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16. Abstract The upgrading and widening of highways over the state, especially in urban areas, are causing the directly affected businesses and property owners to inquire about the possible negative economic impacts of such construction. This paper documents the during-construction effects of widening a 3.5 km (2.2 mi) section of U.S. 59, in Houston, Texas, from a 6-lane freeway with a 4-lane service road to a 10-lane freeway and a 6-lane service road. Construction had not been completed when this report was written. Collected data includes information on abutting businesses' estimation of the construction impact on their businesses and property values, and on the traffic volumes, travel times, and accident rates of the highway. Most businesses' number of usable parking spaces, full-time employees, and part-time employees were unaffected during construction. Most business managers thought that sales had decreased. Sales figures reported by 13 businesses showed a two percent decrease in real terms, which was less severe than the business managers estimated. Real appraised abutting residential property values fell more and commercial property values fell less than corresponding Houston property values during construction, while vacant property value changes were similar. There was no consensus among respondents about the change in traffic volume, travel time, and number of accidents on U.S. 59 during construction. The number of accidents and travel time changed little between 1991 and 1995, but were lowest in 1995. There is no clear trend in traffic volume.					
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**ESTIMATED CONSTRUCTION PERIOD IMPACT OF WIDENING
U.S. 59 IN HOUSTON, TEXAS**

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Research Study Number 0-1260
Study Title: Economic Impact of Highway Widening Projects

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College Station, Texas 77843-3135

IMPLEMENTATION STATEMENT

The following recommendation seems to be in order at this time:

1. The economic impact findings of this study should be used by TxDOT planning officials to write and support environmental impact statements.

DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official view or policies of the Texas Department of Transportation (TxDOT) or the Federal Highway Administration (FHWA). This report does not constitute a standard, specification, or regulation. The report was prepared by Jesse L. Buffington and Marie T. Wildenthal.

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SUMMARY

Between 1991 and the present, a 3.5 km (2.2 mi) section of U.S. 59 in Houston, Texas, was widened from a 6-lane freeway with a 4-lane service road to a 10-lane freeway with a 6-lane service road. Construction is not complete on one of the three widened sections. The Texas Department of Transportation (TxDOT) purchased 281 properties for right-of-way with \$26 million in property costs and \$4.55 million in relocation costs. This report documents the during-construction effects of the widening.

Fifteen percent of the responding abutting businesses' parking spaces were lost during the construction. During the busiest hour of the day at the responding businesses, 17 percent more parking spaces were occupied during construction than before construction. There were fewer customers per day for 70 percent of the businesses and the reported percentage of customers from out-of-town fell from 22 to 13 percent.

Most managers realized the construction was temporary and tried to retain their employees during construction. Approximately 60 percent of the managers thought that their number of full-time employees did not change and approximately 30 percent thought that the number decreased while the number of full-time employees increased three percent. Eighty-two percent of the managers thought that their number of part-time employees did not change, while the actual number decreased 16 percent.

The sales reported by 13 managers increased 13 percent nominally and decreased two percent in real terms. Sales for 1988 and 1996 reported by 10 managers decreased 34 percent nominally and 50 percent in real terms. Houston and Harris County sales increased 32 percent nominally and five percent in real terms, so the abutting firms' sales (and sales tax receipts) were negatively affected by the construction.

Real abutting residential property values decreased more and commercial values fell less than Houston property values decreased during construction, while vacant property value changes were similar for abutting and Houston properties. Nominal Houston property value only decreased one percent between 1989 and 1996, and 60 percent of the responding managers thought they did not change. Twenty-eight percent of the managers thought that the value of all properties abutting U.S. 59 decreased, and the value decreased 42 percent. The distribution of respondents about whether their property value decreased, increased, or stayed the same was similar to the distribution of individual property changes, but a greater percentage increased than the managers expected. Contrary to most managers' expectations, commercial abutting property values increased 25 percent nominally. Nominal abutting residential property values increased four percent between 1989 and 1996 and half of the relocated residents thought they would decrease. Average abutting property tax revenues from properties unaffected by right-of-way acquisition increased while Houston property tax revenue decreased between the property acquisition period and the construction period.

There was no consensus among the business managers, relocated residents, and non-relocated residents of the impact on traffic volume, travel time, and number of accidents. Many thought the number of accidents and travel time increased or did not change. The number of accidents and travel time changed little between 1991 and 1995, but were lowest in 1995 when some construction had been completed.

INTRODUCTION

PURPOSE OF STUDY

The upgrading and widening of highways over the state, especially in urban areas, are causing the directly affected business managers and property owners to ask questions about the possible negative economic impacts of such construction. Business managers along U.S. Highway 80 in Longview, Texas, were concerned that widening the highway through their city would result in the loss of shoulder and private parking spaces for their customers. They were also concerned about the ability of their customers to safely turn into their parking lots because the new curbing restricted continuous access to them. Several years ago, an out-of-state organization trying to study the effects of widening a rural highway from two to four lanes contacted a research economist at the Texas Transportation Institute (TTI) for information on the economic impact (specifically land value, land use, and business impacts) of such an improvement. Later, a real estate appraiser from Austin, Texas, called the same TTI researcher asking for information about the possible economic impact on a client's business property abutting U.S. Highway 183 which was being widened from a 4-lane direct access facility to a 4-lane limited access freeway with service roads. Due to lack of prior research, this research economist was not able to provide any assistance to these people.

To help fill this data gap, the TTI researcher proposed the Longview highway widening study and later the current study of three widening projects located on State Highway (S.H.) 21 in Caldwell, Texas; S.H. 199 west of Fort Worth, Texas; and U.S. Highway 59 in Houston, Texas. The Longview study has been completed and the findings are presented in a research report released in 1993 [1]. Some of the first findings from the current widening study are presented in this report, which describes the widening of U.S. 59 in Houston, Texas.

HIGHWAY IMPROVEMENT

The construction site of interest is a 3.5 km (2.2 mi) segment of U.S. 59 in Houston, Texas. The construction transformed a 6-lane freeway with a 4-lane service road to a 10-lane freeway with a 6-lane service road.

Traffic Volumes, Accidents, and Travel Times

TxDOT estimated the Average Daily Traffic (ADT) for the study area on U.S. 59 in 1985 as 115,000, and the 20-year projected ADT as 188,000. Accident information is only available for the construction period. There were eight percent more injury accidents, 33 percent fewer noninjury accidents, and 13 percent fewer total accidents in 1995 than in 1991. Instrumented vehicles traversed the main lanes in the study area in an average time of three minutes and 44 seconds in 1991, and an average time of three minutes and seven seconds in 1996 (a 17 percent decrease). On the frontage road, instrumented vehicles traversed the study area in an average time of six minutes and 44

seconds in 1991, and an average time of six minutes and eight seconds in 1996 (a 10 percent decrease).

Construction Costs and Construction Dates

The construction costs had totalled \$114 million in October 1997. The construction was divided into three projects and was awarded to two contractors. The construction for the various sections began in April, September, and October 1991. Two sections have been completed and construction should end soon in the last section. It was scheduled to end between October 1993 and June 1995 for the various projects. An HOV flyover bridge was built between 1994 and 1996. Data for the construction period are highlighted in the tables to follow. "After" construction impacts are discussed for convenience instead of referring to "end of construction" impacts.

STUDY CITY AND COUNTY

Historical data on the study city, Houston, and county, Harris, are presented in this section and used in other sections to help interpret the findings of data relating to the U.S. 59 improvement in Houston before versus during and after construction.

Population

Population figures for Houston are shown in Figure 1. Over the past six years, the population of Houston has slowly increased. The Harris County population has also slowly increased, except for a slight decline in 1993 (Figure 2).

Employment

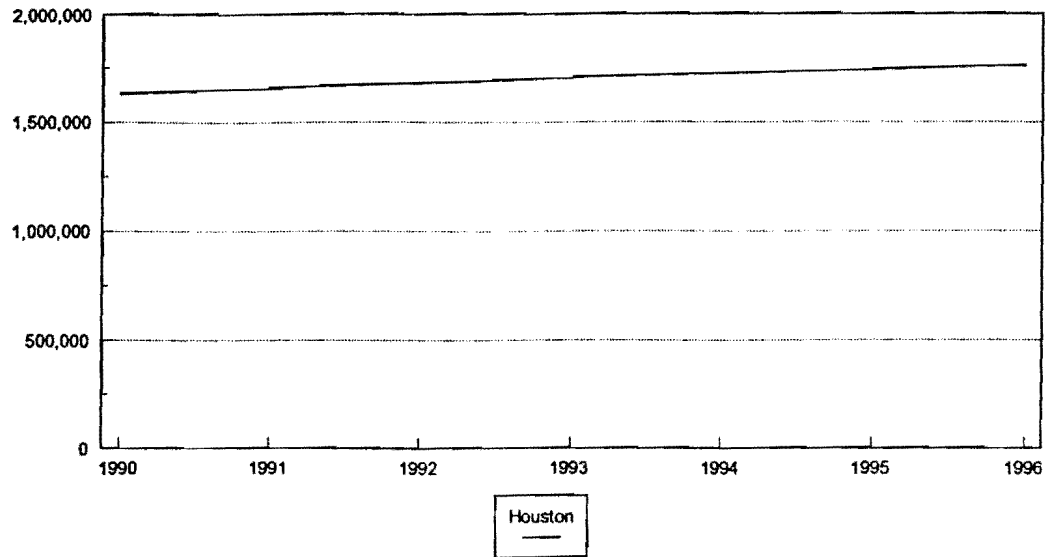
Employment figures for Harris County are presented in Figure 3. Between 1987 and 1991, employment slowly increased, ranging from 1.2 million to 1.4 million. It did not change in 1992 and 1993, and increased three percent annually in 1994 and 1995.

Wages

Real wages for Harris County are presented in Figure 4. Beginning in 1987, real wages increased every year except in 1993. They increased from \$9.7 billion in 1987 to \$11.8 billion in 1995.

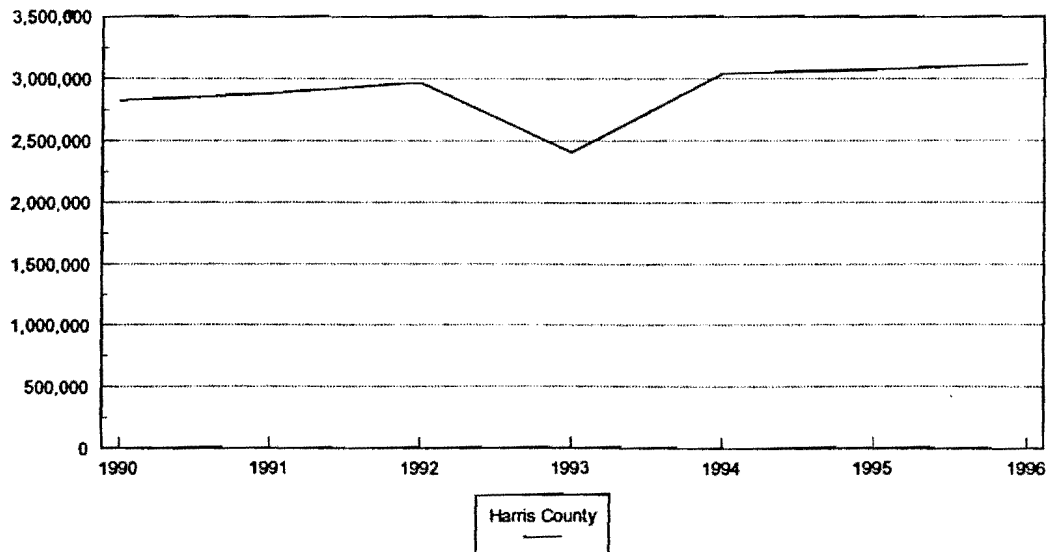
Number of Businesses

The number of businesses in Harris County slowly increased from 70,567 to 84,398 between 1991 and 1994 (see Figure 5). The number of Houston businesses increased from 50,874 in 1991 to 55,787 in 1994 (see Figure 5).



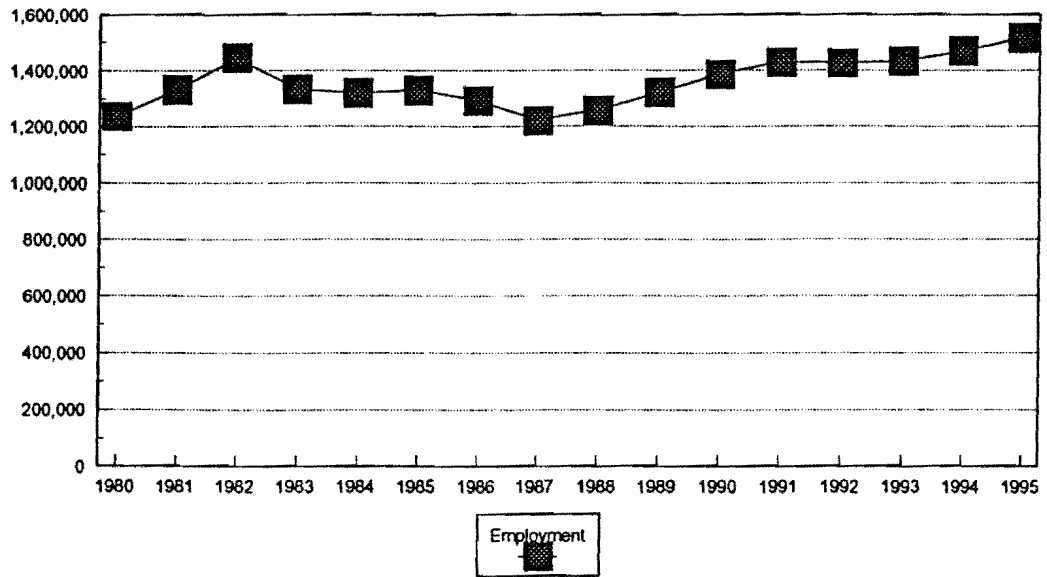
Sources: U.S. Census Bureau; Texas A&M University Dept. of Rural Sociology; and Internet site <http://www-TXSDC.TAMU.EDU/online.html>.

Figure 1. Houston Population for Various Years



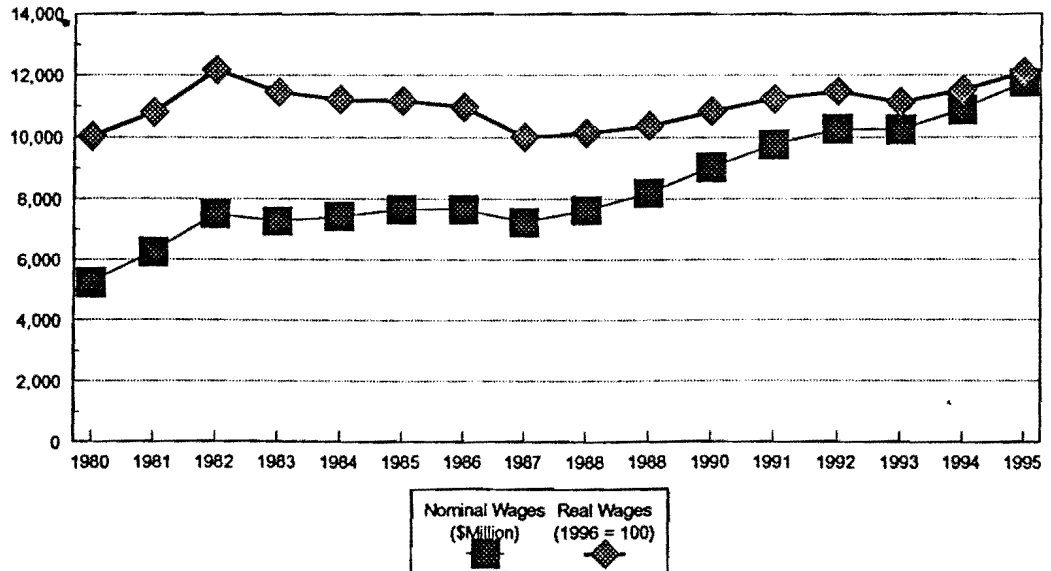
Sources: U.S. Census Bureau; Texas A&M University Dept. of Rural Sociology; and Internet site <http://www-TXSDC.TAMU.EDU/online.html>.

Figure 2. Harris County Population for Various Years



Source: Texas Employment Commission.

Figure 3. Harris County Employment for Various Years



Source: Texas Employment Commission.

