sections			113,256			90,222	-20.3%	-10.8%

Table 2:6

CHANGES IN GASOLINE GALLONAGE SALES OF 18 SERVICE STATIONS
IN OPERATION ALONG OLD U.S. 81 IN TEMPLE DURING 1954 AND 1957

Station	Gasoline Volume 1954 (Gallons)	Gasoline Volume 1957 (Gallons)	Gasoline Volume Change 1954 to 1957 (Gallons)	Percent Change 1954-1957 (Percent)
1	228,156	157,956	- 70,200	-30.8%
2	93,000	34,797	- 58,203	-62.6
3	84,566	70,363	- 14,203	-16.8
4	144,000	18,000	-126,000	-87.5
5	87,095	9,513	- 77,582	-88.9
6	180,600	131,388	- 49,212	-22.7
7	187,172	184,995	- 2,177	- 1.2
8	103,680	196,344	+ 92,664	+89.3
9	6,658	1,429	- 5,229	-78.5
10	264,595	188,395	- 76,200	-28.8
11	231,771	208,193	- 23,578	-10.2
12	411,672	184,968	-226,704	-55.1
13	203,052	200,148	- 2,904	- 1.4
14	128,675	109,736	- 18,939	-14.7
15	171,884	35,961	-135,923	-79.1
16	105,734	115,310	+ 9,576	+ 9.1
17	76,832	50,310	- 26,522	-34.5
18	113,658	72,785	- 40,873	-40.0
Total 18 Stations	2,822,800	1,970,551	-852,209	-30.2%
Average Per Station	156,822	109,475	- 47,347	-30.2

Gasoline Gallonages Retailed

The possible negative effect of the new bypass facility on the business done by service stations on old route U.S. 81 is apparently borne out by a study of Table 2:5. It presents data concerning the gasoline gallonages retailed by these stations during the years 1954 and 1957. The data presented is based on jobber records of gasoline sales and is considered to be an accurate measure of the actual business level of the particular businesses.

Of 18 stations in operation in both 1954 and 1957 along the old route of U.S. 81, 16 showed decreases in the amount of gasoline retailed in 1957 as compared to 1954. Percentages of decrease ranged from 1.2 percent to 88.9 percent, with an average decrease for the 18 stations of 30.2 percent over the study period. Of the 18 stations, however, 2 showed increases of 9.1 percent and 89.3 percent in 1957 over 1954.

About two-thirds of the volume lost by the 18 old firms can be accounted for by internal competition from new businesses. The five new stations which were opened between 1954 and 1957 sold a total of 560,839 gallons of gasoline in 1957. This meant that the total sales along the old route were brought up to over 2 1/2 million gallons during 1957. This was about 10.3 percent less than the total sales for 1954 (see Table 2:7).

This loss in total gasoline gallonages retailed compares very well with the percentage loss in gross dollar volume of business (10.8 percent) previously presented. It also indicates that the new bypass facility, through its diversion of traffic from old route U.S. 81, has probably produced a definite negative effect on the service station beusiness done along the old route.

Table 2:7

CHANGE IN CALCULATED GASOLINE GALLONAGE, SALES OF ALL STATIONS ON OLD U.S. 81 FOR PERIOD 1954-1957

Item	Year 1953	Year 1957	Percent Change
	(Gallons)	(Gallons)	(Percent)
18 Old Stations	2,822,800	1,970,551	-30.2%
5 New Stations		560,839	
Total 23 Stations	2,822,800	2,531,390	-10.3%

Service Stations (New Route)

Only one service station was established on the new bypass facility on U.S. 81 within the study area by the end of 1957. This station was built in anticipation of a heavy traffic flow along the new facility. The operator of this station furnished an estimate of the dollar volume of his business, but in order to preserve individual information it will not be revealed. It was felt by the operator that if a crossover were located in front of the present site of the station, the volume of business might be doubled.

Service Stations (New Route and Old Route)

Since only one service station has been constructed on the new route, and since a comparison of the net effect of the bypass on the area as a whole would entail revealing this figure, such a comparison will not be made. A few general statements, however, may be in order.

One of the major problems in a study such as this is to assign the proper causal factors in the proper amounts to the measured changes that have been isolated. This study is no exception. For example, the factors which have affected the over-all retail sales activity of Temple could be expected to influence the service station operators along old U.S. 81 as well. Whether these factors would affect these stations to a greater or lesser degree than other retail businesses of the city, however, is very difficult to determine. It is perhaps significant, however, that in the face of steadily rising travel, automobile sales and gasoline sales over the rest of the State, gasoline sales along both routes of U.S. 81 in Temple declined about 10 percent. Total retail

sales in the city declined about 11 percent during the same period * (see Table 2:15).

It must be remembered, however, that 10 of the 13 stations along the old route of U.S. 81 did report definite losses in business after the construction of the bypass. Some loss must, obviously, be attributed to the diversion of traffic to the facility. Operator opinion, as has been noted, hold to this line of reasoning.

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* Based on information supplied by Bureau of Business Research, University of Texas, Austin, Texas.

Motels (Old Route)

Five motels were located within the study area on old route U.S. 81. All were called upon for interviews, but complete data was available from only four of these. Of the 4 motels, 1 might be classified as "average," and 3 as "below average." None of the motels located within the study area could be considered a "luxury" type motel. It may be generalized that lodging facilities along old route U.S. 81 are somewhat lower in quality than the general public has come to expect, with current rates ranging from $2.50 to $4.00 for a single room.

During the interviews, statistical data regarding dollar volumes of business for 1954 and 1957, change (if any) in relative property values for the two years under study, and change in clientele and occupancy rate were requested.

Dollar Volume of Business (1954 and 1957)

Table 2:8 presents comparisons of the dollar volumes of business reported by the four motel operators from whom data was available. Of significance is the fact that, as in the Austin area, the motels along old route U.S. 81 suffered a very sharp decrease in over-all dollar volume of business in 1957 following the opening of the new bypass facility.

In 1954, the four reporting operators reported gross motel business of $53,900, or an average of $13,475 per motel. The same four operators reported for 1957 only $24,600, an average of $6,150 per motel. These figures indicate a decrease of 54.4 percent in dollar volume of business in 1957, as opposed to 1954.

Table 2:8

CHANGES IN DOLLAR VOLUME OF FOUR MOTELS ALONG OLD U.S. 81 IN TEMPLE DURING PERIOD 1954-1957

Motel Number	Dollar Volume 1954 (Dollars)	Dollar Volume 1957 (Dollars)	Change in Dollar Volume 1953-1957 (Percent)
1	*	*	-44.3%
2	*	*	-72.4
3	*	*	-57.1
4	*	*	-28.8
Total	$53,900	$24,600	-54.4%
Average Per Motel	$13,475	$ 6,150	

As has been noted, motels, unlike service stations, have little or no opportunity to make up losses caused by diversion of transient traffic through increased "local" trade. Hence the diversion of transient traffic caused by the construction of the new bypass facility on new route U.S. 81 evidently had a very significant effect upon area motel business. This conclusion is borne out of the fact that of the three classes of traffic-serving establishments (service stations, motels, and restaurant and food service facilities) studied in both the Austin and Temple areas, motels suffered the greatest relative losses in dollar volumes of business in each instance.

Property Values (1954 and 1957)

As might be expected, the property values of these motels also declined sharply between 1954 and 1957. The four reporting motel operators estimated the gross over-all value of their properties at $232,000 in 1954 (see Table 2:9), but at only $128,000 in 1957. These figures represent a drop in average estimated property value of from $58,000 per motel in 1954 to $32,000 per motel in 1957, or a gross decline of 44.8 percent.

Such operator opinion as was obtainable from the operators of the motels along old route U.S. 81 held the bypass directly responsible for the sharp decrease in tourist trade. They also held that the decrease in business was directly responsible for the decline in the estimated value of their properties.

Occupancy

Table 2:10 indicates a 61 percent drop in the relative occupancy rate of the motel units in 1957 as compared with occupancy in 1954. This bears

Table 2:9

CHANGES IN ESTIMATED PROPERTY VALUE OF FOUR MOTELS LOCATED ALONG OLD U.S. 81 IN TEMPLE DURING THE PERIOD 1954-1957

Motel Number	Property Value 1954 (Dollars)	Property Value 1957 (Dollars)	Changes in Property Value 1954-1957 (Percent)
1	*	*	-50.0%
2	*	*	-50.0
3	*	*	-45.0
4	*	*	-18.2
Total	$232,000	$128,000	-44.8%
Average Per Motel	$ 58,000	$ 32,000	

Table 2:10

CHANGES IN OCCUPANCY OF FIVE MOTELS ALONG OLD U.S. 81
IN TEMPLE DURING PERIOD 1954-1957

Motel Number	1954			1957			1954-1957
	Normal Capacity (Number)	Avg. Nightly Occupancy Rate (Percent)	Avg. Nightly Occupancy Rate (Number)	Normal Capacity (Number)	Avg. Nightly Occupancy Rate (Percent)	Avg. Nightly Occupancy Rate (Number)	Change From 1954-1957 (Percent)
1	18	85%	15	18	60%	11	-26.7%
2	36	90	32	36	60	22	-43.8
3	36	100	36	36	50	18	-50.0
4	16	90	14	16	25	4	-71.4
5	48	90	43	18	50	24	-44.2

out the picture presented by the decrease in business volume of the motels, and corresponds with the decline in their property values.

Motels (New Route)

No motels were located within the study area along the new route of U.S. 81.

It should be noted, however, that several motels have been constructed on new route U.S. 81 south of the study area. Some of these were in operation before and during 1957, and without doubt attracted a good portion of the overnight transient traffic which might otherwise have done business with the four reporting motels along old U.S. 81.

Restaurants and Food Service Establishments (Old Route)

Thirteen restaurant and food service establishments were located within the study area on old U.S. 81. Two of these were closed at the time of interview and the interviewer was unable to contact the operator. Operators of the remaining 11 establishments were interviewed, but 2 refused to cooperate and 3 were unable, because of recent changes in management, to furnish much useful information. No new restaurants had been established in this area after 1954.

Of the 11 establishments interviewed, 4 were primarily restaurants, 6 combined restaurant and drive-in service and 1 combined drive-in food service and tavern facilities. Two of the 6 completed interviews were of restaurants, while the other 4 were of restaurant-drive-in combinations. In the interviews data was requested concerning both the dollar volume of business for 1954 and 1957 and variations in clientele for the same period.