Figure 4. Harris County Wages for Various Years

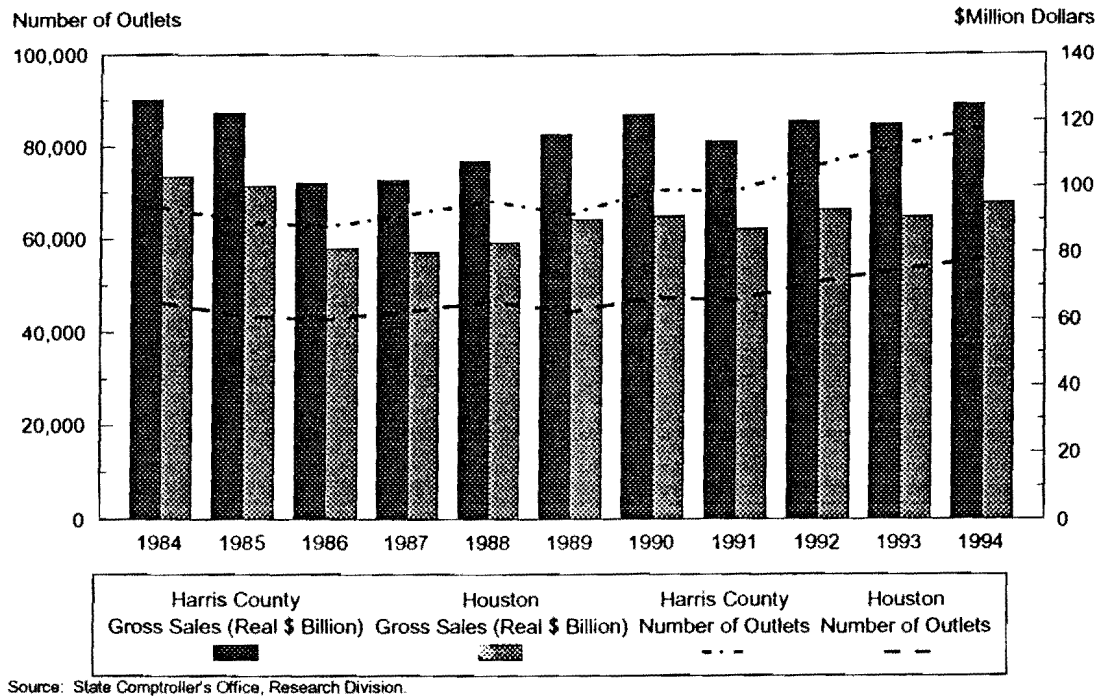


Figure 5. Harris County Gross Sales and Number of Outlets for Various Years

Gross Sales

Real Harris County business gross sales increased between 1986 and 1990, and then alternately increased and decreased between 1990 and 1994 (see Figure 5). The values ranged from \$101 billion to \$126 billion.

Real Houston business gross sales decreased between 1984 and 1988, but went up and down with no clear trend thereafter (see Figure 5). The values ranged from \$80 billion to \$103 billion.

Property Values

Two Harris County real net appraisal property values are being disputed in lawsuits between independent school districts (ISDs) and the Texas comptroller for public accounts, and therefore are currently unavailable (Figure 6). The real available values have ranged from \$157 billion to \$171 billion. The available values during construction are higher than the values between 1988 and 1990.

Houston property value for one year is also being disputed in lawsuits (Figure 7). The real available values have ranged from \$51 million to \$64 million. Values decreased in every instance that they were available for consecutive years.

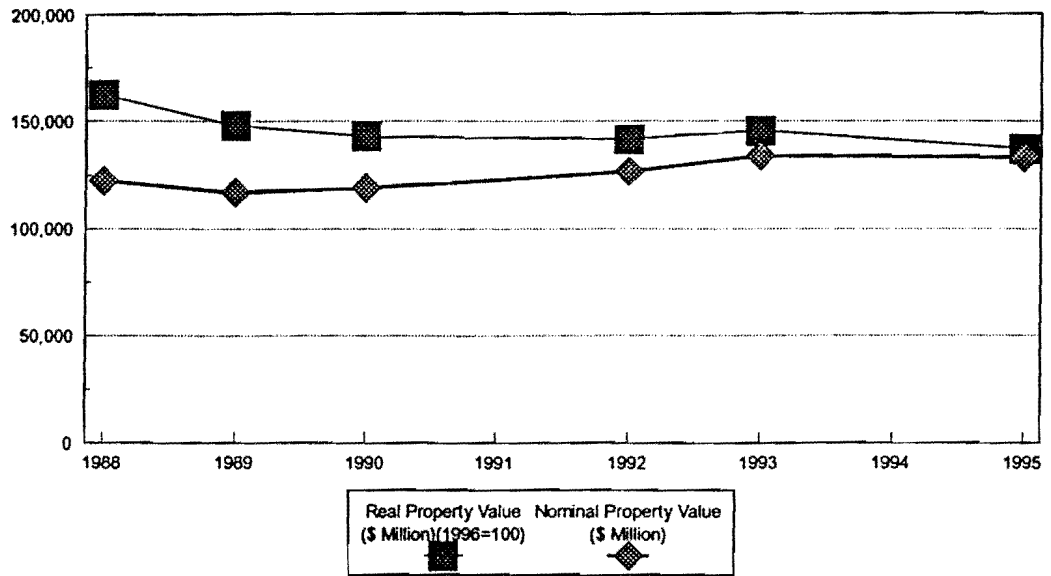


Figure 6. Harris County Property Value for Various Years

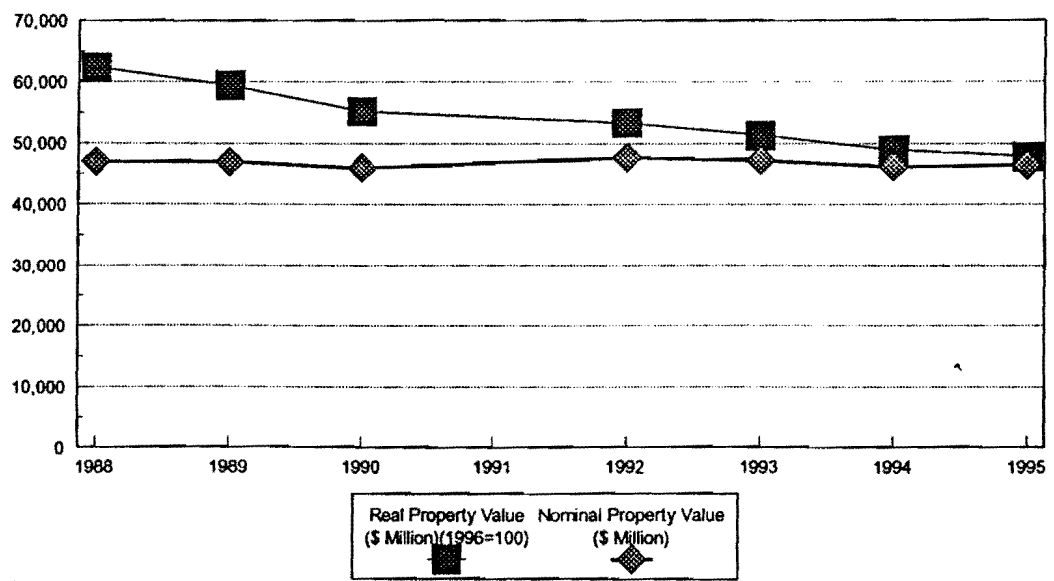


Figure 7. Houston Real Property Value for Various Years

Oil and Gas Production

Trends in crude oil and condensate production for Harris County are presented in Figure 8. Oil production peaked in 1986, but since then it has declined by more than 50 percent. The average price per barrel declined steeply in 1986, increased in 1987, and decreased in 1988 (Figure 9). It increased from 1988 to 1990, the three years prior to construction, and then decreased the first four years of construction. It has risen in the last two years. The real crude oil value has followed the trend in average price (Figure 10).

Between 1992 and 1995, natural gas production increased annually, as shown in Figure 11. The price per million cubic feet (MCF) increased between 1991 and 1993, but decreased until 1995 (Figure 12).

Drilling Activity

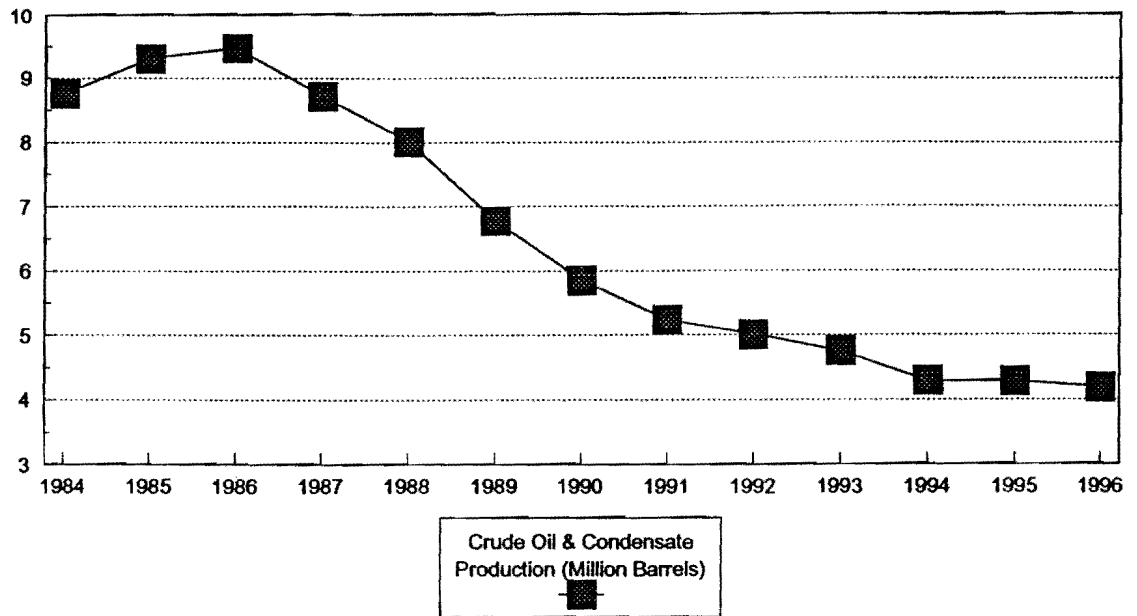
Average annual rotary rig counts for Texas region 3 are listed in Figure 13. Texas region 3 is comprised of 12 counties, including Harris. In 1984 and 1985, there were steep declines in rig counts. They slowly declined between 1986 and 1988, and then slowly increased between 1988 and 1991, immediately prior to construction. During the construction period, rig counts have hovered around 55 rigs.

STUDY METHODS AND DATA SOURCES

The study method is to evaluate data collected to represent the situation before, during, and after construction of the U.S. 59 widening project, although for this study, "after" construction means "at the end of the construction period." The construction period data are highlighted in the tables. Below is a brief summary of the method used in establishing each type of impact. Data for Houston, and to a lesser extent Harris County, are compared with the freeway-specific data to interpret the latter data in estimating construction period impacts.

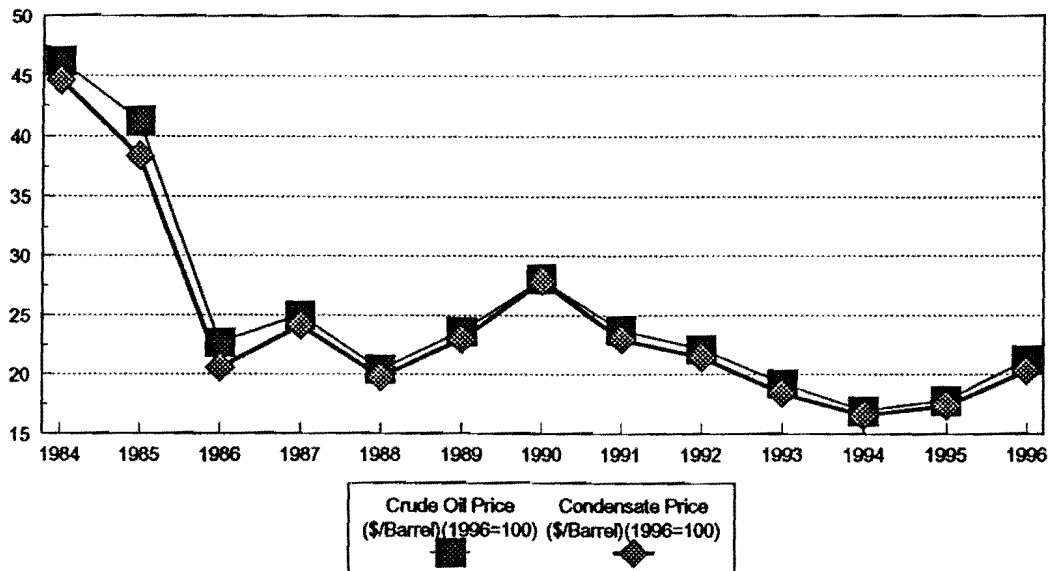
Business Impacts

Business impacts were evaluated by studying trends in the State Comptroller's record of number and types of businesses since 1984. Business impacts were also evaluated through a survey of the business owners and managers along the widened sections of U.S. 59. Managers and owners were asked about changes in their number of parking spaces, employees, and customers, as well as sales and profit levels.



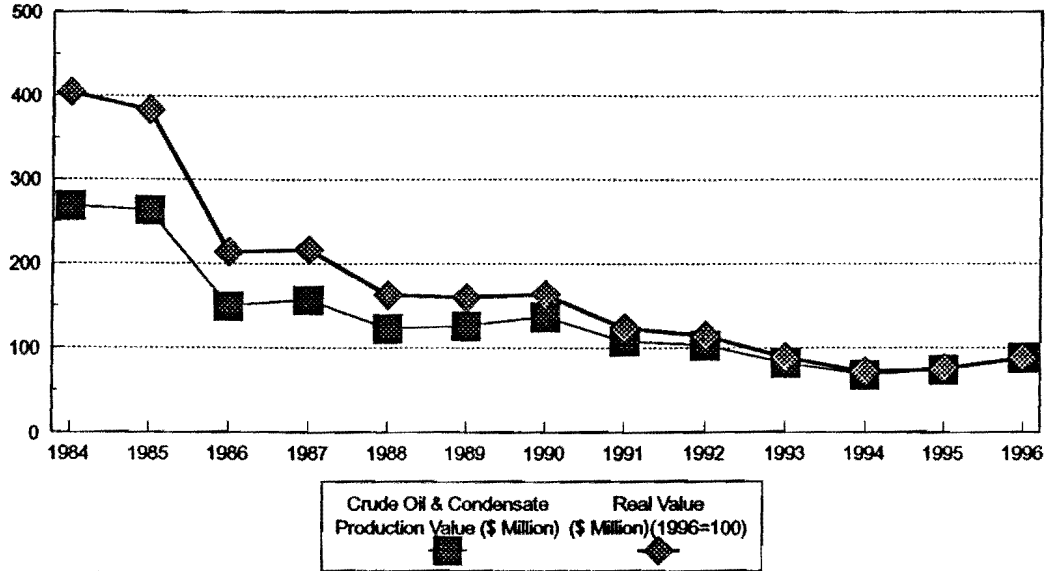
Source: State Comptroller's Office.

Figure 8. Harris County Crude Oil and Condensate Production



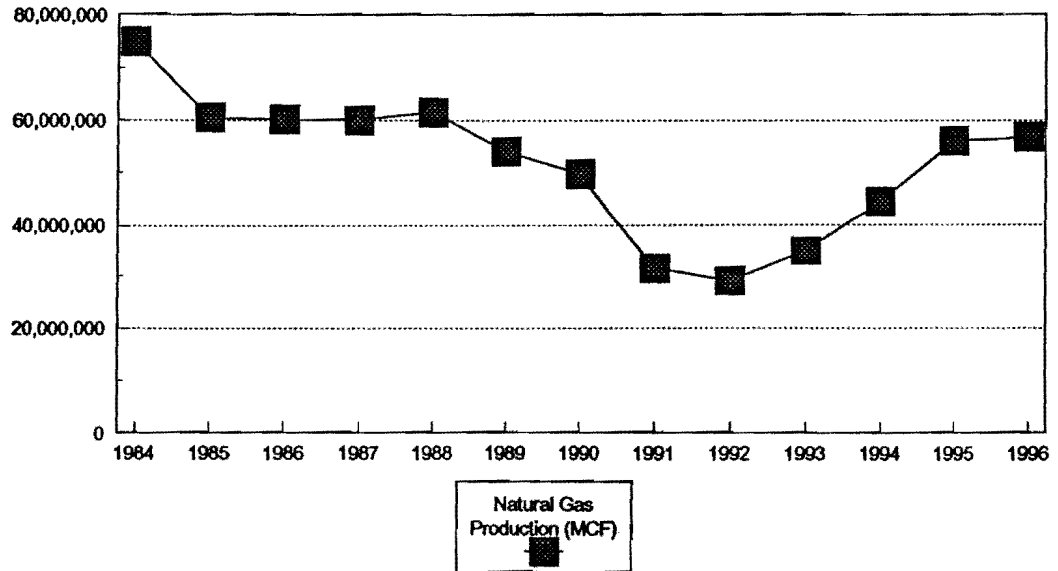
Source: State Comptroller's Office.

Figure 9. Harris County Crude Oil and Condensate Production Prices



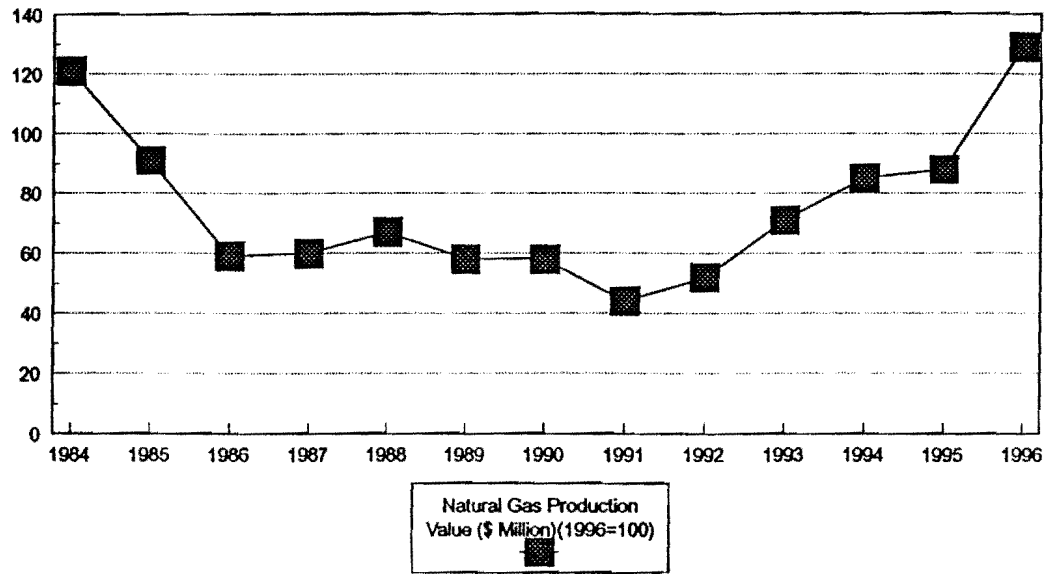
Source: State Comptroller's Office.

Figure 10. Harris County Crude Oil and Condensate Production Value



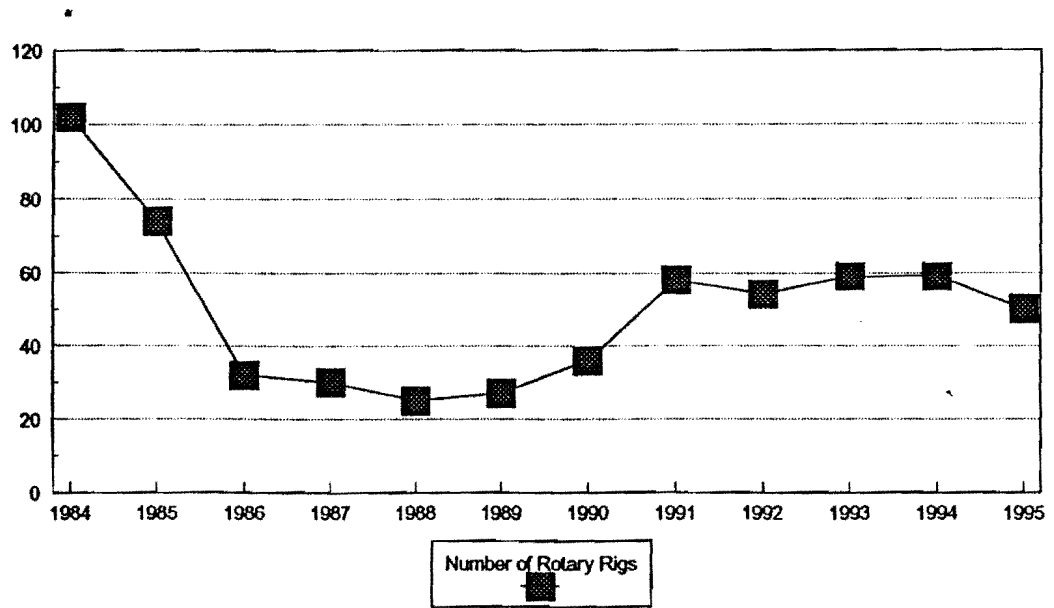
Source: State Comptroller's Office.

Figure 11. Harris County Natural Gas Production



Source: State Comptroller's Office.

Figure 12. Harris County Natural Gas Production Value



Source: Baker-Hughes Incorporated.

Figure 13. Texas Region 3 Average Annual Rotary Rig Count

Residential Impacts

A survey was mailed to residents along the widened sections of U.S. 59 as well as to relocated residents. Residents were asked their opinion of the changes in property value, environmental factors, and traffic issues during construction.

Property Value Impacts

Property value trends were evaluated using Harris County Appraisal District values for Harris County, Houston, and U.S. 59 properties. Business owners' and managers', as well as residents', opinions about the changes in property values were also incorporated in the analysis.

User Cost Impacts

User cost impacts were estimated by investigating instrumented vehicle, accident, and average daily traffic (ADT) data as well as business owners' and managers' and residents' opinions on the changes in traffic volumes, travel time, and accidents on U.S. 59. They were also analyzed using the MicroBencost benefit-cost model.

City and County Tax Revenue Impacts

State Comptroller's data was used to calculate Houston average percent taxable sales per business by Standard Industrial Classification (SIC) code and the percentage was applied to the annual sales provided by business owners and managers in the study area. City and county tax rates, obtained from the Harris County Tax Assessor-Collector and the city of Houston, were applied to these sales volumes, as well as to the property values obtained from the Harris County Appraisal District.

Environmental and General Appearance Impacts

Abutting business owners' and managers' and residents' opinions on the change in noise level, air pollution level, and general appearance of U.S. 59 were used to evaluate the impact of the widening construction on these aspects of U.S. 59.

Contractor and TxDOT Performance Evaluation

Abutting business owners' and managers' opinions on contractor and TxDOT performance were used to evaluate these aspects. The TxDOT area engineer's assessment of the contractor was also included in the contractor performance evaluation.

BUSINESS IMPACTS

INTRODUCTION

In this section, business trends for all Houston and Harris County businesses will be compared with those businesses along the widened sections of U.S. 59 in Houston. The number and types of businesses, as well as their sales levels, are compared and the opinions of abutting business managers regarding various aspects of the construction are presented. The first aspects to be studied are the impacts on the number of parking spaces, the number of customers per day, and the number of employees. Then the impacts on gross sales and net profit will be examined.

The business managers located along U.S. 59 were surveyed about the impacts of the construction on their businesses. They were asked by what percentage interval they thought various business aspects were affected by the construction. Customer impacts included the change in available parking spaces and change in the number of customers during construction. The impacts on sales, net profits, and number of employees were also investigated. Land value impacts and impacts on the general quality of life during construction, as measured by travel time through the construction area, number of accidents, and traffic volumes, were also studied. Actual values were solicited for gross sales, number of employees and parking spaces/occupied parking spaces, and percentage of out-of-town customers. The business managers were also surveyed on their assessment of the contractor's and TxDOT supervisor's performance. This section focuses on the business aspects of the survey.

The during-construction survey was administered in October 1994 during construction on the project. A copy of the survey instrument is included in Appendix A. There were 67 respondents to the survey.

A similar survey was mailed to displaced businesses, and a copy of this survey is included in Appendix B. Only five managers responded and two or three answered any given question, so there was not enough information to represent displaced business managers' opinions.

The after-construction survey was administered in January 1997. Note that the construction was not completed for two of the three construction sections at the time. There were 64 responses. A copy of this survey is included in Appendix C.

CHARACTERISTICS OF HIGHWAY BUSINESSES

The classification for highway businesses is not as detailed as the State Comptroller classifications for Houston and Harris County. For highway businesses, the focus is on retail sales, retail service, professional, and other types of business.

Number and Types

During Construction

Almost half (48 percent) of the respondents were managers of retail sale establishments (Table 1). Thirty-three percent were involved in retail service establishments and 18 percent were involved in professional service operations. One percent was involved in another type of business.

After Construction

After construction, again almost half (47 percent) of the respondents were managers of retail sale establishments. Twenty percent were involved in retail service and 23 percent were involved in professional service. Nine percent were involved in other types of business.

Age of Businesses

During Construction

Fifteen percent (10) of the businesses were less than five years old (Table 2). Twenty-four percent (16) of the businesses were more than six years old. Sixty-one percent of the business managers did not state the age of their businesses.

After Construction

Seventeen percent (11) of the businesses were less than five years old (Table 2). Forty-seven percent (30) businesses were more than six years old. Thirty-six percent of the business managers did not state the age of their businesses.

Age of Buildings

During Construction

Only seven percent of the buildings were less than five years old (Table 3). Fifteen percent were six to 10 years old, and 59 percent were more than 11 years old.

After Construction

Twenty-two percent of the buildings were less than five years old (Table 3). Nine percent were six to 10 years old, and 47 percent were more than 11 years old.

Table 1. Distribution of the Houston Respondents' Businesses by Type of Business

Business Type	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Retail Sales	32	48	30	47
Retail Service	22	33	13	20
Professional Service	12	18	15	23
Other	1	1	6	9
Total	67	100	64	99*

* Percentages may not add to 100% due to rounding.

Table 2. Distribution of Houston Respondents by the Age of Their Business

Business Age	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
< 5 Years	10	15	11	17
6 - 20 Years	10	15	22	34
21 - 50 Years	6	9	8	13
No Answer	41	61	23	36
Total	67	100	64	100

Table 3. Distribution of Houston Respondents by the Age of Their Buildings

Building Age	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
0 - 5 Years	5	7	14	22
6 - 10 Years	10	15	6	9
11 - 20 Years	15	22	13	20
Over 20 Years	25	37	17	27
No Answer	12	18	14	22
Total	67	99*	64	100

* Percentages may not add to 100% due to rounding.

Owner of Buildings

Both before and after construction, approximately half (55 percent) of the businesses owned their buildings and the rest leased their buildings.

IMPACT ON INDIVIDUAL HIGHWAY BUSINESSES

The owners of individual highway businesses were interviewed to obtain hard data to measure the total before- versus during-construction changes in the performance of their businesses, as well as obtain their "opinion" data to estimate the extent of changes due to highway construction activities. The findings from these two databases are presented separately in the proceeding section of Customer Parking Spaces Available. As noted previously, construction was not complete on two of the three freeway sections when the after-construction survey was administered, so the "after" construction results are actually "end of construction period" results.

Customer Parking Spaces Available

During Construction

Business managers were asked to estimate the percentage change in their businesses' number of parking spaces during construction. Over 70 percent of the business managers reported no change in their number of parking spaces (Table 4). Twenty percent indicated that their number of parking spaces decreased.

Business managers were asked to indicate their number of parking spaces before and during construction. The businesses had a total of 1,640 parking spaces before construction and 1,387 parking spaces during construction (Table 5). Therefore, the construction resulted in a loss of 15 percent of the abutting businesses' parking spaces.

Individual managers' opinions, presented collectively in Table 4, are compared to the actual number of parking spaces they reported, presented aggregately in Table 5. In Table 6, the opinions are classified in the left column as increase, no change, or decrease. The difference in the before- and after-construction number of parking spaces reported by each manager is similarly classified in the right three columns. Observations along the diagonal represent opinions agreeing with the reported number of parking spaces, i.e., they said the number of parking spaces changed a certain way and the difference between their reported number of parking places before and after construction reflected that change.

Thirty-one managers' (86 percent) opinions agreed with the numbers they reported. This was the situation for 20 managers whose number of parking spaces did not change, and for 11 who lost parking places. Four managers thought their number increased or did not change while the numbers they provided indicated that they lost parking spaces. Therefore, they were more optimistic about their impact than their figures indicated they should be. One manager said his number of full-time employees did not change but the figures he provided indicated they increased. Thus, he was more pessimistic than his figures indicated.

After Construction

Seventy-five percent of the business managers reported no change in their number of parking spaces (Table 4). Sixteen percent indicated that their number of parking spaces decreased by five percent to 100 percent.

The businesses had a total of 1,770 parking spaces before construction and 1,676 parking spaces after construction (Table 7). Therefore, the construction resulted in a loss of five percent of the abutting businesses' parking spaces.

As seen in Table 8, most (81 percent) managers' opinions of their change in number of parking spaces, presented in Table 4, agreed with the number of parking spaces they reported before and after construction, reported aggregately in Table 7. Thirty-one businesses' number of parking places did not change, and seven businesses' number decreased. Nine managers' opinions did not correspond with the number of parking places they reported. They were almost evenly divided between those who

Table 4. Responding Business Managers' Estimates of the Percentage Change in Their Number of Parking Spaces in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	1	1	1	2
Up 25 - 49%	1	1	0	0
Up 10 - 24%	0	0	1	2
Up 5 - 9%	0	0	0	0
Up 0 - 4%	0	0	0	0
No Change	48	72	48	75
Down < 5%	1	1	0	0
Down 5 - 9%	0	0	3	5
Down 10 - 24%	4	6	3	5
Down 25 - 49%	5	7	2	3
Down 50 - 100%	4	6	2	3
Don't Know	0	0	0	0
No Answer	3	4	4	6
Total Respondents	67	98*	64	101*

* Percentages may not add to 100% due to rounding.

Table 5. Changes in Business Impacts for Houston, Texas, During Construction on U.S. 59

Impact Items	Before Construction	During Construction	Change	
			Number	Percent
Parking Spaces Available	1,640	1,387	-253	-15
Parking Spaces Occupied	1,295	1,519	224	17
Out-of-Town Customers	22	13	NA	-9
Full-Time Employees	694	713	19	3
Part-Time Employees	120	101	-19	-16

Table 6. Estimated Versus Actual Change in Number of Parking Spaces During Construction

Managers' Opinions of Their Change in Available Customer Parking Spaces	Change in Available Customer Parking Based on the Number of Parking Spaces Managers Said They Had*		
	Increase	No Change	Decrease
Increase	0	0	1
No Change	1	20	3
Decrease	0	0	11

* Thirty-one managers did not provide enough information to be classified in this table.

Table 7. Changes in Business Impacts for Houston, Texas, After Construction on U.S. 59

Impact Items	Before Construction	After Construction	Change	
			Number	Percent
Parking Spaces Available	1,770	1,676	-94	-5
Parking Spaces Occupied	1,121	894	-227	-20
Out-of-Town Customers	16	15	NA	-1
Full-Time Employees	564	493	-71	-13
Part-Time Employees	59	90	31	53

Table 8. Estimated Versus Actual Change in Number of Parking Spaces After Construction

Managers' Opinions of Their Change in Available Customer Parking Spaces	Change in Available Customer Parking Based on the Number of Parking Spaces Managers Said They Had After Construction*		
	Increase	No Change	Decrease
Increase	0	1	1
No Change	1	31	3
Decrease	1	2	7

* Seventeen managers did not report their number of parking spaces.

thought that the construction resulted in a greater loss of parking spaces than indicated by the numbers they reported, and those who thought the construction resulted in a smaller loss of parking spaces.

Customer Parking Spaces Occupied

During Construction

The number of occupied parking spaces is also important to business owners. Responding abutting Houston businesses had 1,295 occupied parking spaces during the busiest hour of the day before construction, and 1,519 during construction, a 17 percent gain (Table 5). There were more occupied parking spaces than parking spaces because some respondents with large parking lots did not indicate how many parking spaces they had, but did report the change in their number of occupied parking spaces.

After Construction

Responding businesses had 20 percent fewer occupied parking spaces after construction, with 1,121 occupied parking spaces during the busiest hour of the day before construction, and 894 after construction (Table 7).

Seventy-three percent of the responding business managers indicated that access to their business was affected in some way. One manager said the business was blocked off and another said that equipment was in the way. Several said that it was hard to get to and several others said that it was inconvenient. It was difficult for some vehicles to maneuver. Thirty percent of the responding managers commented on the closure of exits leading to their business. Nine percent of the managers said that customers couldn't find their business. One manager thought that the new elevation of the freeway was higher than their sign so it was not visible until the driver was right on it. Another manager lost all of his road advertisement.

Customers per Day

During Construction

Business managers were asked to estimate the percentage change in their businesses' number of customers per day during construction. Seventy-one percent of the businesses lost between 10 percent and 100 percent of their customers, 22 percent had no change in their number of customers, and one percent gained customers (Table 9). Several managers said that customers couldn't find their business and that many exits were closed, making access difficult. There were no signs to give advance warning of exits to main intersections. Several said their business' driveway was blocked. One said access was slightly affected.