Table 2:11

CHANGES IN DOLLAR VOLUME OF RESTAURANTS ON
OLD U.S. 81 IN TEMPLE 1954-1957

Restaurant Number	Year 1954 (Dollars)	Year 1957 (Dollars)	Change From 1954-1957 (Percent)
1	*	*	- 1.5%
2	*	*	-55.6
3	*	*	- 2.1
4	*	*	-16.9
5	*	*	- 1.8
6	*	*	-10.0
Total	$369,500	$315,500	-14.6%

Dollar Volume of Business (1953 and 1957)

Table 2:11 presents comparisons of the changes in dollar volumes of business reported by the six operators of restaurants and food service establishments who furnished data. It will be noted that all operators indicated losses in business in 1957, as compared to business done in 1954. These losses ranged from $1,000 to $30,000 dollar wise and from 1.5 percent to 55.6 percent. Over-all dollar volumes of business were reported as $369,500 in 1954, and $315,500 in 1957, representing an over-all decline in business of 14.6 percent in 1957, as compared with business done in 1954.

Operator opinion in general held the construction of the new bypass and the movement of a large number of troops out of Fort Hood to be the two factors most directly responsible for the decline in their dollar volumes of business. It is of significance that a restaurant which was a major center of attraction for troops from Fort Hood suffered one of the sharpest decline in dollar volume of business. The operator of this restaurant believed that the troop movement and the bypass construction, were jointly responsible for the sharp decline in this business. He was unable to estimate, however, which of the factors had the greater effect. One of the establishments showing a minimum decline relied heavily on local trade. Its operator reported that he was "glad to see the heavy traffic on the old route relieved."

From the information gathered from these operators, it seems reasonable to conclude that the bypass on new route U.S. 81 had the greatest negative effect upon those restaurants and food service establishments which relied primarily on heavey traffic flow, or tourist trade, and least upon these which relied primarily on local trade. This conclusion correlates satisfactorily

with findings concerning the same types of establishments along the old route of U.S. 81 in the Austin area, and with the information shown in Table 2:12.

Changes in Clientele (1953 and 1957)

Table 2:12 presents information concerning variations in type of clientele reported by operators of the six restaurants and food service establishments furnishing data.

Of chief significance is the fact that the average weekly patronage of the seven reporting establishments declined 24.8 percent in 1957, as opposed to 1954. This figure, of course, is substantially in line with the corresponding drop in dollar volume of over-all business over the same period.

The change in type of clientele from transient to local clients was marked, as was the gross decline in clientele. In 1954, the percentage of weekly patrons was estimated by operators to be approximately 77 percent local and 23 percent transient. In 1957, the percentage estimated by operators was almost 96 percent local and less than 5 percent transient. If the operators are correct in their estimates, these figures would clearly indicate the negative effect that the diversion of traffic to the bypass has had on the restaurants and food service establishments along old route U.S.81.

Restaurants and Food Service Establishments (New Route)

No restaurants and food service establishments were located within the study area along the new route of U.S.81.

Table 2:12

CHANGES IN PROPORTION OF LOCAL AND TRANSIENT CUSTOMERS SERVED BY TEMPLE STUDY AREA RESTAURANTS IN 1954 AND 1957

Restaurant Number	1954			1957			Change From 1954 to 1957		
	Total Weekly Customers (Number)	Percent Local (Percent)	Percent Transient (Percent)	Total Weekly Customers (Number)	Percent Local (Percent)	Percent Transient (Percent)	Total Weekly Customers (Number)	Number of Local Customers (Percent)	Number of Transient Customers (Percent)
1	1,150	70%	30%	800	90%	10%	-30.4	-10.6%	-78.8%
2	1,500	70	30	900	95	5	-40.0	-18.6	-90.0
3	1,200	75	25	1,050	95	5	-12.5	+10.8	-82.7
4	1,300	65	35	700	95	5	-46.2	-21.3	-92.3
5	1,500	98	2	1,500	99	1	- 0.0	+ 1.0	-50.0
6	660	80	20	550	99	1	-16.6	+ 3.2	-96.2
TOTAL	7,310	76.6%	23.4%	5,500	95.8%	4.2%	-24.8	- 5.9%	-86.4%

NONTRAFFIC-SERVING BUSINESS

Nontraffic-Serving Business (Old Route)

All of the nontraffic-serving retail businesses along the old route of U.S. 81 through Temple were contracted. Only 15 interviews were completed, however, and of these only 11 were able to furnish complete dollar volume information for both 1954 and 1957. Operator uncooperativeness, inability to contact past owners, and lack of adequate records kept the rate of response low. One firm was just recently established and had no record of sales for 1954.

Table 2:13 presents the business volume information obtained from the 11 cooperating businesses. Since the businesses within this area are quite heterogeneous, no attempt has been made to estimate either business volume or changes in volume from this nonrepresentative sample of firms. Rather, the data in Table 2:13 is presented as being representative only of the firms included.

It is interesting to note, however, that of these 11 firms, 6 lost business while 5 showed an increase. It is also interesting to see that the losses and gain were almost exactly offset dollar wise. The net change for the 11 firms was a small 1.3 percent increase. This increase, though small, takes on greater significance in view of the fact that total estimated retail sales in the Temple area declined over 11 percent during the same period. And, if of no other import, this small increase in volume done by the nontraffic-serving businesses would indicate that these businesses, like those in the Austin area, were unaffected by the construction of the new facility. In fact, it is quite possible that they received a slight stimulation.

Table 2:13

CHANGE IN DOLLAR VOLUME OF 11 NONTRAFFIC-SERVING BUSINESSES LOCATED ALONG THE OLD ROUTE OF U.S. 81 IN TEMPLE FROM 1954 to 1957

Business	Dollar Volume 1954 (Dollars)	Dollar Volume 1957 (Dollars)	Percent Change 1954-1957 (Percent)
1	$ 100,000	$ 150,000	+50.0%
2	300,000	250,000	-16.7
3	140,000	167,000	+19.3
4	87,400	55,800	-36.2
5	203,000	186,000	- 8.4
6	142,000	143,000	+ .7
7	400,000	500,000	+25.0
8	130,500	90,200	-30.9
9	142,000	94,200	-33.7
10	550,000	675,000	+22.7
11	150,000	65,000	-56.7
Total	$ 2,344,900	$2,376,200	+ 1.3%
Average Per Business	213,173	216,018	

Operator opinion would tend to bear out this belief. The opinions expressed by operators of the nontraffic-serving businesses toward the new route generally indicated either indifference or favor. Several felt that the new facility had no particular effect on their operations or on the volume of business done by their firms. A number of the operators reported that they were glad to see the heavy truck traffic rerouted. Still others mentioned relief of traffic congestion as a desirable result of the new route. In only one case did an operator of a nontraffic-serving enterprise feel that his business had been hurt by the new route, and this operator could offer no relation between the drop in his business volume (a drop of 5 percent) and the existence of the new facility. Methods of business operation and lease terms which were also obtained, were felt to have no particular significance in the study.

Nontraffic-Serving Businesses (New Route)

By the end of 1957 some 10 nontraffic-serving businesses had located on the bypass within the limits of the study area. These were interviewed, but only 2 could furnish complete dollar volume of business figures for 1957. Of the 8 operating businesses, 2 have been in their present locations for less than one year, 5 have been in their locations for from 1 to 2 years, and 1 has been established in its location for 8 years. Two of the buildings are being used for storage, and no construction data was obtained.

Operator opinion as to the desirability of the location on the Interregional was relatively consistent. Among the factors mentioned were the relative price and availability of large size tracts, the accessibility to heavy trucks, the accessibility to customers and employees, the probability of increased commercial

development with corresponding increases in property values, and the ease of direct routing to other major cities and towns. No particular complaints about the location were made by any operator on the new route. Most of the operators felt that the sites were as good or better than they had expected them to be.

Area Business

Since the data on nontraffic-serving firms were not considered to be adequate samples, it is impossible to combine them with traffic-serving businesses into an area total. Table 2:14 shows all the traffic-serving businesses in the area combined into such a total, however. Perhaps the most important figure in this table is the percentage change of total traffic-serving business from 1954 to 1957. This shows a decline of 11.8 percent.

Of the three types of traffic-serving establishments studied, motels with a drop of 54 percent, suffered the greatest proportionate decline in over-all dollar volume of business. Restaurants and food service establishments were next hardest hit with an indicated over-all decline of 14.6 affected. The nontraffic-serving establishments as a whole did not appear to be greatly affected by the new bypass facility during the study period. The ones interviewed showed an over-all increase in dollar volume of 1.3 percent.

These facts are all of more significance if considered in relation to the Temple area retail sales index for the years 1954-1957. Over-all Temple retail sales, based on total dollar volumes, showed a decline of 11.45 percent in 1957 as compared to 1954 (see Table 2:15). Thus the over-all traffic-serving business within the study areas would appear to have been affected no more than the City of Temple as a whole. Nontraffic-serving businesses, on the other hand,

Table 2:14

CHANGES IN TOTAL DOLLAR VOLUME OF ALL TRAFFIC
SERVING BUSINESSES IN THE TEMPLE STUDY AREA
1954-1957

Item	Year 1954 (Dollars)	Year 1957 (Dollars)	Change From 1954 to 1957 (Percent)
Service Stations *	$1,063,700	$ 989,500	- 7.0%
Motels **	67,375	30,750	-54.0
Restaurants ***	800,613	683,583	-14.6
TOTAL	$1,931,688	$1,703,833	-11.8%

* To avoid revealing individual data, the station on the new route was estimated at the same volume level as the average for all other stations during 1957.

** Expanded to include one motel for which data was unavailable. Percentage change remain constant.

*** Nonreporting Restaurants were estimated to be operating at same level as the average for reporting restaurants in both 1954 and 1957.

may have fared much better than Temple retail sales as a whole. This would seem to indicate that the new bypass facility had no large measurable overall effect upon the total business of its area.

Table 2:15

INDEX OF RETAIL SALES*, TEMPLE, 1954 THROUGH 1957

Year	Index	Percent Change From 1954
1954	100.00	
1955	104.00	+ 4.00
1956	89.45	-10.55
1957	88.55	-11.45

* Constructed from data supplied by the Bureau of Business Research, Austin, Texas.

ROCKWALL COUNTY

General

The three studies included in this report deal with the economic impact of new sections of the Interstate Highway System on suburban and rural areas. With respect to Austin and Temple, the projects are concerned with selected study areas related to urban or metropolitan areas. In the Rockwall County project, an entire rural county is included as either study area or control area, with an adjacent metropolitan county supplying the urban influence. Changes in land value provide the principal subject of the following preliminary analysis, although the changes in land use and business activity are discussed in as much detail as practical.