Table 9. Responding Business Managers' Estimates of the Percentage Change in Their Number of Customers per Day in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	1	2
Up 25 - 49%	1	1	2	3
Up 10 - 24%	0	0	1	2
Up 5 - 9%	0	0	1	2
Up 0 - 4%	0	0	0	0
No Change	15	22	15	23
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	7	11
Down 10 - 24%	11	16	5	8
Down 25 - 49%	18	27	8	13
Down 50 - 100%	19	28	17	27
Don't Know	1	1	1	2
No Answer	2	3	6	9
Total Respondents	67	98*	64	102*

* Percentages may not add to 100% due to rounding.

After Construction

The distribution of managers' responses after construction was similar to the during-construction distribution. This might be because construction was ongoing at the time of the survey. Fifty-nine percent of the businesses lost between five percent and 100 percent of their customers, 23 percent had no change in their number of customers, and nine percent gained customers (Table 9). One manager said that customers could not determine how to get to his business and another said that people drove around the construction. Several managers said that their entrance was blocked and others said that their exit ramp was cut off.

Percent of Customers From Out-of-Town

During Construction

One of the factors which could affect the number of customers per day is the percentage of customers from out-of-town. This percentage could in turn be affected by the construction. The average percent of out-of-town customers decreased from 22 percent before construction to 13 percent during construction (Table 5).

After Construction

The average percent of out-of-town customers decreased from 16 percent before construction to 15 percent after construction (Table 7).

Full-Time Employees

During Construction

Sixty percent of the responding abutting Houston business managers did not think that their number of full-time employees changed during construction (Table 10). Thirty-six percent thought that their number decreased. However, the number of full-time employees increased three percent from 694 to 713 (Table 5).

As seen in Table 11, most (80 percent) managers' opinions about the change in their number of full-time employees, presented aggregately in Table 10, agreed with their perceived change in number of full-time employees, presented collectively in Table 5. This was the situation for 19 managers whose number of full-time employees did not change and for 20 who lost full-time employees. Four managers overestimated the negative impact on their number of full-time employees. Two thought they did not change, but their numbers indicated they gained full-time employees. Another two managers thought they lost full-time employees while the number did not change for one and increased for the other. Six underestimated the negative impact as they thought their number did not change, but their reported number of employees decreased. For various reasons, 18 managers' opinions were not able to be classified in the table.

Table 10. Abutting Houston Business Managers' Opinions About the Change in Their Number of Full-Time Employees

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	1	2
Up 25 - 49%	0	0	1	2
Up 10 - 24%	0	0	0	0
Up 5 - 9%	0	0	0	0
Up 0 - 4%	0	0	2	3
No Change	40	60	41	64
Down < 5%	1	1	1	2
Down 5 - 9%	0	0	4	6
Down 10 - 24%	2	3	2	3
Down 25 - 49%	9	13	2	3
Down 50 - 100%	13	19	8	13
Don't Know	0	0	0	0
No Answer	2	3	2	3
Total Respondents	67	100	64	100

Table 11. Estimated Versus Actual Change in Number of Full-Time Employees During Construction

Managers' Opinions of Their Change in Their Number of Full-Time Employees	Change in the Number of Full-Time Employees Managers Said They Had*		
	Increase	No Change	Decrease
Increase	0	0	0
No Change	2	19	6
Decrease	1	1	20

* Eighteen managers did not provide enough information to be classified in the table.

After Construction

Sixty-four percent of the Houston business managers did not think that their number of full-time employees changed during construction (Table 10). Twenty-seven percent thought that their number decreased. These numbers are similar to the during-construction numbers, which is plausible since the after-construction survey was given while the construction was still occurring over most of the project. The number of full-time employees decreased 13 percent from 564 to 493 (Table 7).

After-construction full-time employment versus opinion of the change in employment is found in Table 12. The estimated percent change in number of full-time employees, aggregated in Table 10, and change in reported number of full-time employees, aggregated in Table 7, agreed for 80 percent of the managers. These respondents included one manager whose number of full-time employees increased, 30 whose number of full-time employees did not change, and 13 whose number of full-time employees decreased. Eleven managers' reported number of full-time employees did not agree with their estimate, almost evenly split between those who thought that the construction resulted in a greater loss of full-time employees than indicated by the numbers they reported, and those who thought the construction resulted in a smaller loss. Nine managers did not provide their number of full-time employees.

Table 12. Estimated Versus Actual Change in Number of Full-Time Employees After Construction

Managers' Opinions of Their Change in Their Number of Full-Time Employees	Change in the Number of Full-Time Employees Managers Said They Had*		
	Increase	No Change	Decrease
Increase	1	2	0
No Change	2	30	4
Decrease	1	2	13

* Nine managers did not provide their number of full-time employees.

Employees - Part-Time

During Construction

Most respondents (82 percent) did not think that their number of part-time employees changed during construction (Table 13). One manager thought that his number of part-time employees increased 50 percent to 100 percent, and two managers did not answer the question. Twelve percent thought that the number of part-time employees decreased. The number of part-time employees decreased 16 percent, from 120 to 101 (Table 5), for abutting businesses during construction on U.S. 59 in Houston.

As shown in Table 14, 85 percent of the managers who reported their number of part-time employees, reported in aggregate in Table 5, reported numbers that agreed with their perceived change in number of part-time employees, reported in aggregate in Table 13. The managers with consistent perceptions included 36 who said that their number of part-time employees did not change and five who thought they had lost part-time employees. Four managers gave a more negative estimate when they did not provide numbers. One said his number of part-time employees did not change when his numbers indicated he had gained employees, and three said they had lost employees when their number of part-time employees was the same before and during construction. Three managers gave a more positive estimate when they did not provide numbers. For various reasons, 19 managers' opinions were not able to be classified.

After Construction

Most respondents (41, or 64 percent) did not think that their number of part-time employees changed after construction (Table 13). Three managers thought that their

Table 13. Abutting Houston Business Managers' Opinions of the Change in Number of Part-Time Employees

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	1	1	1	2
Up 25 - 49%	0	0	0	0
Up 10 - 24%	0	0	1	2
Up 5 - 9%	0	0	0	0
Up 0 - 4%	0	0	1	2
No Change	55	82	41	64
Down < 5%	1	1	0	0
Down 5 - 9%	0	0	1	2
Down 10 - 24%	2	3	0	0
Down 25 - 49%	1	1	0	0
Down 50 - 100%	5	7	2	3
Don't Know	0	0	0	0
No Answer	2	3	17	27
Total Respondents	67	100	64	100

Table 14. Managers' Estimated Versus Actual Number of Part-Time Employees Before and During Construction

Managers' Opinions of Their Change in Their Number of Part-Time Employees	Change in the Number of Part-Time Employees Managers Said They Had*		
	Increase	No Change	Decrease
Increase	0	0	1
No Change	1	36	2
Decrease	0	3	5

* Nineteen managers did not provide enough information to be classified in this table.

number of part-time employees increased and three managers thought that the number decreased. Seventeen (27 percent) did not answer the question. The number of part-time employees increased 53 percent, from 59 to 90 (Table 7) for abutting businesses during construction on U.S. 59 in Houston.

As shown in Table 15, 82 percent of the managers who reported their number of part-time employees, reported in aggregate in Table 7, reported numbers that agreed with their perceived change in number of part-time employees, reported in aggregate in Table 13. There were 36 of these managers with consistent perceptions and all said that their number of part-time employees did not change. Three managers gave a more positive estimate when they did not provide their numbers of part-time employees and five gave a more pessimistic view when they did not provide numbers. For various reasons, 20 managers' opinions were not able to be classified.

Gross Sales Volume

During Construction

Sixty-nine percent of the business managers thought that their sales decreased, including 50 percent that thought their sales decreased by more than 25 percent (Table 16). Eighteen percent thought that their gross sales did not change and four percent thought that they increased five percent to 49 percent. The businesses' reduction in sales is attributed to the same reasons business managers thought their number of occupied parking spaces decreased, which is primarily lack of accessibility. One manager thought it was due to the economy.

Table 15. Managers' Estimated Versus Actual Number of Part-Time Employees Before and After Construction

Managers' Opinions of Their Change in Their Number of Part-Time Employees	Change in the Number of Part-Time Employees Managers Said They Had After Construction*		
	Increase	No Change	Decrease
Increase	0	1	1
No Change	2	36	1
Decrease	0	3	0

* Twenty managers did not provide enough information to be classified in this table.

Average gross sales for 13 businesses that were in business and reported sales for all years before and during construction are found in Figure 14. Average gross sales increased until 1990, and then began to decline. The average gross sales for all respondents for each year are shown in Figure 15. Average sales increased from 1988 until 1991 and decreased thereafter, just one year after the start of the decline in the average sales of those who reported sales each year.

As seen in Table 17, the perception of 70 percent (14) of the managers of their change in gross sales was the same when they provided sales figures before and during construction and when they gave their opinion of the change, presented collectively in Table 16. Four managers' estimates were more negative than when they provided the figures, and two managers' estimates were more positive than when they provided the figures.

After Construction

Sixty percent of the business managers thought that their sales decreased (Table 16). Twenty-three percent thought that their gross sales did not change and 11 percent thought they increased.

Average gross sales for 10 businesses that were in business and reported sales for all years before and after construction are \$2.4 million in 1988 and \$3.6 million in 1996.

As seen in Table 18, the perception of 77 percent (10) of the managers of their change in gross sales was the same when they provided sales figures before and after construction and when they gave their opinion of the change, presented collectively in Table 16. Two managers' estimates were more negative when they did not provide the figures and one manager's estimate was more positive when he provided the figures.

Table 16. Houston Abutting Business Managers' Opinions on Their Change in Gross Sales During Construction

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	0	0
Up 25 - 49%	2	3	1	2
Up 10 - 24%	1	1	1	2
Up 5 - 9%	1	0	3	5
Up 0 - 4%	0	0	1	2
No Change	12	18	15	23
Down < 5%	0	0	0	0
Down 5 - 9%	1	1	7	11
Down 10 - 24%	12	18	8	13
Down 25 - 49%	15	22	9	14
Down 50 - 100%	19	28	14	22
Don't Know	1	1	2	3
No Answer	3	4	3	5
Total	67	96*	64	102*

* Percentages may not add to 100% due to rounding.

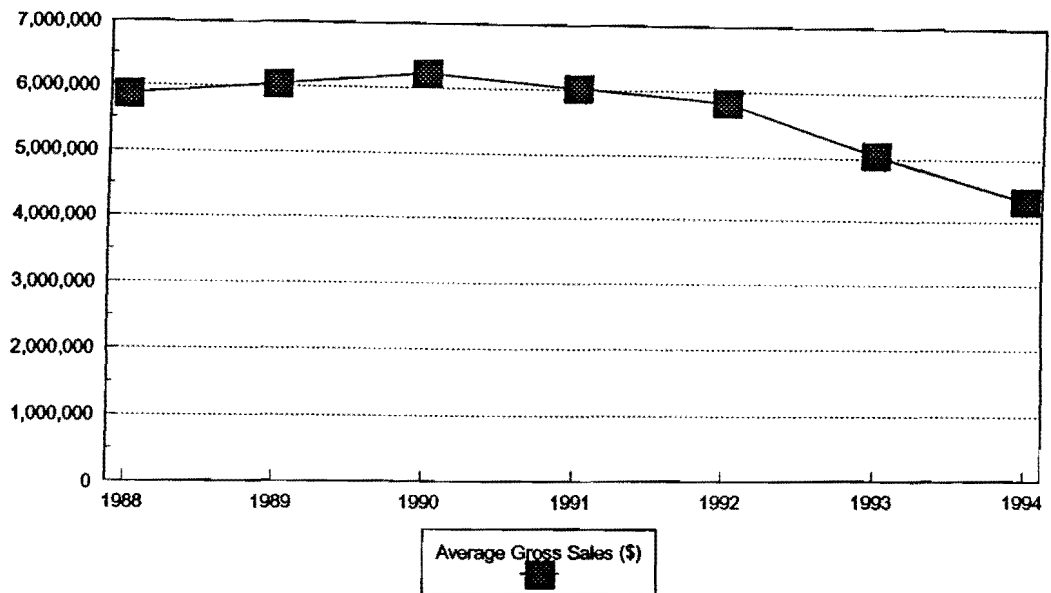


Figure 14. Trend in Average Gross Sales for Thirteen Businesses Reporting Sales During Construction in Houston, Texas

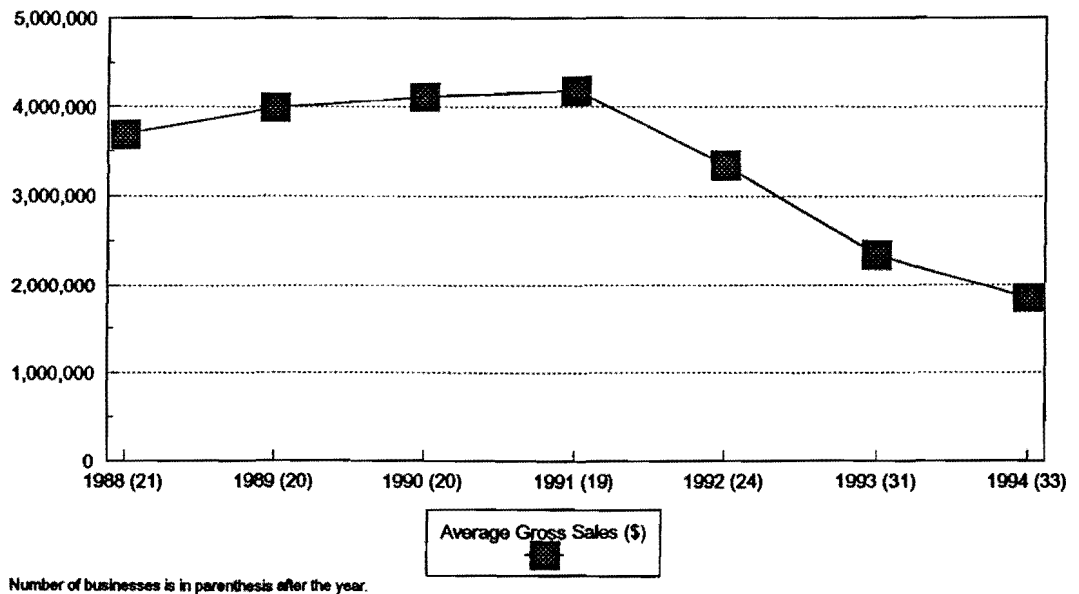


Figure 15. Responding Businesses' Average Gross Sales Before and During Construction for U.S. 59 in Houston, Texas

Table 17. Managers' Perceptions of Gross Sales Changes When Providing Sales Figures and Not Providing Sales Figures During Construction

Managers' Opinions of Their Change in Sales	Change in Sales Volume the Managers Reported Before and During Construction		
	Increase	No Change	Decrease
Increase	1	0	1
No Change	0	0	1
Decrease	4	0	13

Table 18. Managers' Perceptions of Gross Sales Changes When Providing Sales Figures and Not Providing Sales Figures After Construction

Managers' Opinions of Their Change in Sales	Change in Sales Volume the Managers Reported Before and After Construction		
	Increase	No Change	Decrease
Increase	1	0	0
No Change	1	1	1
Decrease	1	0	8

Two-thirds of the 43 managers commenting on their change in sales attributed the change to the construction. As reported earlier in the discussion of the change in the number of customers per day, people want to avoid the area because of the difficulty of getting in and out. Several mentioned the difficulties due to the closure of freeway entrance and exit ramps as well as entrances and exits to their business. A manager noted that changes in the area disrupted the traffic flow.

One manager said that the business was hidden because of the work. Another said there was better visibility. A manager said that it was hard to see the business with the higher freeway and one business is closing because the owner doesn't like the freeway being elevated. Note that construction was not finished when this survey was administered. Two managers said that business should pick up when the construction is completed.

One said that his change in sales was due to the economy and another said that it was due to other developments. One business was new. Another manager thought that sales would decrease when they finish because people will be going so fast on the freeway that they will be passed by.

Sales Level

During Construction

Only 39 business owners responded when asked for their before-construction sales level (Table 19). Fifty-nine respondents gave their sales category for the during-construction period. When only considering the respondents providing sales information, approximately one-half earned \$100,000 to \$500,000 before construction and less than \$100,000 during construction, while approximately one-fourth earned less than \$100,000 before construction and \$100,000 to \$500,000 during construction.