Rockwall County, the smallest county in the State, is in the Blackland Prairies of North Central Texas. It is adjacent and to the northeast of Dallas county and has an area of 147 square miles. The City of Dallas, with its more than 240 square miles, is the nearest metropolitan area. From the courthouse in the town of Rockwall to the edge of the Dallas urban area (at the intersection of new U.S. 67 and Loop 12) is a distance of 17.2 miles, 6.3 of which are in Rockwall County. The town of Rockwall is about 24 miles from the Dallas central business district, via new Highway 67 (Interstate 40).

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. Since 1950, however, the town of Rockwall has grown from a population of 1,500 to its presently estimated 2,500 bringing the county population back to its 1940 level. Other principal towns in the county are Royse City, population estimated at 1,400 (1,266 in 1950), and Fate, population 150.

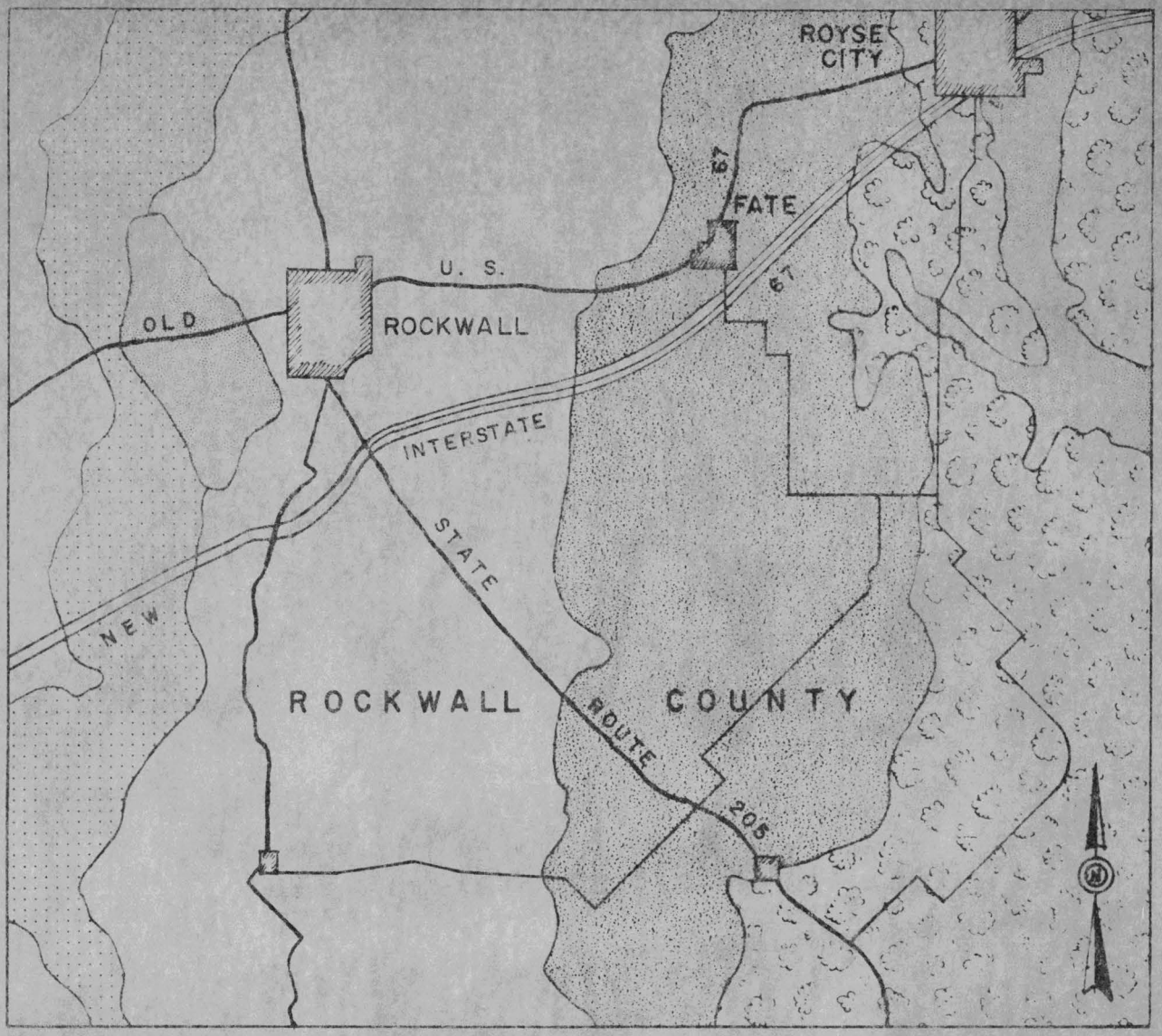
The economy of the county is based on cotton, grain, and livestock supplemented by indsutry and commerce. An aluminum extrusion plant established in 1953 (employment, 185) is the only large industrial enterprise. A general classification of agricultural soil groups in the county is shown in Figure 3:1.

NEW INTERSTATE HIGHWAY 67

Since both the route and the roadway of old Highway 67 through Rockwall County were inadequate by modern standards, the new highway was surveyed through bottom land and farm land well to the south of the former location. The county voted a $65,000 bond issue for the purchase of right of way. At about the same time, State Highway 205, running north and south through the county was improved and became, from its interchange with new U.S. 67, the major access road serving the town of Rockwall.

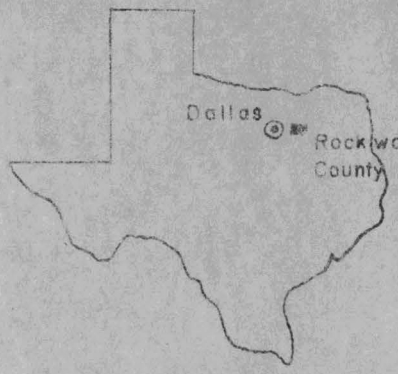
The first section of new U.S. 67, from its junction with U.S. 80 and Loop 12 in Dallas to the Rockwall interchange (intersection with Route 205), was opened in July, 1951. This interchange is 1.9 miles from the courthouse in Rockwall. The second section, from the Rockwall interchange to the Royse City interchange, was opened to traffic more than five years later, in December, 1956. A third section, from Royse City to the Hunt County line (2.3 miles), has been completed but was not open in 1957, pending construction of the route through Hunt County. Construction costs for the 12.7 miles open to traffic in Rockwall County were as follows:

Grading and Structures	$1,051,563
Base and Surfacing	1,440,445
Bridges and Overpasses	557,260
Engineering (T.H.D.)	226,444
Total	$3,275,712



SOIL TYPES

- SHALLOW BLACK LAND
- OVERFLOW BOTTOM
- CULTIVATED RIVER BOTTOM
- BLACK LAND
- RAWHIDE LAND



NEW INTERSTATE LEGEND

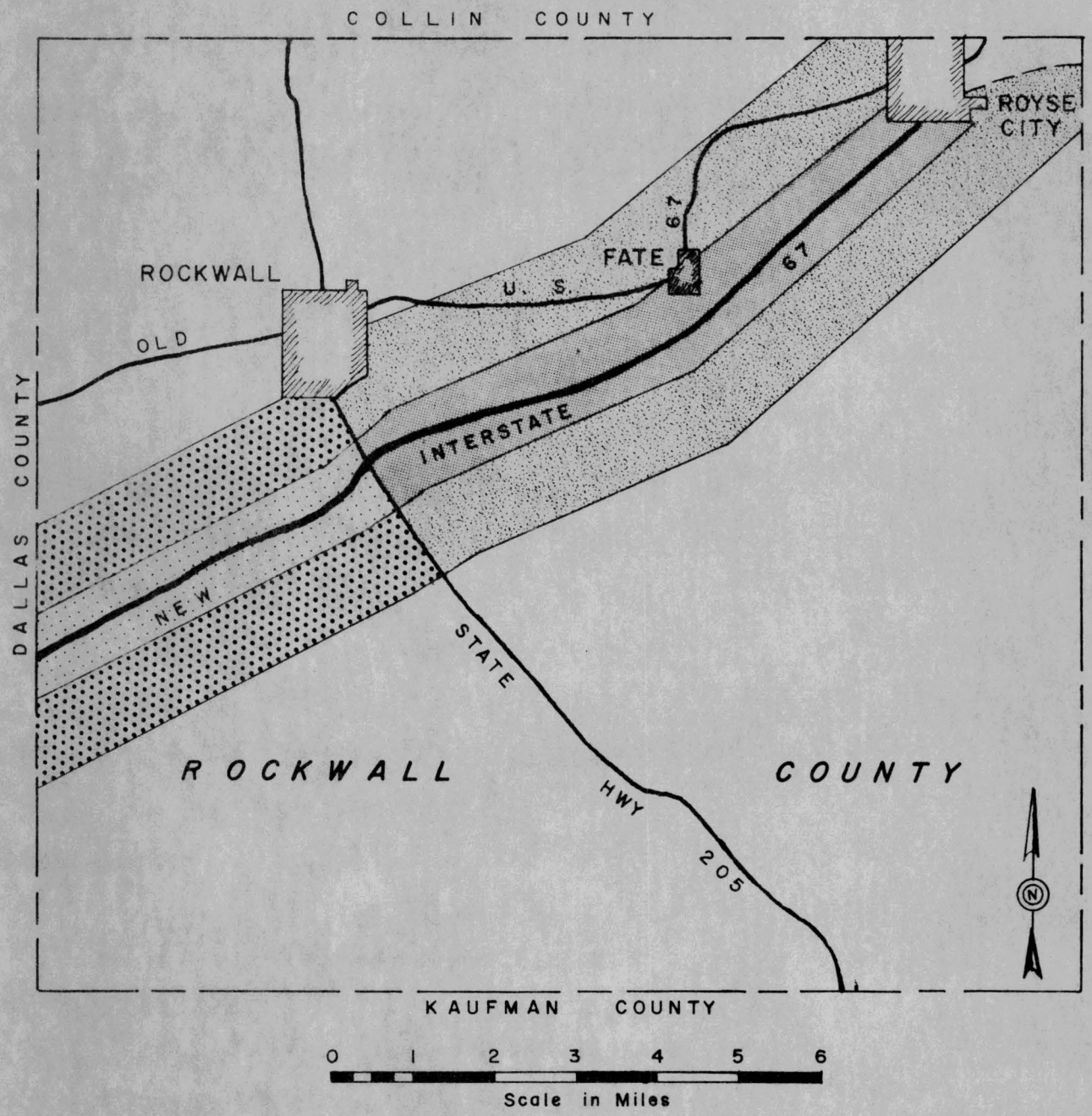
- COMPLETED 1951
- COMPLETED 1956

FIGURE 3:1

Right-of-way cost was $83,535. Service roads along the new facility have been completed for only 2 miles of the area under study. Several feeder roads cross the highway, although there are no major highway grade crossings. In these respects, therefore, the highway is not yet up to the full standards of the Interstate System.

STUDY AND CONTROL AREAS

The area selected for primary analysis was a band 1.5 miles wide along each side of the new facility from the Dallas County line to Royse City (Figure 3:2). This gives a strip some 12.5 miles long and 3 miles wide, or an area of about 24,000 acres, consisting largely of agricultural and overflow bottom land. Due to the 5-year time lag between opening dates of the two sections of roadway, there are actually two study areas involved: the First Section, 4.4 miles in length, lying west of the Rockwall interchange, opened in 1951; and the Second Section, 8.3 miles of roadway, lying east of the Rockwall interchange, opened to traffic in 1956. Each section is further divided into 2 sub areas: Zone A, which includes the area within 0.5 miles of the facility; and Zone B, which includes the area between 0.5 to 1.5 miles of the facility. Abutting properties in Zone A were identified separately, but land sales within this group were too few in number for significant analysis at this time. Urban properties in the towns and communities in the county were excluded from consideration in the land value phase of the study. Field data regarding transactions that involved less than 10 acres is considered inadequate at this time, and most tracts of such size were likewise excluded from the land value analysis.



STUDY & CONTROL AREAS

(ROCKWALL)

— STUDY AREA 1-A

— STUDY AREA 1-B

— STUDY AREA 2-A

— STUDY AREA 2-B

— CONTROL AREA

FIGURE 3:2

The comparative or control area includes the remaining agricultural and bottom land outside the three-mile-wide strip. In a sense, both the study areas and the control area may be considered to be subdivided according to the soil types shown in Figure 3:1 and according to the location of sample plots on either dirt roads or surfaced roads.

METHODS

The collection of field data for the Rockwall project followed essentially the same procedures set forth in the introductory section 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 and survey maps and aerial photos. The Soil Conservation and A.S.C. offices of the U.S.D.A. in Rockwall were especially helpful locating exactly the various properties in the study area.

Rockwall County has been included in a ten-year study of Farm and Ranch Real Estate Sales conducted by the Department of Agricultural Economics of the Texas Agricultural Experiment Station, College Station, Texas. This program was also based on county deed records. Through the cooperation of this agency, field cards covering a ten-year period, 1945-54, were made availabe. With respect to farm transactions involving ten or more acres, the cards gave names, acreage, price, survey and deed index. Although it was frequently necessary to consult the deed records for a more exact location of properties within the three-mile strip, the use of these cards saved much time in the preliminary field work.

The organization of data for purposes of analysis was also similar to the Austin and Temple procedures, the principal difference being the use of four study periods rather than three. Due to the recent completion of the Second

Section (ending at Royse City) only the relatively few transactions during 1957 would have been available for an "after-completion" study period. Therefore, it was decided to organize the material around the opening date of the First Section (ending at the Rockwall interchange). The general "before" and "after" periods were then divided into three-year groups to facilitate trend and analysis.

In addition to information derived from deed records and ownership maps, the following factors were determined for each property: soil area, type of road (dirt or surfaced), acreage size group, and county map coordinates. A series of data based on different road types was also examined in considerable detail. The soil areas and their combinations yielded nine classifications. Since a preliminary inspection revealed few unexpected price variances between soil types, only one table in the present report deals with these classes. Tabulations regarding acreage size groups and map-grid classifications have been examined, but the lack of sufficient data has dictated that these comparisons be deferred until a later report. It is hoped that these latter classes will yield information of value in determining the extent of variation according to distance from the old and new routes of Highway 67, and distances from business districts, interchanges, county lines, etc.

Number of Transactions

From the outset it was recognized that a study of this type might be handicapped by a shortage of property sales during given periods. This possibility contributed to the decision to include the entire county as a study area.

Voluntary farm sales in Texas declined from 53.5 per 1,000 farms in 1946 to 27.1 in 1957.[1/] Had Rockwall County not resisted this trend, there would indeed have been a serious problem concerning number of sales during recent years. While a larger number of transactions is to be desired, the information summarized below indicates an acceptable number for each major period and shows no significant decline between periods.

NUMBER OF ITEMS

	Before (1944-1951)	After (1952-1957)
Study Area	93	97
Control Area	149	129
Sub-Totals	242	226
R-O-W Sales	31	43
TOTALS	273	269

Since the "before" period is two years longer than the "after" period, the 25 sales occurring in 1944-45 could be subtracted from the sub-total of 242 "before" sales. This gives 217 sales for 1946-51 compared to 226 for 1952-57, an actual increase of nine sales for the later period. These totals, when distributed between study and control areas, show the following relationships:

1/ Information appearing in this report pertaining to farm sales and prices for the state as a whole is obtained from one or both of the following sources: Farm Land Market Situation in the Southwestern States, 1946-54, Bulletin 797, Texas Agricultural Experiment Station, College Station, Texas, March 1955; and "The Farm Real Estate Market," May 1958, Agricultural Research Service, U.S.D.A., Washington 25, D.C.

NUMBER OF SALES

	Before (1946-51)	After (1952-57)	Percent Change
Study Area			
First Section	45	62	+37.8
Second Section	31	35	+12.9
TOTAL	76	97	+27.6
Control Area	141	129	- 8.5

Between the two periods the number of sales increased 27.6 percent in the three-mile-wide study area, while decreasing 8.5 percent in the control area. Moreover, the shorter First Section (4.4 miles), which is nearer to the Dallas city limits, had a greater number of sales in both periods than did the Second Section (8.3 miles). The First Section also had a much greater percentage increase in sales between periods, although some of this difference may be attributed to the time lag between the opening dates of the two sections of roadway.

On the basis of this preliminary analysis, there appears to be justification for the conclusion that Rockwall County's reversal of the statewide downtrend in farm sales between 1946 and 1957 deserves to be considered one aspect of the over-all economic impact attributable to the new U.S. Highway 67.

CHANGES IN LAND VALUES

The changes in land values that have occurred in the Rockwall County study areas 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 eleven 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 the relative distance of the land from the facility.

Land prices in the two sections and four zones of the study area have generally increased from the 1944-48 base period, through the 1949-51 construction stage, and on into the later periods, with a very marked increase during the final (1955-57) period. In contrast to this trend, the control area prices remained relatively stable until the 1955-57 period, when they likewise turned up sharply. In both cases the prices were adjusted to constant dollars using the BLS Consumer Price Index.

Comparisons between the two study area sections are given in Table 3:1. The table reveals that the very marked increase in price per acre between the last two periods is in the study area, a phenomenon characteristic primarily of First Section properties. Although not shown here, it has been determined that by excluding certain Zone B properties which were subject to a special influence, the First Section increase for the 1955-57 period would have been a modest 20 to 30 percent instead of the 99.6 shown in the table. The special influence was the subdivision of rural acreage near a small lake into residential lots, and the subsequent trading of large tracts in the vicinity a number of times during the period, with the last trade topping $500 an acre in deflated dollars.

The lake is only a short distance south of the highway and about four miles from the Dallas County line. No residences have been built in this subdivision, and there appears to be much doubt locally as to the success of the venture. It is certain, however, that the new facility provided the ready access necessary to the development of the lakeside property, and there appears to be little justification for excluding the transactions from the

Table 31

SUMMARY OF CHANGES IN ADJUSTED LAND PRICES
IN ROCKWALL COUNTY, 1944-1957

Properties Within 1.5 Miles of New Highway 67
Compared With Control Area Properties

Sections	Periods	No. of Sales (Number)	No. of Acres (Acres)	Price Per Acre (Dollars)	Price Changes Dollars (Dollars)	Price Changes Percent (Percent)
First Section						
Highway 67	1944-48	26	1,537	$ 75	--	--
Dallas County	1949-51	29	2,398	92	$ 17	23.1%
line to Rockwall						
interchange;	1952-54	35	2,384	110	18	19.1
4.4 miles	1955-57	27	2,322	220	110	99.6
Total "Before"		55	3,935	86	--	--
Total "After"		62	5,206	169	83	98.0
Second Section						
Highway 67						
Rockwall	1944-48	19	1,131	118	--	--
interchange to	1949-51	19	1,490	133	15	27.0
Royse City						
interchange;	1952-54	20	1,596	114	-19	-14.0
8.3 miles	1955-57	15	1,139	141	27	23.3
Total "Before"		38	2,621	126	--	--
Total "After"		35	2,735	125	-1	- 0.8
Both Section						
Highway 67						
Dallas County	1944-48	45	2,669	93	--	--
line to	1949-51	48	3,888	108	15	15.8
Royse City						
interchange;	1952-54	55	3,977	112	4	3.6
12.7	1955-57	42	3,961	197	85	76.4
Total "Before"		93	6,557	102	--	--
Total "After"		97	7,938	154	52	51.4
Control Area	1944-48	52	4,134	73	--	--
	1949-51	97	10,127	70	-3	- 4.7
	1952-54	63	6,210	70	0	- 0.1
	1955-57	66	6,468	135	65	93.5
Total "Before"		149	14,261	71	--	--
Total "After"		129	12,678	101	30	42.3

1955-57 totals, especially since most of the acreage that was traded remains in agricultural use.

An explanation for the similar rise (93.5 percent) in control area prices between the last two periods is not so readily available. A review of summary tables prepared in the ten-year study of Farm and Ranch sales, mentioned previously, reveals a somewhat more gradual rise for all Rockwall County farm properties. This would be expected since these data did not exclude property transactions in the three-mile-wide strip. Even so, there is also a marked increase evident in the Farm and Ranch series, beginning in the third quarter of 1954.

Table 3:2 and those following show the increase occurring in all control area properties. Inspection of tabulations relating to the soil groups (not included in this report) reveals that the rise in control area property values occurred in the better farm soil areas (black land, shallow black land, and cultivated bottom land), rather than in the other areas.