Businesses can gain or lose sales and remain in the same sales category. Therefore, comparing changes in sales categories during construction with the managers' opinions of the change is not as informative as it is for reported sales figures. However, 38 percent of the managers reported changes in sales categories before and during construction that agreed with their opinion on their change in sales during that time period (Table 20). Eighteen said that their sales decreased and three said they increased while their sales categories did not change.

After Construction

The distribution of respondents giving their sales category for the during- and after-construction periods are similar (Table 21). As seen in Table 22, 38 percent (14) of the managers' perceptions of their change in gross sales were the same when they provided sales categories before and after construction (Table 21) and when they were asked to give their opinion, presented aggregately in Table 16. One manager's estimate was more negative when he did not provide the figures, and one manager's estimate was more positive when he provided the figures.

Table 19. Gross Sales Levels of Responding Business Managers Abutting Construction in Houston, Texas, Before and During Construction

Annual Sales	Before Construction		During Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Less Than \$100,000	10	15	32	48
\$100,000 - \$500,000	22	33	15	22
\$500,000 - \$1,000,000	2	3	2	3
Over \$1,000,000	5	7	10	15
No Response	28	42	8	12
Total	67	100	67	100

Table 20. Managers' Perceptions During Construction of Their Change in Sales Intervals When They Provided Sales Intervals and When They Didn't

Managers' Opinions of Their Change in Sales	Change in Sales Interval Category the Managers Reported Before and During Construction		
	Increase	No Change	Decrease
Increase	0	3	0
No Change	1	2	0
Decrease	2	18	13

Table 21. Gross Sales Levels of Responding Businesses Abutting Construction in Houston, Texas, Before and After Construction

Annual Sales	Before Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Less Than \$100,000	10	16	14	22
\$100,000 - \$500,000	11	17	12	19
\$500,000 - \$1,000,000	6	9	8	13
Over \$1,000,000	10	16	9	14
No Response	27	42	21	33
Total	64	100	64	101*

* Percentages may not add to 100% due to rounding.

Table 22. Managers' Perceptions of Gross Sales Changes When Providing Their Opinion and Their Sales Categories After Construction

Managers' Opinions of Their Change in Sales	Change in Sales Volume the Managers Reported Before and After Construction		
	Increase	No Change	Decrease
Increase	0	1	0
No Change	0	9	0
Decrease	1	21	5

Net Profit

During Construction

Business managers' opinions on changes in net profit were similar to their opinion on gross sales (Table 23). Sixty-one percent thought that net profit decreased, including 45 percent who thought it had decreased over 25 percent. Twenty-one percent thought that it did not change and five percent thought that it increased five percent to 49 percent.

After Construction

Fifty-one percent thought that net profit decreased (Table 23). Twenty-seven percent thought that it did not change and 11 percent thought that it increased up to 49 percent.

IMPACT ON ALL HIGHWAY AND OTHER CITY BUSINESSES

Individual business owners were asked their opinion about the gross sales impact of construction activities on all highway businesses and also on other city businesses. These opinions are presented below.

All Abutting Businesses

During Construction

Most (81 percent) of the responding abutting business managers thought that sales of all abutting U.S. 59 businesses decreased during construction (Table 24).

After Construction

Twenty-five percent of the businesses thought that sales of businesses abutting U.S. 59 decreased after construction. Nine percent thought they increased and nine percent thought they did not change. Fifty-seven percent either did not know or did not answer the question.

Other City Businesses

Gross Sales

During Construction. Almost half of the respondents (48 percent) thought that the gross sales of nonabutting businesses did not change during construction (Table 25). Eight percent thought they increased and 21 percent thought they decreased.

Table 23. Abutting Houston Business Managers' Opinions of Their Change in Net Profit During Construction on U.S. 59

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	0	0
Up 25 - 49%	2	3	1	2
Up 10 - 24%	1	1	1	2
Up 5 - 9%	1	1	3	5
Up 0 - 4%	0	0	1	2
No Change	14	21	17	27
Down < 5%	1	1	0	0
Down 5 - 9%	0	0	6	9
Down 10 - 24%	10	15	7	11
Down 25 - 49%	12	18	6	9
Down 50 - 100%	18	27	14	22
Don't Know	3	4	3	5
No Answer	5	7	5	8
Total	67	98*	64	102*

* Percentages may not add to 100% due to rounding.

Table 24. Abutting Business Managers' Opinions on the Change in Gross Sales of U.S. 59 Businesses

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	0	0
Up 25 - 49%	0	0	1	2
Up 10 - 24%	0	0	0	0
Up 5 - 9%	0	0	3	5
Up 0 - 4%	0	0	1	2
No Change	2	3	6	9
Down < 5%	3	4	0	0
Down 5 - 9%	6	9	8	13
Down 10 - 24%	15	22	6	9
Down 25 - 49%	16	24	0	0
Down 50 - 100%	15	22	2	3
Don't Know	6	9	15	23
No Answer	4	6	22	34
Total	67	99*	64	100

* Percentages may not add to 100% due to rounding.

Table 25. Abutting Houston Business Managers' Opinions on the Change in Gross Sales of Nonabutting Businesses

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	2	3	0	0
Up 25 - 49%	0	0	1	2
Up 10 - 24%	3	4	0	0
Up 5 - 9%	1	1	4	6
Up 0 - 4%	0	0	1	2
No Change	32	48	9	14
Down < 5%	1	1	0	0
Down 5 - 9%	2	3	8	13
Down 10 - 24%	4	6	6	9
Down 25 - 49%	7	10	0	0
Down 50 - 100%	1	1	1	2
Don't Know	12	18	16	25
No Answer	2	3	18	28
Total	67	98*	64	101*

* Percentages may not add to 100% due to rounding.

After Construction. Fifty-three percent of the respondents either did not know or did not answer the question on how they thought nonabutting businesses' sales changed after construction. Ten percent thought they increased, 14 percent thought they did not change, and 24 percent thought they decreased.

Employment

During Construction. Abutting business managers' opinions of the change in nonabutting businesses' employment are found in Table 26. Over half (52 percent) thought nonabutting Houston employment did not change, while 21 percent thought that it decreased. One percent thought that it increased.

After Construction. Forty-eight percent of the respondents either did not know or did not answer the question on how they thought nonabutting businesses' employment changed after construction. Eighteen percent thought they increased, 23 percent thought they did not change, and 11 percent thought they decreased.

COMPARISON OF CHANGES IN HIGHWAY, CITY, AND COUNTY BUSINESS GROSS SALES

Before- versus during- and after-construction business sales are compared for U.S. 59, Houston, and Harris County based on data obtained from highway businesses and the state comptroller's office. These comparisons are made to determine the extent of the construction impact on the gross sales of the U.S. 59 businesses.

Highway Versus City Businesses

During Construction

The total gross sales for 13 abutting business managers that reported their gross sales before and during construction are presented in Table 27. Nominal abutting sales increased 13 percent while Houston sales increased 31 percent. Real abutting businesses' sales decreased two percent while Houston businesses' sales increased four percent (Table 28).

After Construction

The total gross sales for 10 abutting business managers who reported their gross sales before and after construction are presented in Table 29. Nominal abutting sales decreased 34 percent but Houston sales are not available for 1996. Real abutting businesses' sales decreased 50 percent (Table 30).

Table 26. Respondents' Estimates of the Change in Employment in Parts of Houston Not Located on U.S. 59 During Construction

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	0	0
Up 25 - 49%	1	1	1	2
Up 10 - 24%	0	0	2	3
Up 5 - 9%	0	0	7	11
Up 0 - 4%	0	0	1	2
No Change	35	52	15	23
Down < 5%	2	3	0	0
Down 5 - 9%	0	0	5	8
Down 10 - 24%	6	9	2	3
Down 25 - 49%	4	6	0	0
Down 50 - 100%	2	3	0	0
Don't Know	15	22	18	28
No Answer	2	3	13	20
Total Respondents	67	100	64	100

**Table 27. Abutting Businesses', Houston, and Harris County, Texas,
Nominal Gross Sales for 1988 - 1994**

Year	13 Responding Abutting Businesses' Gross Sales (\$)¹	All Houston Businesses' Gross Sales²	All Harris County Businesses' Gross Sales²
1988 - 1990	39,080,000	64,812,305,039	84,162,947,383
1991 - 1994	44,236,483	84,632,516,509	111,991,515,546

¹ Sum of actual gross sales figures provided by 13 abutting businesses who provided their sales for both years.

² Source: Comptroller of Public Accounts, Research Division.

**Table 28. Abutting Businesses', Houston, and Harris County, Texas, Real
Gross Sales for 1988 - 1994**

Year	10 Responding Abutting Businesses' Gross Sales (\$)¹	All Houston Businesses' Gross Sales²	All Harris County Businesses' Gross Sales²
1988	51,831,378	85,959,853,429	111,624,399,361
1989 - 1994	50,752,837	89,600,822,134	118,565,916,256

¹ Sum of actual gross sales figures provided by 10 abutting businesses.

² Source: Comptroller of Public Accounts, Research Division.

Table 29. Abutting Businesses', Houston, and Harris County, Texas, Nominal Gross Sales for 1988 and 1996

Year	10 Responding Abutting Businesses' Gross Sales (\$)¹	All Houston Businesses' Gross Sales²	All Harris County Businesses' Gross Sales²
1988	23,830,000	64,812,305,039	84,162,947,383
1996	15,660,000	NA	NA

¹ Sum of actual gross sales figures provided by 10 abutting businesses who provided their sales for both years.

² Source: Comptroller of Public Accounts, Research Division.

Table 30. Abutting Businesses', Houston, and Harris County, Texas, Real Gross Sales for 1988 and 1996

Year	10 Responding Abutting Businesses' Gross Sales (\$)¹	All Houston Businesses' Gross Sales²	All Harris County Businesses' Gross Sales²
1988	31,605,469	85,959,853,429	111,624,399,361
1996	15,660,000	NA	NA

¹ Sum of actual gross sales figures provided by 10 abutting businesses.

² Source: Comptroller of Public Accounts, Research Division.

Highway Versus County

During Construction

Harris County gross sales are found in Table 27. They increased 33 percent while abutting sales decreased two percent.

After Construction

Harris County real gross sales are not available for 1996.

SUMMARY

Business impacts were assessed using survey results supplemented with secondary data. Most business managers answered an October 1994 survey on during-construction impacts. Construction was not complete for two of the three segments in January 1997, but a survey on after-construction impacts was administered at that time. Fifteen percent of the businesses were less than five years old. Therefore, questions about circumstances before construction started may have been answered by referring to circumstances before the construction reached their business. Approximately one-third of the businesses' buildings were less than 10 years old in each city. Slightly over half of the businesses in each city owned their building during and after construction.

For certain impacts, the managers were asked for their opinion on how the aspect changed and later were asked to provide numbers before, during, and after construction. This situation allowed for a comparison of perceptions to actual numbers.

Fifteen percent of the responding abutting businesses' parking spaces were lost during the construction. Of those reporting their number of parking spaces, 86 percent of the businesses provided numbers that agreed with their opinion on the change in their number of parking spaces. After construction, 81 percent of the businesses provided numbers that agreed with their opinion on the change in their number of parking spaces. Responding abutting businesses lost five percent of their parking spaces after construction.

During the busiest hour of the day at the responding businesses, 17 percent more parking spaces were occupied during construction than before construction. After construction, the number of occupied parking spaces decreased by 20 percent. The decrease was attributed to the closure or relocation of entry and exit ramps close to businesses, lack of access, and people going around the construction.

The decreased number of occupied parking spaces corresponded to fewer customers per day during construction for 70 percent of the businesses during and after construction, although 23 percent of the businesses did not think there was a change in their number of customers per day. The reported percentage of customers from out-of-town fell from 22 percent to 13 percent during construction. After construction, the reported percentage of out-of-town customers decreased from 16 percent to 15 percent.

Most managers seemed to realize that the construction was temporary and tried to retain their employees during construction. Approximately 60 percent of the managers thought that their number of full-time employees did not change during or after construction and approximately 30 percent thought that the number decreased. The number of full-time employees increased three percent during construction, but fell 13 percent afterward. Eighty-two percent of the managers thought that their number of part-time employees did not change during construction and 64 percent thought so afterward. The number of part-time employees decreased 16 percent during construction, but increased 53 percent afterward. The numbers provided by the managers agreed with opinions they expressed about 80 percent of the time.

There were 13 managers who reported gross sales figures for the year before construction through the end of construction. Their sales increased 13 percent nominally and decreased two percent in real terms during construction. There were 10 managers who reported their sales for 1988 and 1996, and their sales decreased 34 percent nominally and 50 percent in real terms. Houston and Harris County sales increased 32 percent nominally and five percent in real terms, so using either standard the abutting firms' sales decreased more than the average Houston and Harris County sales levels during construction. Houston and Harris County sales were not available for 1996.

RESIDENTIAL IMPACT

Residents abutting U.S. 59 were identified using information provided by TxDOT. In the summer of 1994, a mail survey was conducted on the residents' opinions on various potential construction impacts. A copy of the survey is included in Appendix D. Two hundred ninety-eight surveys were mailed and 46 were returned, yielding a 15 percent response rate. This is an average response rate for a mail survey.

Several residents were displaced as a result of the construction. Some moved to other locations on U.S. 59. Of the 46 respondents to this survey, 21 remained in their original location.

Seven had to move and three moved to other locations on U.S. 59. Thirty-one residents indicated how long they had lived in their present location and 11 of the respondents had lived there for at least five years (Table 31). One of the 21 relocated residents had lived at his relocated residence for six to 15 years, while 18 (86 percent) had lived at their relocated residence for five years or less.

All but four respondents owned their own residence in any location. Thirty-eight residents indicated whether they had owned their current residence and 34 (89 percent) indicated they had. Of the 20 respondents indicating whether they owned their relocation residence, 16 indicated they did own it.

Residents and relocated residents were surveyed about the construction impacts on their property value, traffic conditions, and environment. The questions were similar to those asked of businesses. In the following sections, the responses will be discussed with those of business managers.

Table 31. Length of Time that Responding Residents Had Lived at Their Current Location Abutting U.S. 59 in Houston, Texas

Age of Residence	Number of Residents	Percentage of Residents
0 to 5 Years	20	65
6 to 15 Years	2	6
16 to 30 Years	6	19
31 to 100 Years	3	10
Total	31	100

Average: 12.78 years

RELOCATION IMPACTS

RELOCATION EXPENSE

In order to have enough land to accommodate the widening of U.S. 59, 281 properties were purchased by TxDOT. Property purchase costs include \$10.7 million for land, \$10.1 million for improvements, and \$5.7 million for net damages or enhancements (Table 32). Relocation costs were \$4.6 million (Table 33). The price per hectare for 142 properties for which land area and values were available ranges from \$96,296 per hectare to \$1,420,000 per hectare (\$39,000 per acre to \$575,100 per acre). The total value of the properties divided by the total land area yielded an average value per hectare of \$380,072 (\$153,929 per acre).

RELOCATION SURVEY

The opinions of relocated residents are presented in the property value, user cost, and environmental impact chapters. Only one, two, or three business managers answered any given question on the relocated business survey (found in Appendix B) so their opinions are not presented in this report. The following information was obtained from the personal business interview survey and from the resident and displaced business mail surveys.

Original Location

During Construction

Twenty-four percent of the businesses responding to the during-construction survey were started before construction at the interview location, while 15 percent were initiated at the interview location during construction (Table 34).

After Construction

Thirty-nine percent of the businesses responding to the after-construction survey were started before construction at the interview location, while 25 percent were initiated at the interview location during construction (Table 34).

Percent of Respondents Who Relocated

During Construction

Twenty-three (34 percent) of the businesses responding to the during-construction survey moved because the state took right-of-way (Table 35). The front of the property was the original location for 16 businesses and five businesses started at other locations (Table 36).

Table 32. Right-of-Way Acquisition Summary Costs

Type of Cost	Cost (\$)
Land Cost	10,682,492
Improvement Cost	10,056,743
Net Damages (Enhancements)	5,664,488
Total Property Costs	26,403,723

Table 33. Distribution of Relocation Costs by Type of Expense for U.S. 59 in Houston, Texas

Type of Relocation Cost	Cost (\$)
Rent	371,667
House	426,527
Downpayment	8,773
Incidental Expense - Acquisition	5,821
Incidental Expense - Replacement	13,817
Incremental Interest Expense	3,146
First Move Estimate	508,429
First Move Fee	6,030
Second Move Estimate	508,586
Second Move Fee	5,410
Third Move Estimate	109,738
Third Move Fee	945
Moving Payment	1,373,624
Reconnect Fee	62,683
Search Expense	126,993
Replacement Costs	1,023,348
Total	4,555,537

Table 34. Distribution of Respondents by the Age of Their Business at the Location Where the Interview Occurred

When Business Began on U.S. 59	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Before 1980	10	15	10	16
1980 - 1990	6	9	15	23
1991 - 1994	10	15	16	25
No Answer	41	61	23	36
Total	67	100	64	100

Table 35. Number of Businesses That Had to Move Due to Construction in Houston

Business Moved Due to Construction?	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Yes	23	34	16	25
No	27	40	42	66
No Answer	17	25	6	9
Total	67	99*	64	100

* Percentages may not add to 100% due to rounding.

Table 36. Distribution of Houston Businesses by Their Original Location

Original Location	Before Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Front of Property	16	24	13	20
Other Location	5	7	2	3
Not Applicable	46	69	49	77
Total	67	100	64	100

After Construction

Sixteen (25 percent) of the businesses responding to the after-construction survey moved because the state took right-of-way (Table 35). The front of the property was the original location for 13 businesses and two businesses started at other locations (Table 36).

One business moved because the U.S. 59 widening construction precluded relocating to the remaining portion of the tract. One resident was able to move his home to the remainder of the tract. A business owner rebuilt his business with money he received from the state for his property.

One resident moved due to the high taxes on the property at the relocation address. Another resident moved because he could not find a suitable place to live after he relocated. He purchased a lot and had a house built because the advanced age of he and his wife made it difficult for them to purchase a house that would need repairing in a few years.

Moving Expenses

Many owners were not happy with the right-of-way payment amount and procedure. One wished TxDOT would pay more and said that payments were inconsistent. Another said that the appraisal was very inconsistent. Another said that some owners held out and probably got a better deal from the state. He thought the state paid very little if it could get away with it.

One business owner said he was paid well for his property, but did not lose any business. He lost one location completely, but didn't get any money for it because he did not own the property.

One business owner did not receive payment though he signed all of the papers. They told him he moved before he had to, even though he received a letter telling him to

vacate. A resident did not receive enough money to purchase another home outright and was soon to be homeless at the time of the survey if he did not find a job that could cover the rent on the residence he was residing in. Another resident received \$2,000 for relocation and downpayment on a house. He moved himself and was very displeased, but did not have any other choice.

One manager noted that moving is inconvenient. Another said that TxDOT was not helpful in getting permission to open a new business or in obtaining the permits.

One Business Owner's Story

One business owner gave permission for his story to be relayed to TxDOT. He was offered \$12,000 for a property for which he had paid \$16,000 over 13 years. With an attorney, he was able to get another \$5,000. The lienholder took \$6,619. He had 30 tons of steel rafters on the property with which he was planning to build a welding shop on the site. The cost of moving the rafters was \$3,500 to \$5,500. He did not have enough money left to buy a comparable property, which was selling for \$30,000 to \$40,000. A demolition man was sent over to the property with a bulldozer and a cutting torch, and he scrapped 30 tons of steel rafters. Then they called him up and told him they had made a terrible mistake.

Reasons for Closing

One displaced business closed because the owner lost his business but was not given enough money to buy a new place of business. Another owner was not given enough money to relocate and was too old to be hired. A third business closed because of shrinking margins and today's environmental expense of new locations.

One abutting manager thought that businesses in the inbound area were badly hurt and did not come back. Another thought that by the time the construction ended, people would be out of the habit of stopping at abutting businesses and wouldn't come back to them.

SUMMARY

There were 281 properties affected by TxDOT right-of-way purchases. Right-of-way costs were \$26 million and relocation costs were \$4.6 million. Fifteen percent to 25 percent of the respondents started businesses before the construction started and a similar percentage started during construction. Similar percentages moved due to the construction. Relocation inconvenienced many people, but some were more affected than others.

PROPERTY VALUE

It is important to look at changes in property values abutting construction sites in light of changes in nonabutting property values in the vicinity of the construction. If the construction site property value trends differ from the trends in the region, the construction may have affected the property value. Therefore, Harris County and Houston property value trends will be investigated to determine if abutting property value changes were similar.

Business managers were asked their opinions about the construction impact on their business property, U.S. 59 property, and Houston property values. The opinions were compared with actual property values obtained from the Harris County Appraisal District. Property values were deflated to 1996 values using the Consumer Price Index (CPI).

HARRIS COUNTY

As seen in the introduction, real Harris County property values have been \$1.4 billion to \$1.5 billion since 1989. Values are not available for years that law suits by the independent school districts (ISDs) versus the Texas comptroller of public accounts have not yet been settled.

Real commercial and industrial property values are graphed in Figure 16. They decreased 12 percent since 1989. They have comprised an average of 30 percent of Harris County property values between 1988 and 1995.

Real residential property values are shown in Figure 17. Property values increased nine percent between 1988 and 1995. They averaged 38 percent of Harris County appraisal values over the years under study.

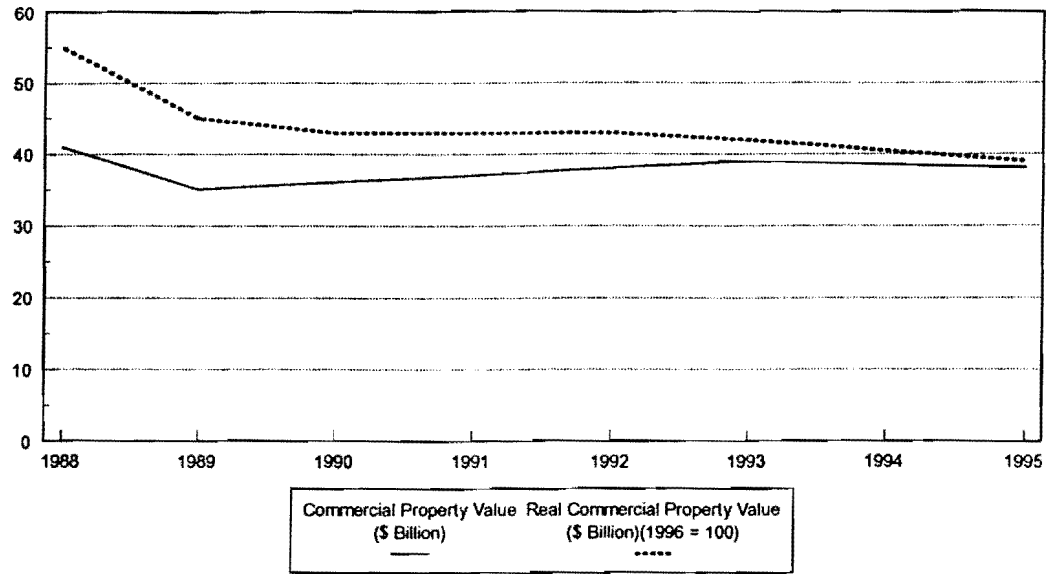
Real vacant property values are plotted in Figure 18. The values have declined 29 percent between 1988 and 1995. These values have averaged three percent of Harris County properties.

ALL HOUSTON PROPERTIES

Business Managers' Opinions

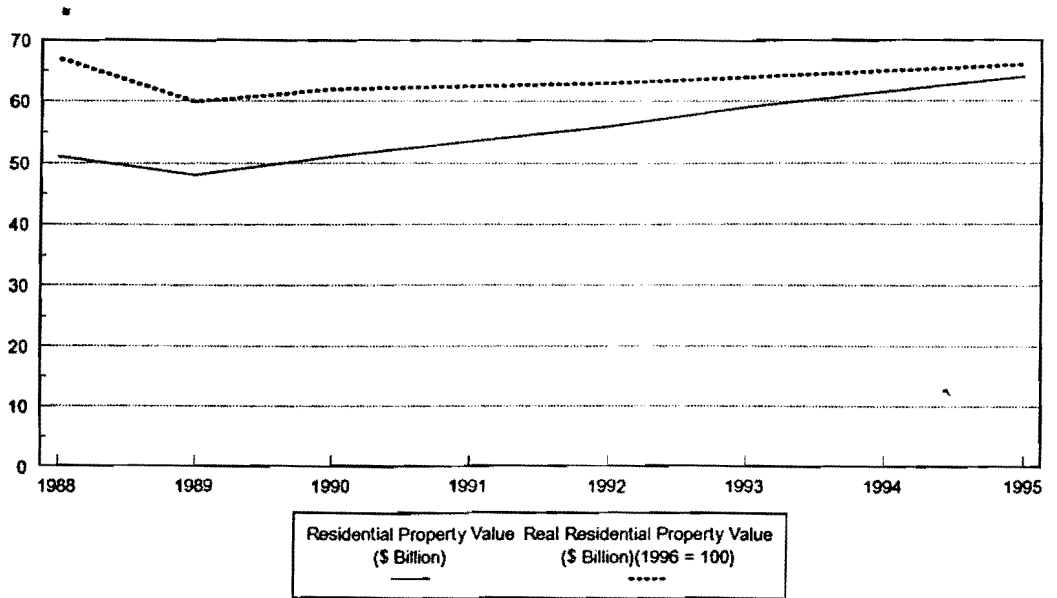
During Construction

There is no consensus on the impact during construction on all property values in Houston by abutting business managers (Table 37). Sixty percent of the respondents did not think that area property values had changed. Twenty-one percent did not give an opinion. Of the remaining businesses, almost the same number indicated that property values had decreased as indicated they had increased.



Source: Harris County Appraisal Office.

Figure 16. Harris County Commercial Property Values



Source: Harris County Appraisal Office.

Figure 17. Harris County Residential Property Values

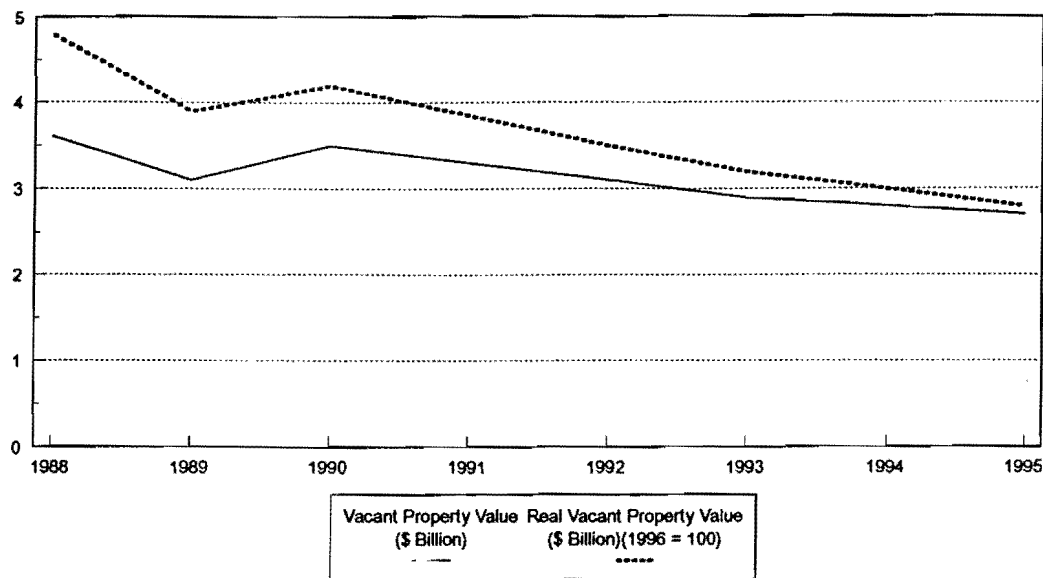


Figure 18. Harris County Vacant Property Values

After Construction

There is no consensus on the impact after construction on all property values in Houston by abutting business managers (Table 37). Note that the survey was administered while the construction was ongoing which might account for the nonresponse of 33 percent of the managers and 25 percent of them did not know how property values had been affected. Thirteen percent of the respondents did not think that area property values had changed. Nineteen percent thought that property values increased while 12 percent thought they decreased.

Houston Property Value

The distribution of Houston property values among property types is similar to that of Harris County property values. Houston property values constituted an average of 37 percent of Harris County property values between 1984 and 1995. Changes in Houston property values are presented in Figure 7. As stated for Harris County property values, values are not available for years that lawsuits by the ISDs versus the Texas Comptroller of Public Accounts have not yet been settled.

Real commercial and industrial property values are found in Figure 19. Their values decreased 27 percent between 1988 and 1995. They comprised an average of 32 percent of Houston property values between 1988 and 1995.

Table 37. Respondents' Estimates of the Change in Property Values for All Properties in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	0	0
Up 25 - 49%	1	1	1	2
Up 10 - 24%	4	6	1	2
Up 5 - 9%	0	0	8	13
Up 0 - 4%	1	1	1	2
No Change	40	60	8	13
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	6	9
Down 10 - 24%	1	1	2	3
Down 25 - 49%	4	6	0	0
Down 50 - 100%	0	0	0	0
Don't Know	14	21	16	25
No Answer	2	3	21	33
Total Respondents	67	99*	64	102*

* Percentages may not add to 100% due to rounding.

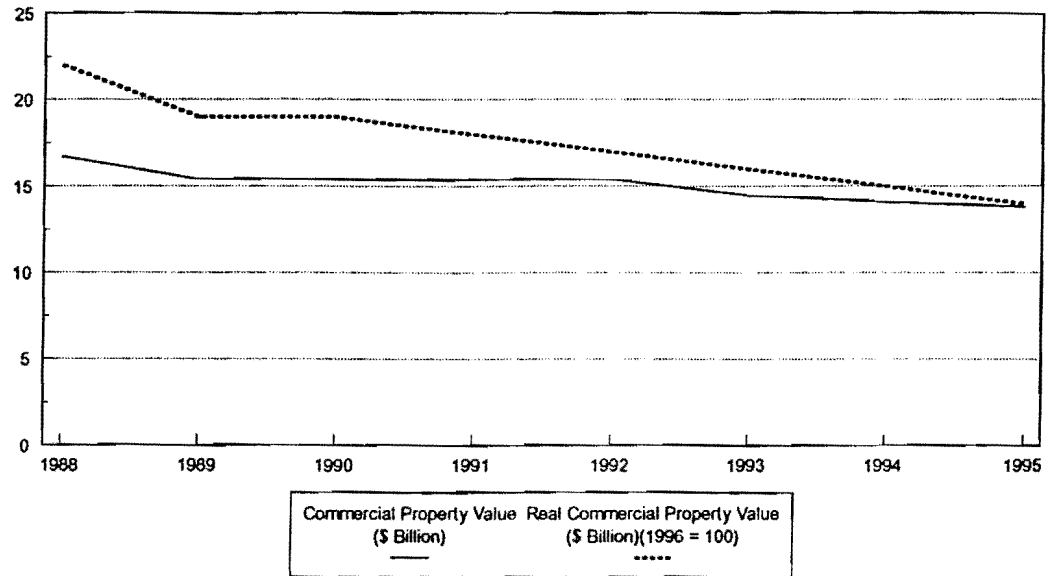


Figure 19. Houston Commercial Property Values

Real residential property values are shown in Figure 20. They decreased less than one percent between 1988 to 1995. They comprised an average of 41 percent of Houston property values.

Real vacant property values made up an average of three percent of Houston property values and are shown in Figure 21. They decreased 33 percent between 1989 and 1995.

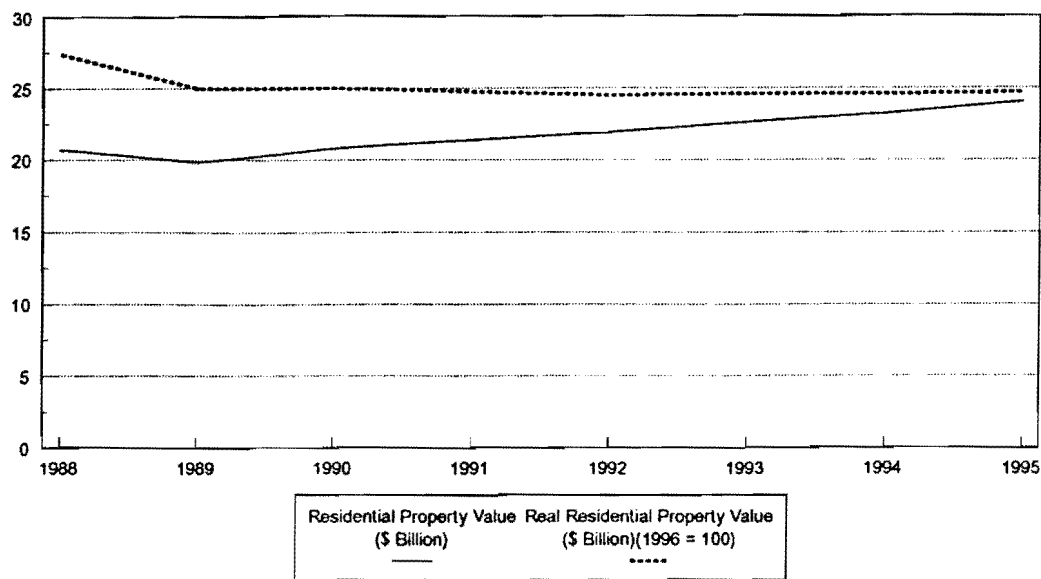
Abutting business managers were probably giving their opinion about nominal property values. Nominal commercial, residential, and vacant property values decreased during construction. Houston nominal property values decreased by one percent between 1989 and 1995.