Turning to a comparison with the State as a whole we find the following:

	STATE OF TEXAS (Index of Value of Farm Real Estate Per Acre; Percent of 1947-49 Avg.	ROCKWALL COUNTY CONTROL AREA (Price per Acre, deflated to 1947-49 dollars)
1944-48	--	$73
1946-48	93	--
1949-51	109	70
1952-54	134	70
1955-57	143	135

Table 3:2

CHANGES IN ADJUSTED LAND PRICES BEFORE AND AFTER COMPLETION ON NEW HIGHWAY 67 IN ROCKWALL COUNTY

First Section - Zone A (Abutting or Within 0.5 Mile)

Periods	Number of Sales (Number)	Number of Acres (Acres)	Price Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Percent)
			STUDY AREA		
1944-48	19	1,248	$ 72	--	--
1949-51	12	4,728	110	$ 38	52.8%
Total "Before"	31	5,976	102	--	--
1952-54	24	1,157	118	8	7.3
1955-57	14	6,566	131	13	11.0
Total "After"	38	7,723	129	27	20.6
			CONTROL AREA		
1944-48	52	4,134	73	--	--
1949-51	97	10,128	70	-3	-4.1
Total "Before"	149	14,262	71	--	--
1952-54	63	7,106	70	0	0.0
1955-57	66	6,468	135	65	92.8
Total "After"	129	13,574	101	30	42.2

Table 3:2-A

CHANGES IN ACTUAL LAND PRICES BEFORE AND AFTER COMPLETION ON NEW HIGHWAY 67 IN ROCKWALL COUNTY

First Section - Zone A (Abutting or Within 0.5 Mile)

Periods	Number of Sales (Number)	Number of Acres (Acres)	Price Per Acre (Dollars)	Price Change From Earlier Period: Per Acre (Dollars)	Per Acre (Percent)
			STUDY AREA		
1944-48	19	1,248	$ 62	--	--
1949-51	12	4,728	116	$ 54	87.1%
Total "Before"	31	5,976	105	--	--
1952-54	24	1,157	135	19	16.4
1955-57	14	6,566	153	18	13.3
Total "After"	38	7,723	150	45	42.9
			CONTROL AREA		
1944-48	52	4,134	63	--	--
1949-51	97	10,128	74	11	17.5
Total "Before"	149	14,262	71	--	--
1952-54	63	7,106	80	6	8.1
1955-57	66	6,468	158	78	97.5
Total "After"	129	13,574	117	46	64.8

Table 5:3

CHANGES IN ADJUSTED LAND PRICES BEFORE AND AFTER COMPLETION ON NEW HIGHWAY 67 IN ROCKWALL COUNTY

First Section - Zone B (From 0.5 to 1.5 Miles)

Periods	Number of Sales (Number)	Number of Acres (Acres)	Price Per Acre (Dollars)	Price Change From Earlier Per. Per Acre (Dollars)	Price Change From Earlier Per. Per Acre (Percent)
			STUDY AREA		
1944-48	7	289	$ 88	--	--
1949-51	17	1,926	88	0	0.0
Total "Before"	24	2,215	88	--	--
1952-54	11	1,225	102	14	15.9
1955-57	13	2,165	246	142	141.2
Total "After"	24	3,390	194	106	120.4
			CONTROL AREA		
1944-48	52	4,134	73	--	--
1949-51	97	10,128	70	-3	- 4.1
Total "Before"	149	14,262	71	--	--
1952-54	65	7,106	70	0	0.0
1955-57	66	6,468	135	65	92.8
Total "After"	129	13,574	101	30	42.2

Table 3:3-A

CHANGES IN ACTUAL LAND PRICES BEFORE AND AFTER COMPLETION ON NEW HIGHWAY 67 IN ROCKWALL COUNTY

First Section - Zone B (From 0.5 to 1.5 Miles)

Periods	Number of Sales (Number)	Number of Acres (Acres)	Price Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Percent)
			STUDY AREA		
1944-48	7	289	$ 76	--	--
1949-51	17	1,926	93	$ 17	22.4%
Total "Before"	24	2,215	91	--	--
1952-54	11	1,225	117	24	25.8
1955-57	13	2,165	288	171	146.2
Total "After"	24	3,390	226	135	148.4
			CONTROL AREA		
1944-48	52	4,134	63	--	--
1949-51	97	10,128	74	11	17.5
Total "Before"	149	14,262	71	--	--
1952-54	63	7,106	80	6	8.1
1955-57	66	6,468	158	78	97.5
Total "After"	129	13,574	117	46	64.8

The relationships shown above indicate that the control area in Rockwall County did not conform to the statewide uptrend in farm real estate prices before 1955, although the eventual percentage increase recorded for the control area greatly exceeded the statewide increase. In the light of these evidences, we can only surmise at this time that the factors determining the Texas trend in farm real estate prices were not fully operative in the Rockwall control area until after 1954. Of course, the study area properties may have absorbed some of the market demand for higher-priced land before that time.

Referring again to Table 3:1, it is seen that the prices of Second Section properties remained almost constant during the study period. However, there has not been sufficient time for an adequate after-completion average. There were only 15 farm sales recorded in this section during the 1955-57 period and the roadway was not opened to traffic until late 1956. When the two zones within the Second Section are tabulated separately, as in Tables 3:4 and 3:5, it is shown that in Zone A (abutting or within 0.5 miles) the farms had a net increase of 33.6 percent in price per acre, whereas in Zone B (0.5 to 1.5 miles) they decreased 11.6 percent in value. In the 1952-54 period, the combined Second Section zones show a net of 14.0 percent decrease from the preceding period (Table 3:1); separagely, Zone A prices per acre increased 42.3 percent during this period (Table 3:4), whereas Zone B farm prices decreased 20.9 percent (Table 3:5).

The differences observed to date within and between the zones of both sections of the study area may be summarized as follows: In the First Section both zones (Tables 3:2 and 3:3) demonstrate increases in real prices-per-acre, but Zone B out-performs Zone A in this respect. In the Second Section, Zone A (nearest to the facility) increases (Table 3:4) while Zone B decreases

Table 3:4

CHANGES IN ADJUSTED LAND PRICES BEFORE AND AFTER COMPLETION ON NEW HIGHWAY 67 IN ROCKWALL COUNTY

Second Section - Zone A (Abutting or Within 0.5 Mile)

Periods	Number of Sales (Number)	Number of Acres (Acres)	Price Per Acre (Dollars)	Price Change From Earlier Per[illegible] Per Acre (Dollars)	Per Acre (Percent)
			STUDY AREA		
1944-48	9	557	$ 99	--	--
1949-51	8	342	111	$ 12	12.1%
Total "Before"	17	899	104	--	--
1952-54	5	140	158	47	42.3
1955-57	5	453	133	-25	-15.8
Total "After"	10	593	139	35	33.6
			CONTROL AREA		
1944-48	52	4,134	73	--	--
1949-51	97	10,128	70	-3	-4.1
Total"Before"	149	14,262	71	--	--
1952-54	63	7,106	70	0	0.0
1955-57	66	6,468	135	65	92.8
Total "After"	129	13,574	101	30	42.2

Table 3:4-A

CHANGES IN ACTUAL LAND PRICES BEFORE AND AFTER COMPLETION ON NEW HIGHWAY 67 IN ROCKWALL COUNTY

Second Section - Zone A (Abutting or Within 0.5 Mile)

Periods	Number of Sales (Number)	Number of Acres (Acres)	Price Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Percent)
			STUDY AREA		
1944-48	9	557	$ 86	--	--
1949-51	8	342	117	$ 31	36.0
Total "Before"	17	899	98	--	--
1952-54	5	140	180	63	53.8
1955-57	5	453	156	-24	-13.3
Total "After"	10	593	162	64	65.3
			CONTROL AREA		
1944-48	52	4,134	63	--	--
1949-51	97	10,128	74	11	17.5
Total "Before"	149	14,262	71	--	--
1952-54	63	7,106	80	6	8.1
1955-57	66	6,468	158	78	97.5
Total "After"	129	13,574	117	46	64.8

Table 3:5

CHANGES IN ADJUSTED LAND PRICES BEFORE AND AFTER COMPLETION ON NEW HIGHWAY 67 IN ROCKWALL COUNTY

Second Section - Zone B (From 0.5 to 1.5 Miles)

Periods	Number of Sales (Number)	Number of Acres (Acres)	Price Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Percent)
			STUDY AREA		
1944-48	10	572	$136	--	--
1949-51	11	1,147	139	$ 3	2.2%
Total "Before"	21	1,719	138	--	--
1952-54	15	1,457	110	-29	-20.9
1955-57	10	685	146	36	32.7
Total "After"	25	2,142	122	-16	-11.6
			CONTROL AREA		
1944-48	52	4,134	73	--	--
1949-51	97	10,128	70	-3	-4.1
Total "Before"	149	14,262	71	--	--
1952-54	63	7,106	70	0	0.0
1955-57	66	6,468	135	65	92.8
Total "After"	129	13,574	101	30	42.2

Table 3:5-A

CHANGES IN ACTUAL LAND PRICES BEFORE AND AFTER COMPLETION ON NEW HIGHWAY 67 IN ROCKWALL COUNTY

Second Section - Zone B (From 0.5 to 1.5 Miles)

Periods	Number of Sales (Number)	Number of Acres (Acres)	Price Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Dollars)	Price Change From Earlier Period Per Acre (Percent)
			STUDY AREA		
1944-48	10	572	$118	--	--
1949-51	11	1,147	146	28	23.7
Total "Before"	21	1,719	137	--	--
1952-54	15	1,457	126	-20	-13.7
1955-57	10	685	171	45	35.7
Total "After"	25	2,142	140	3	2.2
			CONTROL AREA		
1944-48	52	4,134	63	--	--
1949-51	97	10,128	74	11	17.5
Total "Before"	149	14,262	71	--	--
1952-54	63	7,106	80	6	8.1
1955-57	66	6,468	158	78	97.5
Total "After"	129	13,574	117	46	64.8