PROPERTIES ABUTTING CONSTRUCTION

Business Managers' Opinions of All Properties Abutting Construction

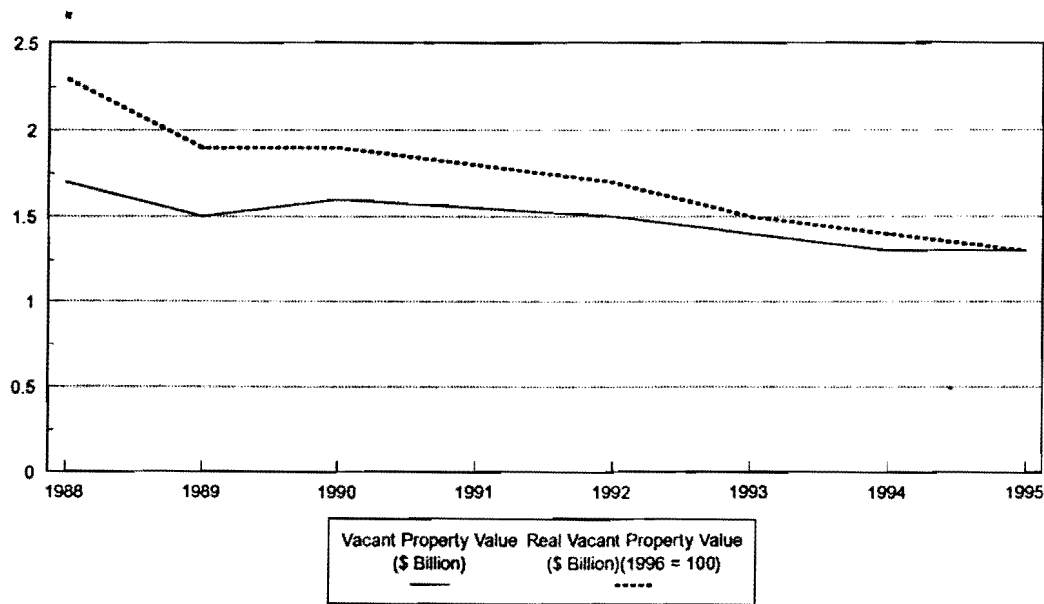
During Construction

There was no consensus about whether the property value of all U.S. 59 properties changed during construction (Table 38). Seventeen percent of Houston managers estimated that it had increased, 18 percent said it had not changed, and 28 percent responded that it had decreased.



Source: Harris County Appraisal Office.

Figure 20. Houston Residential Property Values



Source: Harris County Appraisal Office.

Figure 21. Houston Vacant Property Values

**Table 38. Respondents' Estimates of the Change in Property Values on U.S. 59
During Construction in Houston, Texas**

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	0	0
Up 25 - 49%	4	6	1	2
Up 10 - 24%	5	7	1	2
Up 5 - 9%	3	4	10	16
Up 0 - 4%	0	0	2	3
No Change	12	18	4	6
Down < 5%	0	0	0	0
Down 5 - 9%	1	1	6	9
Down 10 - 24%	11	16	1	2
Down 25 - 49%	5	7	0	0
Down 50 - 100%	3	4	3	5
Don't Know	20	30	21	33
No Answer	3	4	15	23
Total Respondents	67	97*	64	101*

* Percentages may not add to 100% due to rounding.

After Construction

Respondents mainly gave no opinion on the change in property value, and there was no consensus among those giving an opinion as to what the change might be (Table 38). Again, note that the survey was administered while the construction was ongoing, and this fact might account for the nonresponse of 23 percent of the managers and the fact that 33 percent of them did not know how property values had been affected. Twenty-three percent of abutting businesses' managers estimated that it had increased, six percent that it had not changed, and 16 percent that it had decreased.

Individual U.S. 59 Property Values

Business Managers' Opinions

During Construction. Business managers were asked if their property value changed during the construction. Forty-six percent of the respondents thought that it did not change (Table 39). Those that indicated that it changed generally said that it went down. Twenty percent did not know or did not answer.

After Construction. Respondents mainly gave no opinion on the change in property value and there was no consensus among those giving an opinion as to what the change might be (Table 39). Twenty-three percent of abutting businesses' managers estimated that it had not changed, 16 percent said it had decreased, and 11 percent responded that it had increased.

Abutting Residents' Opinion

Approximately half (48 percent) of the respondents thought that their property value decreased due to construction. Nineteen percent of the respondents thought that their property value increased up to 50 percent due to the construction (Table 40). Fourteen percent of the respondents did not think that their property value changed due to the construction and 19 percent did not know or did not answer. One resident said that the reason his property value hasn't changed is because he now has less land than before.

Relocated Residents' Opinion

Slightly over half (52 percent) of the respondents thought that their property value increased due to construction. Twenty-four percent thought that it decreased, while eight percent thought there was no change (Table 40). Sixteen percent did not know or did not answer the question.

Table 39. Responding Business Managers' Estimates of the Impact on Their Property Value Due to Construction on U.S. 59 Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	0	0	0	0
Up 25 - 49%	0	0	0	0
Up 10 - 24%	2	3	1	2
Up 5 - 9%	0	0	4	6
Up 0 - 4%	1	1	2	3
No Change	31	46	15	23
Down < 5%	0	0	0	0
Down 5 - 9%	1	1	2	3
Down 10 - 24%	5	7	4	6
Down 25 - 49%	6	9	1	2
Down 50 - 100%	7	10	3	5
Don't Know	11	16	26	41
No Answer	3	4	6	9
Total Respondents	67	97*	64	100

* Percentages may not add to 100% due to rounding.

**Table 40. Distribution of Residents' Opinions of the Impact of U.S. 59
Construction on Their Property Value**

Percentage Change	Nonrelocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	0	0	6	24
Up 25 - 49%	3	14	4	16
Up 10 - 24%	1	5	0	0
Up 5 - 9%	0	0	2	8
Up 0 - 4%	0	0	1	4
No Change	3	14	2	8
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	1	4
Down 10 - 24%	1	5	0	0
Down 25 - 49%	4	19	2	8
Down 50 - 100%	5	24	3	12
Don't Know	1	5	2	8
No Answer	3	14	2	8
Total	21	100	25	100

Appraised Property Value

All Abutting Property Values. Appraisal records from 1984 to 1996 for properties abutting U.S. 59 between Kelley Road and Rothermal Road were obtained from the Harris County Appraisal Office. The total nominal appraisal market value for all properties abutting construction on U.S. 59 in 1984 was \$32 million while the real value was \$49 million (Figure 22). The property value decreased each year thereafter and in 1996 was \$18 million, 62 percent below the value in 1984.

All Abutting Property with Value from 1984 to 1996. Part of this decrease was due to the taking of right-of-way. The total nominal appraisal market value for all properties abutting construction and having value for all years between 1984 and 1996 on U.S. 59 was \$13 million in 1984 while the real value was \$19 million (Figure 22). In 1996, the real total appraisal market value decreased 43 percent to \$11 million.

Property Taken for Right-of-Way. In 1984, the total nominal appraisal market value for all properties taken for right-of-way abutting construction between 1984 and 1996 on U.S. 59 was \$3.1 million, while the real value was \$4.7 million (Figure 22).

Construction-Side Versus Non Construction-Side Property Values. Values for property on the construction-side of the freeway are presented in Figure 23 and values for property on the non construction-side of the freeway are presented in Figure 24. The trend in values for all properties abutting construction and having value for all years between 1984 and 1996 on U.S. 59 appears to be the same regardless of which side of the freeway the property is located.

Land Values. It is important to look at land values since property values may decrease due to aging of improvements. Also, the value per square meter is a more accurate gauge of the change in land values. The land value per square meter for all abutting properties with reported land area is presented in Table 41. Nominal values ranged from \$12.31 to \$13.58 per square meter (\$1.14 to \$1.26 per square foot) each year. Real values per square meter fell each year that land area was provided and fell 40 percent from 1984 to 1996.

Individual Property Value Changes. The actual direction of change for each property from which no right-of-way was taken is summarized in Table 42. Sixty percent of the property values did not change during construction. Twenty percent of the property values decreased and 20 percent increased. Therefore, during construction, a smaller percentage of property values remained unchanged than was anticipated by the business owners. During construction, more underestimated the number that increased, and after construction, more underestimated the number that decreased.

COMPARISON OF PROPERTY VALUES BY TYPE OF PROPERTY

The total before-, during-, and after-construction property values for each type of property for Harris County, Houston, and abutting property are presented in this section. These are property values, not land values, so the age of the improvements could greatly impact the property values as well. Only properties where no right-of-way was taken are considered in the abutting section of the following tables.

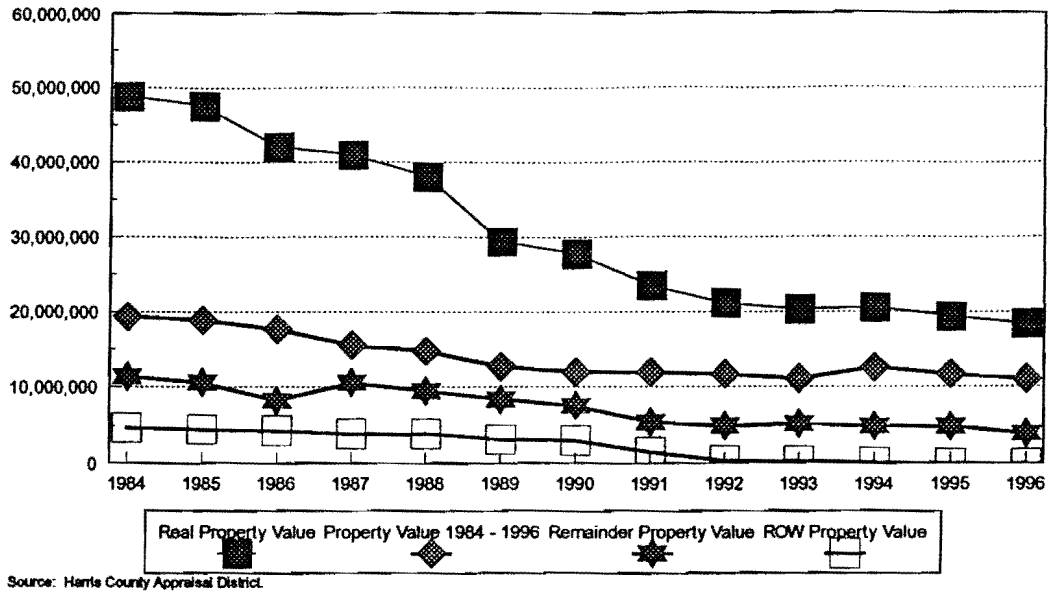


Figure 22. Property Values for All Properties Abutting Construction on U.S. 59 for Various Years

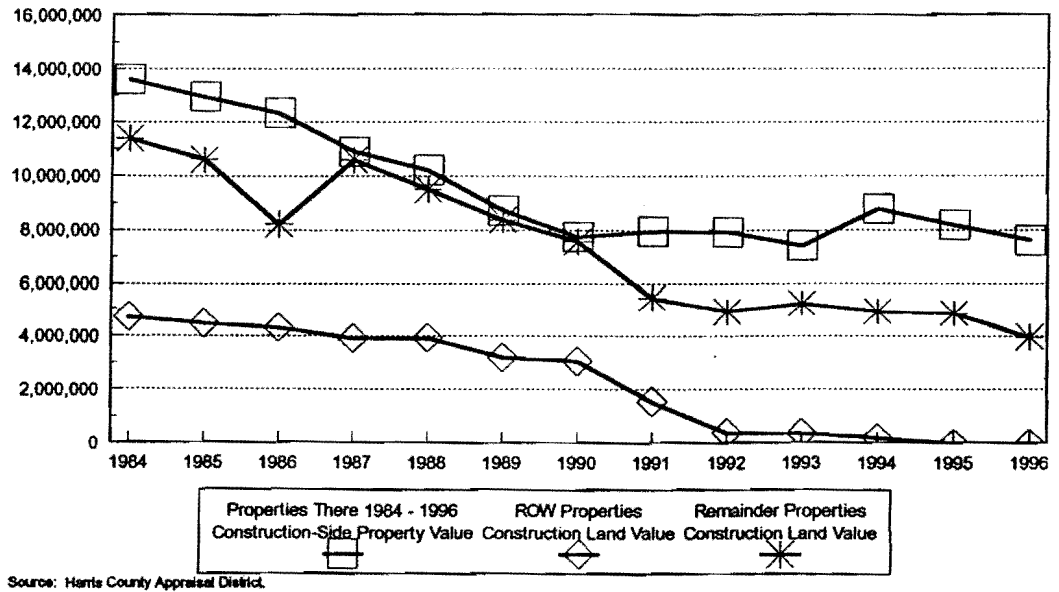


Figure 23. Value of Property on the Construction-Side of U.S. 59

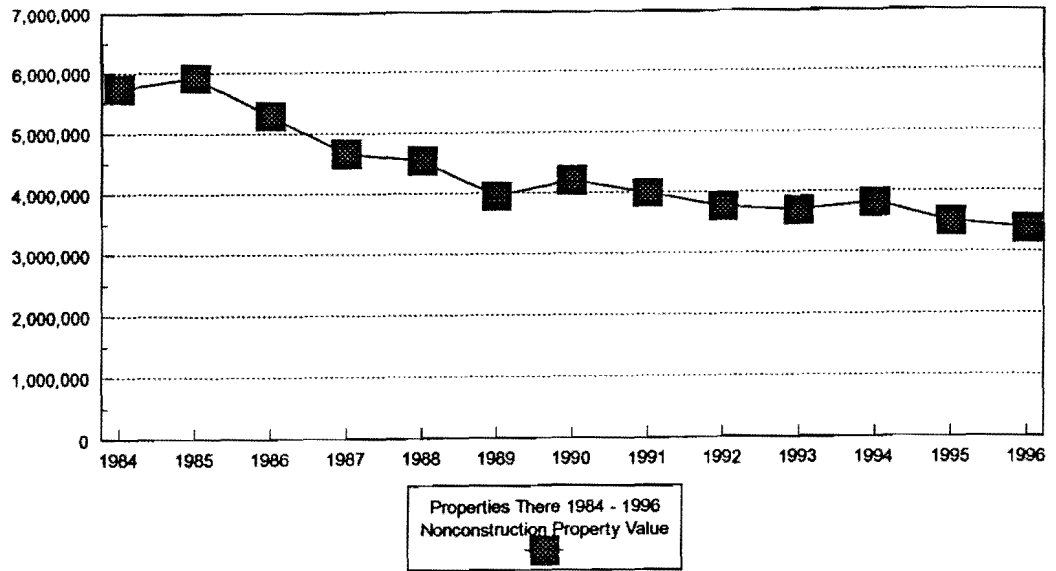


Figure 24. Value of Property on the Non Construction-Side of U.S. 59

Table 41. Land Value per Square Meter for All Properties Abutting Construction That Had Reported Land Area, for Various Years

Year	Square Meters	Land Value (\$)	Land Value per Square Meter (\$)	Real Land Value per Square Meter (\$) (1996 = 100)	Percent Change in Real Land Value per Square Meter
1984	627,851	8,527,860	13.58	20.51	NA
1989	654,585	8,667,680	13.24	16.76	-18
1993	552,171	6,857,670	12.42	13.49	-20
1995	550,065	7,146,640	12.99	13.37	-1
1996	549,260	6,760,320	12.31	12.31	-8

Table 42. Actual Change in Value for Highway Property from Which No Right-of-Way Was Taken During Construction, U.S. 59, Houston, Texas

Type of Property Change	Number of Properties	Percent of Properties
Increase	30	20
No Change	89	60
Decrease	30	20

Commercial

Commercial property values for 1989 and 1996 are presented in Table 43. Commercial property values in Houston decreased 27 percent during construction. Highway property values decreased one percent while nonabutting property values decreased 27 percent. Therefore, abutting commercial property values appear to have decreased less than Houston and nonabutting property values during construction.

Residential

Residential property values for 1989 and 1996 are presented in Table 44. During construction, Houston and nonabutting property values fell one percent, while abutting property values fell 18 percent. Harris County property values increased nine percent and non-Houston Harris County property values increased 16 percent. Therefore, abutting residential property values appear to have decreased more than Houston and nonabutting property values during construction.