PERCENTAGE CHANGE IN LAND VALUES BY STUDY SECTIONS

ROCKWALL AREA

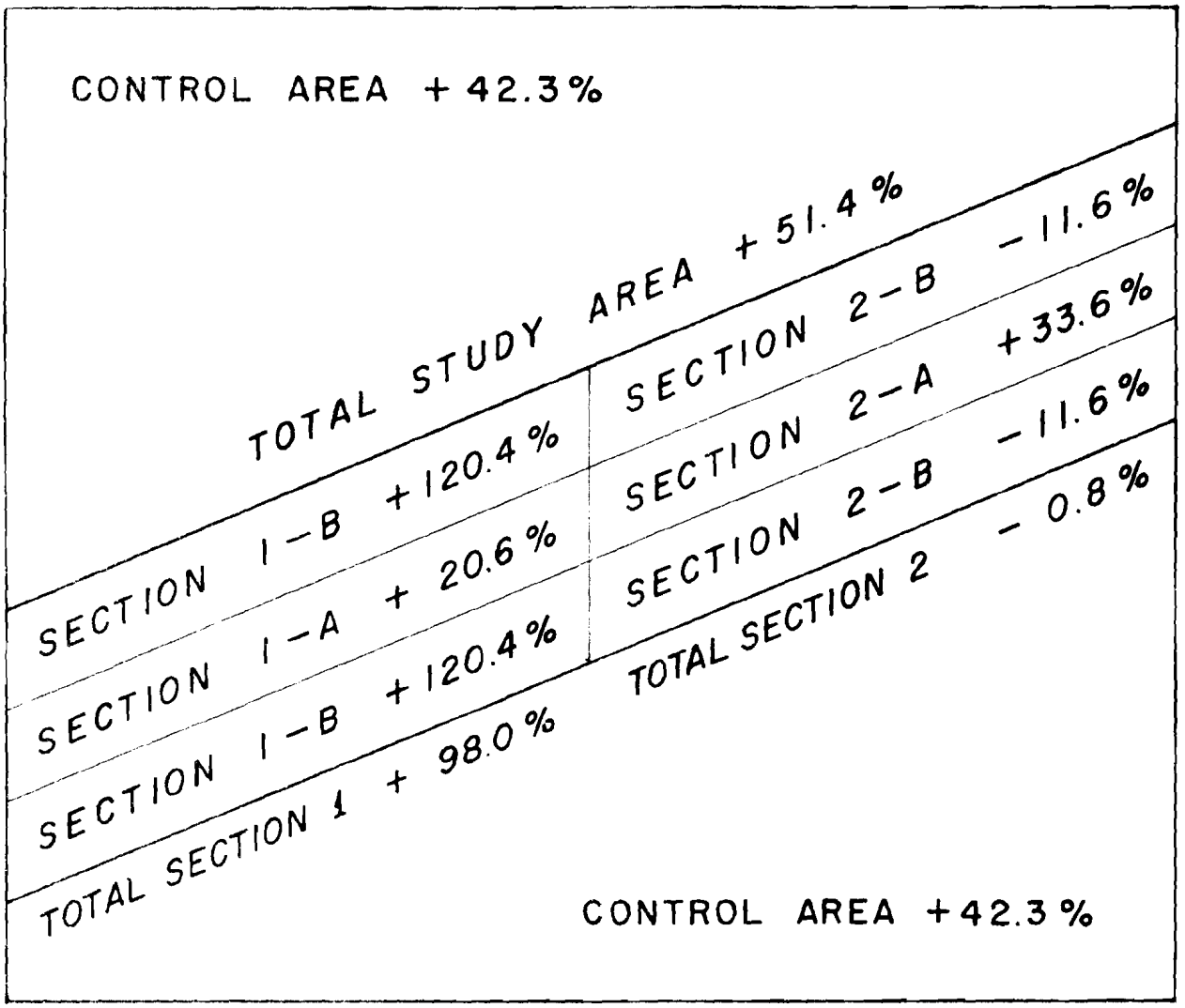


FIGURE 7-7

(Table 3:5). Zone A's percentage increases exceed those of the control area in all except the final (1955-57) period, whereas Zone B exceeds control area price increases in only the 1949-51 period. These relationships can be more easily seen in the summary chart Figure 2:3.

RIGHT OF WAY SALES

Right of way sales were not included in study or control areas, and the gathering of data on right-of-way transactions was incidental to the field procedures. In many cases the deed records were incomplete with respect to the sales price, and such items were omitted from the sample. In Table 3:6 the information is organized to show the price per-acre change between two periods, with each period's sales being classified according to soil type. A 38.6 percentage increase in price per acre is shown for 1953-54 sales over those of 1948-49. The control area consisted of nonright of way sales in the three-mile-wide strip that occurred during the same years. These show only a five percent price increase, as compared with the 38.61 percent right of way increase. The apparent 13.3 percent decline between the periods in the value of black land properties in the control area is based on only seven transactions, and more investigation will be necessary in order to determine the significance of this observation.

CHANGES IN LAND USE

Land uses have not changed to any great extent along the route of new U.S. 67. Those that have occurred along the route or in its vicinity since the opening of the new highway are indicated on the accompanying map (Figure 3:4). Most of the commercial traffic-serving establishments shown on the map are quite

Table 3:6

PRICES OF RIGHT OF WAY TRANSACTIONS IN ROCKWALL COUNTY

By Soil Types 1948-49 and 1953-54, as Reflected in Deed Records

(Control Area Data in Parentheses) 1/

Periods and Soil Type	Number of Sales (Number)	Acres Per Sale (Acres)	Price* Per Acre (Dollars)	Price Change Between Period (Dollars)
1948-49 Total	31 (42)	5.77 (66.3)	132.61 (119.25)	
(1) Shallow Black Land	9 (25)	7.70 (53.2)	123.73 (107.67)	
(4) Black Land	17 (13)	4.88 (79.9)	138.23 (146.02)	
(8) Combination of (1) and (4)	5 (4)	5.32 (104.2)	138.17 (89.47)	
1953-54 Total	43 (37)	3.21 (76.2)	183.79 (125.23)	38.6 (5.0)
(1) Shallow Black Land	19 (29)	2.61 (59.4)	130.16 (129.25)	5.2 (20.0)
(4) Black Land	22 (7)	3.79 (139.9)	187.13 (126.59)	35.4 (-13.3)
(3) Combination of (1) and (4)	2 (1)	2.57 (120.5)	166.14 (56.61)	20.2 (-36.7)

* Prices given here are adjusted to constant dollars (1947-1949 = 100).

1/ Control area sales for this table are non-ROW transaction within study zones A and B applying to the specified years.

small; they appear to have been established to serve local traffic rather than through traffic. The larger and more complete traffic-serving enterprises in nearby Dallas would obviously have more appeal to the majority of through traffic. The industrial establishment shown on the map is the aluminum plant mentioned previously; the nontraffic-serving establishment is an automobile agency.

At the beginning of this study it was hypothesized that the new facility would assist in creating a large number of new home sites for people presently living and working in Dallas. And, while in a few instances Dallas people have moved out to Rockwall County, the movement has not been substantial. It is quite probable that the time period covered in this study is too short to catch this movement. It is believed, however, that the potential is present and that changes in land use from agricultural to residential uses will be accelerated in the next few years. The area in Zone 1 A is particularly suited to residential development.

It is believed that some additional commercial uses will develop in the "A" zone of the study area; particularly around the planned interchange. There is also reason to believe that the development of additional industrial establishments will be likely. Sites are available, and many other industrial location factors such as labor, supply, water, transportation facilities, etc. are favorable. The fact is, however, that such development has not yet occurred in any marked degree.

The black area on the map outlines the general boundaries of overflow bottom land. The land-use classification of this wooded and largely nonproductive land is that of "Land Held for Future Use." After the completion, in 1955, of Lavon Dam, just to the north of Rockwall County, this land was no

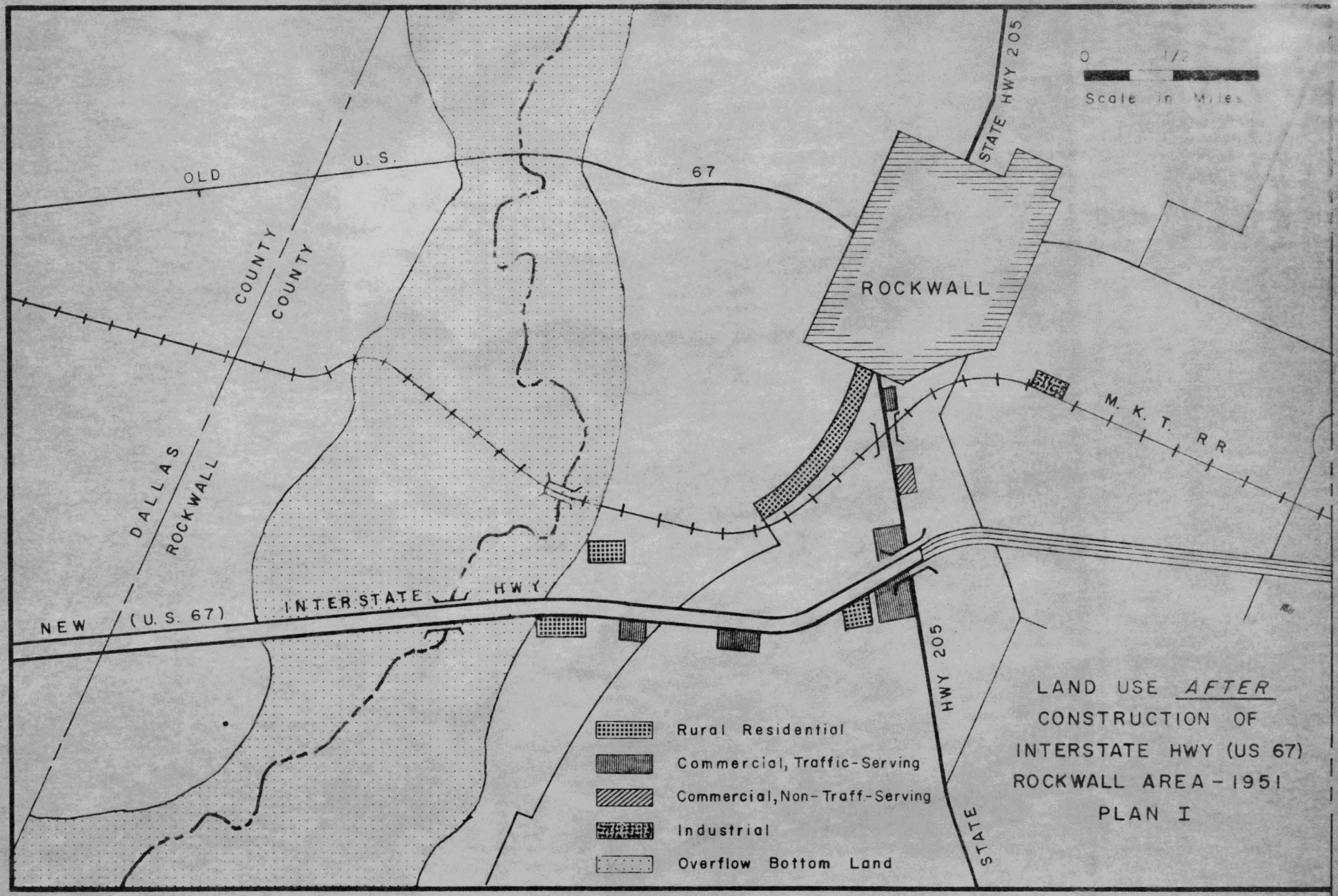
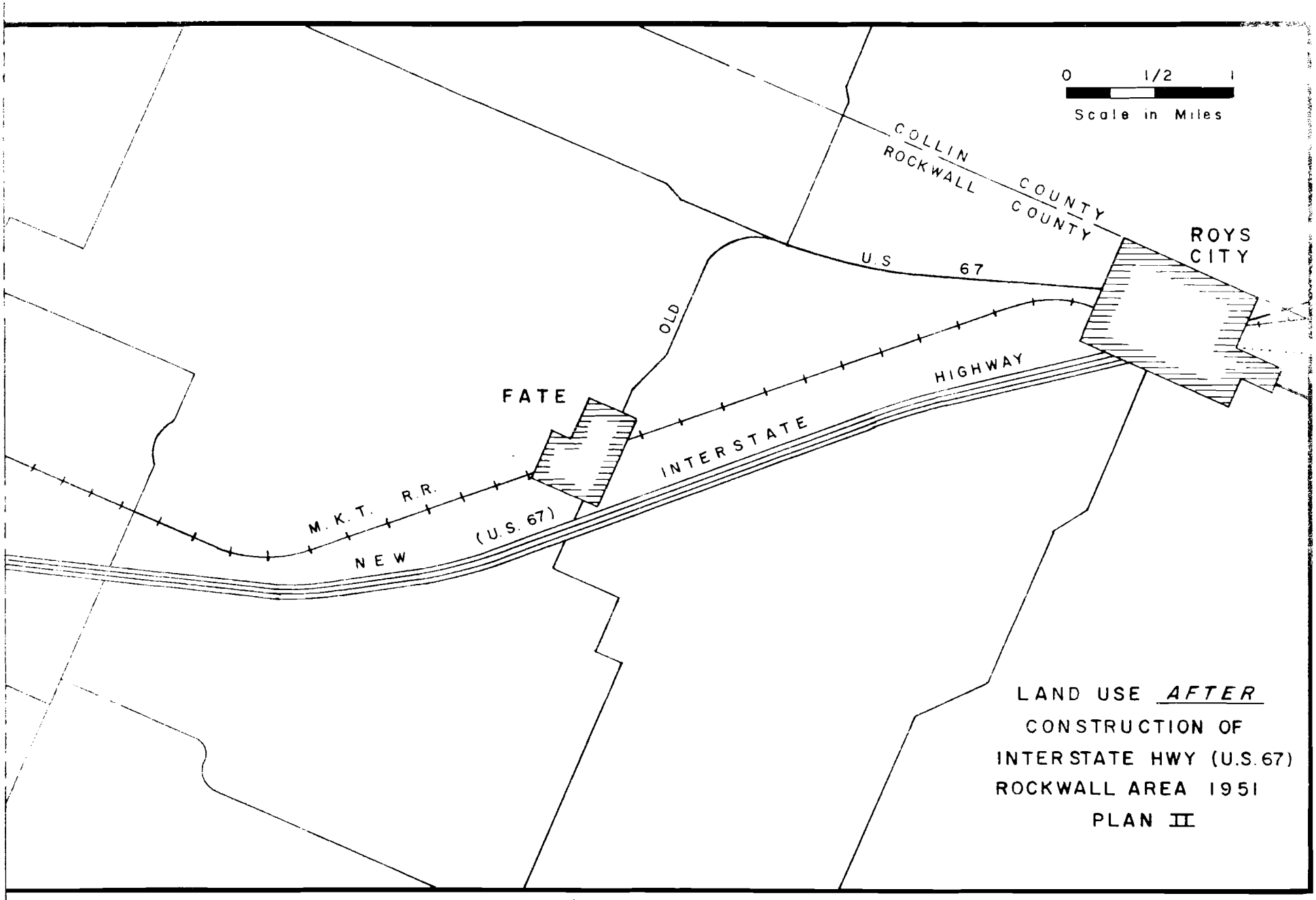

0 1/2
Scale in Miles
OLD U.S. 67
STATE HWY 205
ROCKWALL
DALLAS COUNTY
ROCKWALL COUNTY
M. K. T. R R
NEW (U.S. 67) INTERSTATE HWY
HWY 205
STATE
Rural Residential
Commercial, Traffic-Serving
Commercial, Non-Traff-Serving
Industrial
Overflow Bottom Land
LAND USE AFTER CONSTRUCTION OF INTERSTATE HWY (US 67) ROCKWALL AREA - 1951
PLAN I
PLAN II - NEXT PAGE

FIGURE 3:4



PLAN I Preceding Page

FIGURE 3:4 cont.

longer subject to periodic overflow. However, most of it is poorly drained and there have been no large-scale changes in its land use. Land sales in this area, while tabulated separately, were eventually grouped with the other soil classifications for purposes of this report.

Business Activity

As was the case in both the Austin and Temple studies, an attempt was made in the Rockwall County study area to determine the effects on business of the new Interregional Highway.

Procedures were essentially the same as those used in the Austin and Temple study areas. Business data from two general classes of businesses, traffic-serving and nontraffic-serving, were taken for consideration and analysis. The Before and After approach was also used, with the year 1955 representing the Before period and 1957 the After. The year 1955 was selected since, up to this time, improvements on U.S. 67 had no effect on general traffic flow east of the Rockwall interchange (see Figure 3:5) where U.S. 67 intersects Highway 205. The year 1957 represents the After period, since in December, 1956, the second improved section of U.S. 67, from the Rockwall interchange to the Royse City interchange, was opened to general traffic, thus diverting a large amount of the traffic flow from the Rockwall area.

The investigations into the effects of the construction of the Interstate Route on business activity in Rockwall County have been seriously hindered by two factors. These were (1) the reluctance of business personnel in the area under investigation to provide full dollar volume data on their operations, and (2) the fact that the general traffic on U.S. 67 in 1957 did not bypass certain business locations in Royse City, even though these locations are property along the old route of U.S. 67 (see Map). When the third section of the Interstate Route, from the Royse City interchange to the Hunt County line, is opened to traffic, the general flow of through traffic will completely bypass both Rockwall and Royse City, and a true old route will be available for study.

As of this date, however, data is comparatively inconclusive because of the temporary routing of U.S. 67 traffic along a portion of the normal "old route" U.S. 67.

In this section, an effort will be made to present such data as is presently available, and to interpret this data within reasonable limits, with the understanding that further study will be necessary to provide full corroboration of interpretations made.

Businesses Interviewed

A total of 24 interviews of operators of businesses located along the old route of U.S. 67 were made. As defined for this study, the old route of U.S. 67 is that route established in 1952. It begins at the intersection of the Interregional and Highway 205, proceeds north along Highway 205 to Rockwall, thence east along F.M. 7 to its intersection with Highway 548 in Royse City (see Map). That portion of F.M. 7 east of this point was still being used by U.S. 67 general traffic at the time of the business interviews, and hence could not at that time be legitimately considered to be a part of the "old route" of U.S. 67. In later studies, business located along this portion of F.M. 7 in the Royse City area will, of course, contribute to "old route" data.

Of the businesses studied, 12 were service stations located along old route, and 4 were service stations located along the new Interregional. Three were restaurants and food service establishments located along the old route and seven were nontraffic-serving businesses along the old route. No motels were located within the study area along either the old or new routes.

TRAFFIC ROUTINGS: ROCKWALL COUNTY STUDY AREA

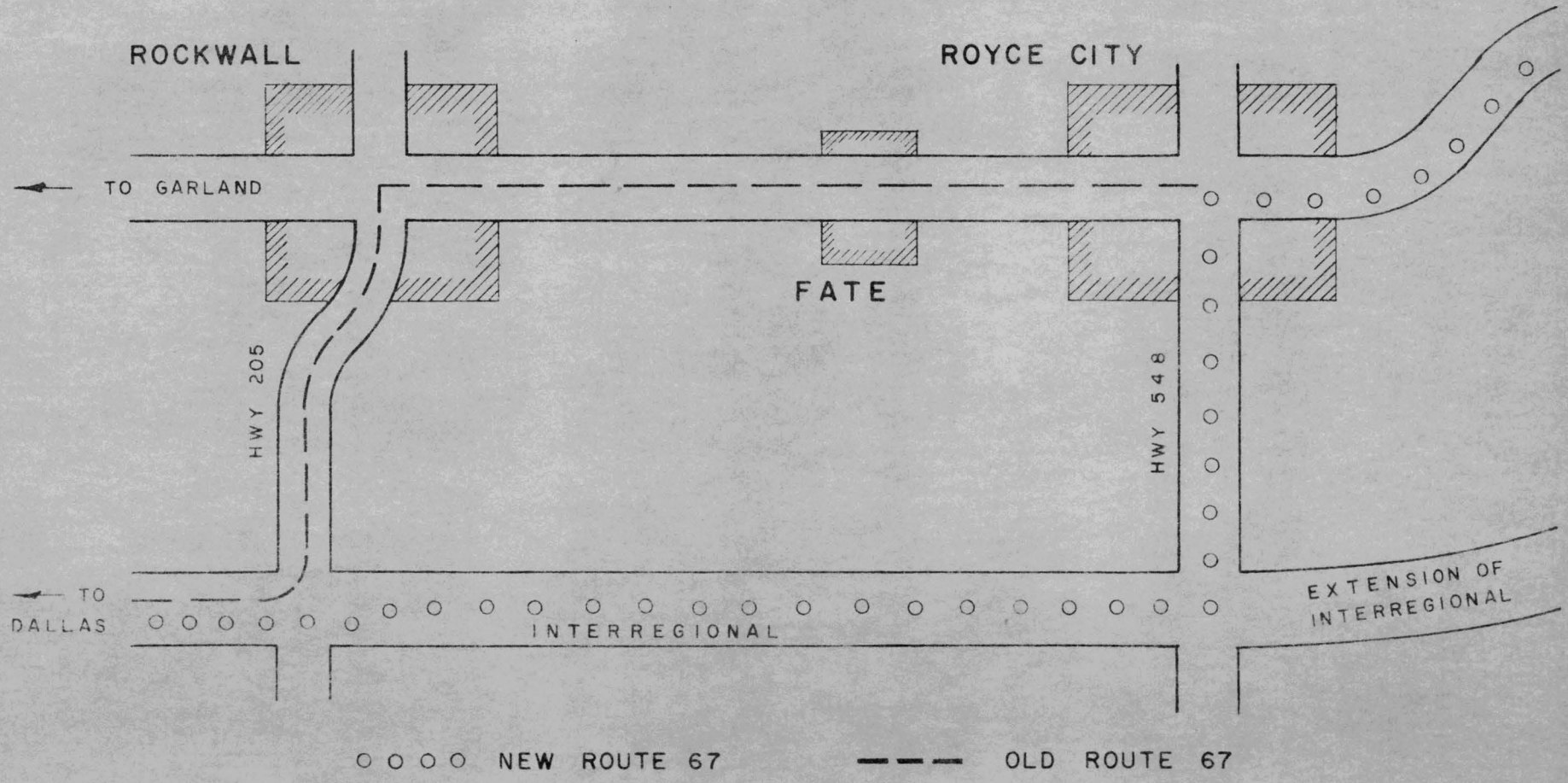


FIGURE 3:5

TRAFFIC-SERVING BUSINESSES

Service Stations (Old Route)

Eleven interviews provided data concerning gasoline gallonages retailed during 1955 and 1957 by service stations along the old route. Additional data was obtained for similar gasoline gallonage of one station not interviewed at the time of the study. Thus for comparative purposes data on gasoline gallonages was obtained for a total of twelve stations located along the old route. Dollar volume of business figures were available for only two of the stations interviewed. The hesitancy of these operators to provide the interviewer with dollar volume figures for the years in question is unfortunate in that it robs the study of a valuable measure of economic activity.

A study of Table 3:7, however, would indicate that if gasoline gallonage retailed is a satisfactory indicator of service station business carried on, the diversion of through traffic to the new route of U.S. 67 had a definite negative effect on those service stations located along the old route. The twelve reporting stations indicated gross sales of 1,115,000 gallons of gasoline in 1955, as opposed to only 863,000 gallons retailed in 1957. This is a decrease of 252,000 gallons of 22.6 percent.

Operator opinion tended to bear out the picture indicated by the gasoline gallonage figures. One operator reported that his gross business dropped 35 percent after the change in route. Another felt that the route change had reduced traffic flow near his station by 75 percent, and had cut his gross business by at least 50 percent. Still another reported that he intended to move his business to the Interregional, to take advantage of the diverted flow of traffic. Several operators reported reductions in personnel and hours of operation.

Table 3:7

CHANGE IN GASOLINE SALES OF THIRTEEN SERVICE STATIONS
IN OPERATION ALONG THE OLD ROUTE OF U.S. 67 DURING 1955 AND 1957

Station Number	Gasline Volume 1955 (Gallons)	Gasoline Volume 1957 (Gallons)	Change From 1955-1957 Gallons (Gallons)	Change From 1955-1957 Percent (Percent)
1	132,000	108,000	- 24,000	-18.2
2	90,000	60,000	- 30,000	-33.3
3	35,000	36,000	+ 1,000	+ 2.9
4	83,000	85,000	+ 2,000	+ 2.4
5	136,000	92,000	- 44,000	-32.3
6	14,000	7,000	- 7,000	-50.0
7	144,000	111,000	- 33,000	-22.9
8	87,000	68,000	- 19,000	-21.8
9	118,000	62,000	- 56,000	-47.2
10	84,000	37,000	- 47,000	-56.0
11	135,000	155,000	+ 20,000	+14.8
12	57,000	42,000	- 15,000	-26.3
Total	1,115,000	863,000	-252,000	-22.6

Not every operator, however, held that the new facility had seriously affected his business. One operator reported a growth in local trade which had, at the time of interview, offset the loss attributable to the diversion of through traffic to the new route. Another reported having done relatively little highway business at any time; he therefore felt that his business was unaffected by the traffic diversion.

In general, however, service station operators doing business along the old route were definitely of the opinion that the new facility had a strong negative effect on their businesses.

Service Stations (New Route)

Four service stations were located along the new route within the limits of the study area. Of the four operators interviewed, only one could provide a year's record of sales and none could provide dollar volume of business figures. For this reason no attempt has been made to estimate total sales for station on the new route.

Although reluctant to provide specific business data, the operators of these stations were relatively consistent in their broad general opinions concerning their locations on the new Interregional. All agreed that their locations were as satisfactory as had been anticipated. Two indicated that they had purchased their locations partly as speculative venture in anticipation of large increases in property values. All indicated that traffic flow along the new Interregional was as great or greater than they had anticipated.

Service Stations (New Route and Old Route)

Gasoline gallonage sales by all reporting stations on the old route suffered a gross decrease of over 22 percent. Since figures are not available for stations on the new route, it was not possible to develop area-wide information.

Whether the old route gallonage data may be considered a satisfactory base from which the business activity of the entire area can be measured is open to question. It may be again noted that the failure of station operators to provide dollar volume figures for the years in question eliminates reasonable opportunity for corroboration of the picture presented by the gasoline gallonage data. On the other hand, the picture presented by the gasoline gallonage sales is broadly comparable to that presented by the gasoline gallonage figures tabulated in the Austin and Temple study areas.

It can probably be safely concluded that the opening to traffic of the new Interregional had a negative effect upon those service stations doing business along the old route of U.S. 67. The extent to which this was offset by gains from businesses located on the Interregional is impossible to determine from available data.

Restaurants and Food Service Establishments

There were a total of six restaurants or food service establishments located within the boundaries of the entire study area. Four of these were located on what is now the Old Route in Rockwall while the other two are located on a section that is presently considered as part of the new route. The opening of the remaining section east of Royse City will cause these two to be bypassed. They might move properly, then be considered as being on a

temporary route. There were no restaurant facilities located along the Interregional at the time of this study.

Of the four restaurants located on the old route in Rockwall, completed interviews were obtained from only two. One of the remaining two was closed and the other had been under new management for a period of only a few weeks consequently no interview was completed. The operators of the other two businesses were able to furnish sales volume information for both 1955 and 1957. Their records indicated that their businesses had suffered substantial losses during the study period. One reported a loss of over 60 percent and the other a loss of over 50 percent in gross sales.

The two restaurants along the temporary route had a much better performance record for the same period. Together their sales increased by almost a third from 1955 to 1957. They were, of course, still available to all U.S. 67 traffic.

These changes in volumes are largely substantiated by the changes in clientele over the same period. The two bypassed establishments in Rockwall showed a drop in total customers of almost two-thirds. About 98 percent of this total customer loss, however, was due to the sharp drop in transient customers. According to the operators, transient business was practically eliminated by the route change while local trade was only lightly affected. The two businesses had an estimated 70 percent transient trade prior to the route change. Since over 97 percent of this group of customers were eliminated by the route change, a severe impact on overall customer volume would have been expected.

The two businesses on the temporary route showed quite different changes in their clientele. Over-all, they showed a net increase of 19 percent in total customers served. Their local customers increased by over 40 percent

and the loss in transient trade was held to about 23 percent. In 1955 the composition of their clientele was only 60 percent local and 40 percent transient. By contrast, in 1957 the local trade had increased in importance to the point where it constituted 75 percent of the total business. Transient trade, in spite of the continued availability to route 67 traffic, had declined to only 25 percent of the total.

If the changes in both total customers and the local transient ratios are correct, it would appear that some factor other than the highway traffic is influencing general restaurant business in this area since the businesses on Route 67 have lost in both absolute and proportionate share of traffic business. Changes in management practices are probably responsible for a large part of this change. One of the restaurants--the one showing the large gain in local clientele--had instigated several new practices specifically designed to attract local trade. According to other businessmen in the area this business was exceptionally well managed.

Although it is not possible to estimate with any degree of accuracy the extent of the effect of the new facility on the restaurants and food service establishments which were bypassed, the direction of such impact is clearly negative. Of the four establishments in operation on the old route in 1955, one is now closed and two of the others have suffered substantial losses (over 50 percent). The two quite comparable establishments which are still served by U.S. 67 indicated an increase in sales of about 33 percent, but with a decline in transient trade.

Total Traffic Serving Businesses

Since there were no motels located on either the old or new routes, the analysis of total effect of the new facility on traffic-serving businesses is limited to service stations and restaurants. In each of these business groups the impact appeared to be definitely negative in nature.

Service stations on the old route lost over 22 percent of their gallonage sales--a net loss in sales of some 252,000 gallons of gasoline pumped. And, while there is strong indications that some of these losses are being recouped by new stations along the new route, it is clear that all of these losses have not been fully regained as yet.

Restaurants appeared to have been even more seriously affected. Those that have been bypassed have suffered severe decreases in total sales. The ones on the temporary route have increased total sales, but not by enough to offset these decreased. The total impact on these cannot be determined accurately until traffic has been routed over the Interregional and completes the bypassing of Royse City. From the local transient ratio of their clientele, however, it would appear that bypassing would not seriously affect their total business.

Since the area included in this study is basically rural, the towns involved are small and agriculturally oriented, the area is located only a short distance from Dallas, and tourist or travel service facilities are not impressive, it could be expected that any change which would make service facilities less accessable to the traveling public would have a negative effect on business dependant upon the traveling public.

The new Interregional Highway has certainly made the facilities on the old route less accessable. In addition it has brought the more impressive travel facilities in Dallas closer through reducing the travel time to Dallas.

NONTRAFFIC-SERVING BUSINESSES

Of the nontraffic-serving businesses interviewed, only six were able to furnish dollar volume information concerning their operation in 1955 and 1957. Three of these businesses were located along the old route in Rockwall and three were located along the temporary route in Royse City. This is not considered to be an adequate number for a sample of the nontraffic-serving retail business within the area. Some remarks concerning the information found would appear to be in order, however.

The three businesses located in Rockwall reported a total dollar volume of sales of $268,000 in 1955 and a volume of $296,000 in 1957. This was an increase of $28,000 or 10.4 percent. The businesses in Royse City reported sales of $270,000 in 1955 and $321,000 in 1957. This was an increase of $51,000 or 18.9 percent

The businesses in Rockwall were quite similar to those in Royse City in both type of business and in operation. As can be seen, they were also very similar in sales volumes during the base year.

It is at least of interest, if not of major analytical significance to note that the sales volumes of both groups increased during the study period. The greater increase by the stores still being served by the temporary route of U.S. 67 may have been due in part to the greater through traffic stream. More than likely, however, it was not. As was the case

with the restaurants, the stores showing the greatest increase was considered to have had better than average management during this period.

The manager of only one of the Royse City stores felt that his volume was influenced by passing traffic. His estimate of total influence, however, was less than two percent of the total three store volume. The other two stores did not feel that their volume was related to traffic. One of the Rockwall operators considered that his business was affected indirectly as a residual influence through reduced buying power of the traffic-serving businesses. The other two did not consider their sales affected by the road change.

It can probably be state, then, that if these responses are indicitative of other stores of a like nature, the nontraffic-serving retail establishments have not been significantly effected by the new facility. A study covering a greater number of stores and a longer period of time would be necessary however, before definite conclusions as to either the direction or extent of actual impact could be made.