Vacant

Vacant property values for 1989 and 1996 are presented in Table 45. Harris County property values fell approximately 29 percent, while Houston, nonabutting, and abutting values decreased approximately 33 percent. Therefore, abutting vacant property values do not appear to have been affected by the construction.

SUMMARY

In real terms, abutting residential property values decreased more and commercial property values decreased less than Houston property values decreased during construction, while vacant property value changes were similar for abutting and Houston properties. When business managers and residents give their opinion of how property

Table 43. Commercial Property Values for Harris County, Houston, and Abutting Property Before and During Construction

Location	1989 Real Property Value (\$) ¹	1996 Real Property Value (\$) ¹	Actual Difference (\$)	Percent Difference (%)
Highway Property	6,713,612	6,654,560	-59,052	-1
Houston (all)	19,463,401,954	14,214,993,612	-5,248,408,342	-27
Houston (other than highway) ²	19,456,688,342	14,208,339,052	-5,248,349,290	-27
Harris (all)	44,898,883,432	39,325,839,764	-5,573,043,668	-12
Harris (other than Houston) ³	25,435,481,478	25,110,846,152	-324,635,326	-1

¹ Source: Harris County Appraisal District.

² Houston property values minus the highway property values.

³ Harris County property values minus Houston property values.

Table 44. Residential Property Values for Harris County, Houston, and Abutting Property Before and During Construction

Location	1989 Real Property Value (\$) ¹	1996 Real Property Value (\$) ¹	Actual Difference (\$)	Percent Difference (%)
Highway Property	2,498,898	2,056,350	-442,548	-18
Houston (all)	25,029,832,515	24,663,671,115	-366,161,400	-1
Houston (other than highway) ²	25,027,333,617	24,661,614,765	-365,718,852	-1
Harris (all)	60,469,526,009	65,947,244,970	5,477,718,961	9
Harris (other than Houston) ³	35,439,693,494	41,283,573,855	5,843,880,361	16

¹ Source: Harris County Appraisal District.

² Houston property values minus abutting property values.

³ Harris County property values minus Houston property values.

Table 45. Vacant Property Values for Harris County, Houston, and Abutting Properties Before and During Construction

Location	1989 Real Property Value (\$) ¹	1996 Real Property Value (\$) ¹	Actual Difference (\$)	Percent Difference (%)
Highway Property	2,148,809	1,459,470	-689,339	-32
Houston (all)	1,937,467,288	1,297,823,141	-639,644,147	-33
Houston (other than highway) ²	1,935,318,479	1,296,363,671	-638,954,808	-33
Harris (all)	3,910,070,243	2,762,176,586	-1,147,893,657	-29
Harris (other than Houston) ³	1,972,602,955	1,464,353,445	-508,249,510	-26

¹ Source: Harris County Appraisal District.

² Houston property values minus abutting property values.

³ Harris County property values minus Houston property values.

values change, they probably respond based on how they think the values changed nominally. Sixty percent of the responding managers thought Houston property values did not change during construction and nominal Houston property value decreased one percent between 1989 and 1996. Twenty-eight percent of the managers thought that the value of all properties abutting U.S. 59 decreased and the value decreased 42 percent. The distribution of respondents reporting whether their property value decreased, increased, or stayed the same was similar to the distribution of individual property changes, but a greater percentage increased than the managers expected. Commercial abutting property values increased 25 percent nominally while almost half of the respondents thought their property value did not change and one-fourth thought it decreased. Fifty-two percent of the relocated residents thought their property value increased and 48 percent thought it decreased, while nominal abutting residential property values increased four percent between 1989 and 1996. All of these are during-construction responses because the after-construction survey was conducted while construction was ongoing and approximately 50 percent of the respondents did not give an opinion for each question of the after-construction survey.

USER COST IMPACTS

Traffic volume, travel time, and accident rates on the highway may have been affected by changes in the highway during construction. These changes will be summarized in the first section. The business managers were asked to estimate the extent to which highway construction activities affected traffic volumes, travel times, and accident numbers in the construction area. The opinions and actual numbers are compared in the following section. The benefit-cost ratio was also estimated.

HIGHWAY CHANGES DUE TO CONSTRUCTION

Between Kelley and Hopper Roads, the number of lanes increased from six to 10 on U.S. 59 and the 4-lane service road was expanded to six lanes. The construction was divided into three sections and a fourth project involved the construction of an HOV flyover bridge. Construction on the bridge occurred between 1994 and 1996. The construction started between April and October 1991 on the three sections of the freeway. Construction on two sections has been completed and is ongoing on the remaining section. It was scheduled to end between October 1993 and June 1995 for the various projects.

TRAFFIC VOLUME, TRAVEL TIME, AND ACCIDENT RATE TRENDS ON U.S. HIGHWAY 59

Traffic Volumes

Business Managers' Opinions

During Construction. Forty-five percent of the businesses thought that the traffic volume did not change during construction, but 22 percent thought that it had decreased and 23 percent thought that it had increased (Table 46).

After Construction. A higher percentage (40 percent) of managers thought that traffic volumes increased after construction than during construction, while a smaller percentage thought that it did not change (20 percent) or decreased (five percent). More respondents did not know how traffic volume had changed (eight percent) or did not answer the question (28 percent) than during construction, as well. One manager thought that traffic was smoother after construction. One manager said that there was the same traffic volume, but fewer lanes. Another manager said that people did not want to exit or enter the freeway due to the traffic jam. One manager conducted an exit interview of his customers and found that they were afraid of the congestion and trucks. Another said that there was increased traffic in his parking lot because people were using it as a turnaround and he was concerned about the safety of this situation.

Table 46. Responding Business Managers' Estimates of the Change in Traffic Volume on U.S. 59 During Construction in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	3	4	2	3
Up 25 - 49%	5	7	1	2
Up 10 - 24%	7	10	10	16
Up 5 - 9%	1	1	11	17
Up 0 - 4%	1	1	1	2
No Change	30	45	13	20
Down < 5%	0	0	0	0
Down 5 - 9%	2	3	3	5
Down 10 - 24%	8	12	0	0
Down 25 - 49%	4	6	0	0
Down 50 - 100%	1	1	0	0
Don't Know	3	4	5	8
No Answer	2	3	18	28
Total Respondents	67	97*	64	101*

* Percentages may not add to 100% due to rounding.

Non-Relocated Residents' Opinion

Sixty-two percent of the residents did not know or did not answer when asked whether the traffic volume changed due to construction. Twenty-four percent thought that the traffic volume on U.S. 59 increased 10 percent to 100 percent due to the construction, while 10 percent thought there was no change and one resident (five percent) thought it decreased five percent to 10 percent (Table 47).

Relocated Residents' Opinion

There was no consensus on the construction impact on the relocated residents' traffic volume. Forty-four percent of the relocated residents thought that the traffic volume on U.S. 59 decreased due to the construction (Table 47). Thirty-two percent thought that it increased and 16 percent thought that it did not change. One resident wrote that the construction was better for Houston traffic, but resulted in a loss to him.

Traffic Counter Volume

Traffic volume was measured by TTI researchers for various locations on or near U.S. 59 for three days each in 1991, 1992, and 1993. Average daily traffic (ADT) for U.S. 59 entrance ramps at Laura Koppe and Tidwell and exit ramps at Tidwell and Crosstimbers is graphed in Figure 25. Frontage road ADT is graphed in Figure 26 and cross street ADT is graphed in Figure 27. There is no trend in ADT.

Travel Time

Business Managers' Opinions

During Construction. Most business managers (63 percent) thought that the time it took to travel through Houston increased during construction (Table 48). Twenty-four percent thought that it did not change.

After Construction. There was no consensus about the change in travel time after construction, but the question was asked while construction was still occurring. Twenty-two percent of the respondents thought that the travel time went up, nine percent thought it did not change, 25 percent thought it went down, and 44 percent did not know how it changed or did not answer the question.

Opinion on Their Change in Travel Time to Work

Non-Relocated Residents. Fifty-three percent of the residents did not know or did not answer when asked whether the travel time to work changed due to construction. Twenty-nine percent of the residents thought that the time it took to get to work increased due to construction, while 14 percent thought it did not change (Table 49). One resident (five percent) thought that it decreased 10 percent to 25 percent.

Table 47. Distribution of Residents' Opinions on the Change in Traffic Volume Due to Construction on U.S. 59

Percentage Change	Non-Relocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	3	14	5	20
Up 25 - 49%	1	5	2	8
Up 10 - 24%	1	5	1	4
Up 5 - 9%	0	0	0	0
Up 0 - 4%	0	0	0	0
No Change	2	10	4	16
Down < 5%	0	0	2	8
Down 5 - 9%	1	5	1	4
Down 10 - 24%	0	0	1	4
Down 25 - 49%	0	0	2	8
Down 50 - 100%	0	0	5	20
Don't Know	2	10	0	0
No Answer	11	52	2	8
Total	21	101*	25	100

* Percentages may not add to 100% due to rounding.

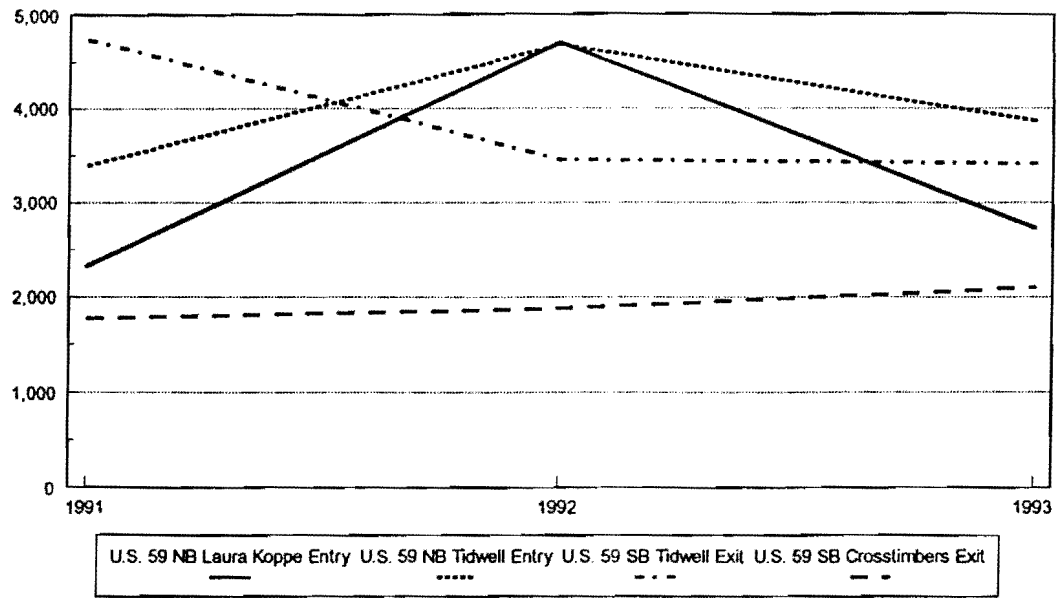


Figure 25. Average Daily Traffic at Selected Entry and Exit Ramps on U.S. 59 in Houston, Texas

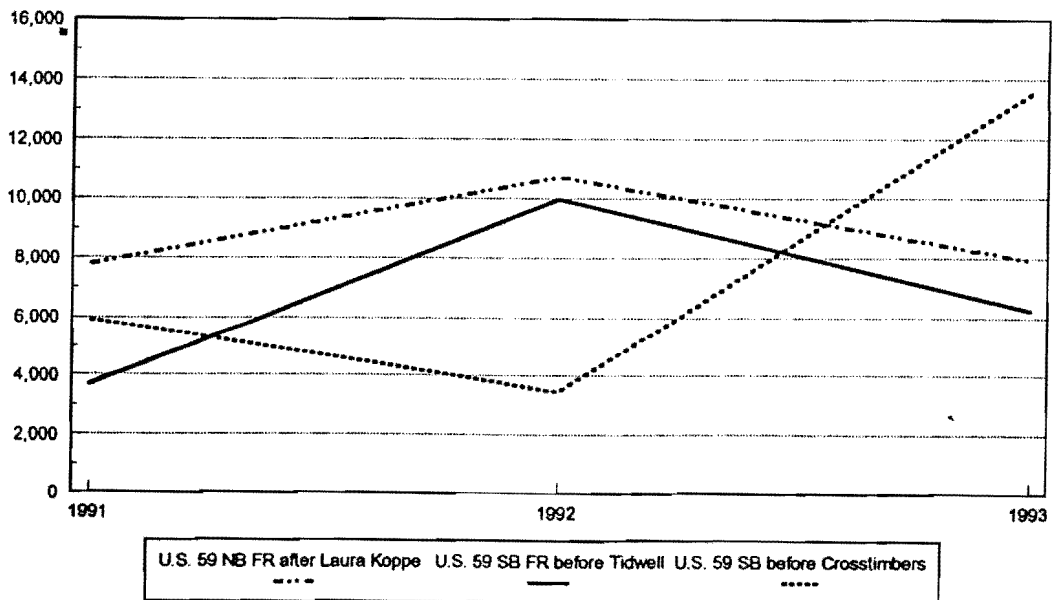


Figure 26. Average Daily Traffic for U.S. 59 Frontage Roads at Laura Koppe, Tidwell, and Crosstimbers in Houston, Texas

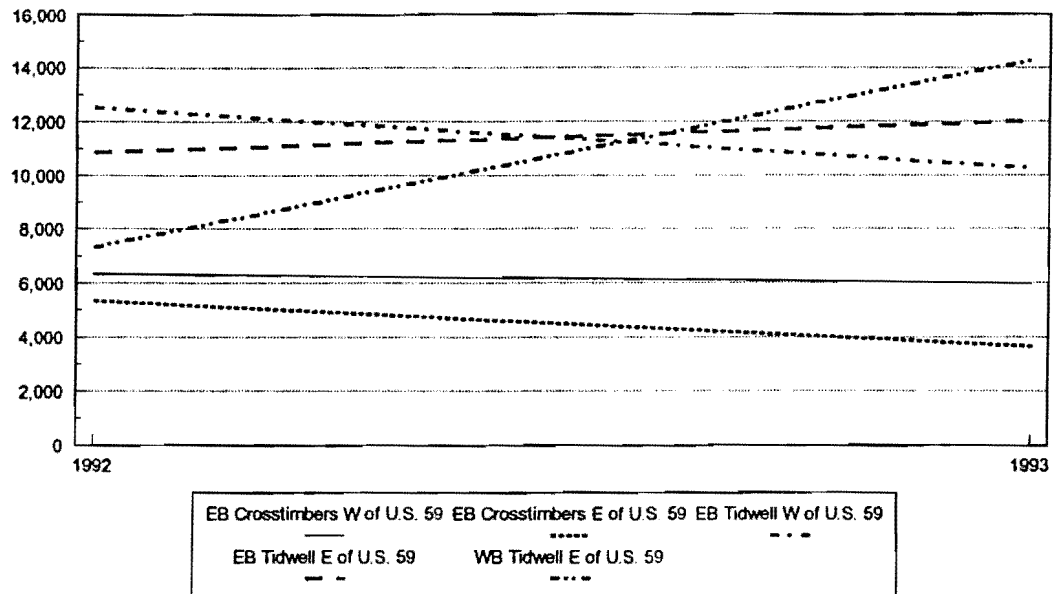


Figure 27. Average Daily Traffic for Several Cross Streets of U.S. 59 in Houston, Texas

Relocated Residents. Sixty-eight percent of the relocated residents thought that their travel time to work increased due to construction. Sixteen percent thought that the time it took to get to work did not change, while 12 percent thought it decreased (Table 49).

Opinion on the Change in Travel Time to Buy Gas and Food

Non-Relocated Residents. There was no consensus about the impact of construction on the time it took to buy gas or food (Table 50). Thirty-nine percent thought that it increased, 10 percent thought that it did not change, and 10 percent thought that it decreased. Forty-three percent did not know how travel time had changed or did not answer the question.

Relocated Residents. Over half (56 percent) of the relocated residents thought that their travel time to buy food and gas on U.S. 59 increased due to the construction (Table 50). Thirty-two percent thought that it did not change and 12 percent thought that it decreased.

Table 48. Responding Business Managers' Estimates of the Change in Travel Time on U.S. 59 During Construction

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	15	22	1	2
Up 25 - 49%	11	16	0	0
Up 10 - 24%	11	16	2	3
Up 5 - 9%	2	3	11	17
Up 0 - 4%	4	6	0	0
No Change	16	24	6	9
Down < 5%	1	1	0	0
Down 5 - 9%	0	0	10	16
Down 10 - 24%	2	3	6	9
Down 25 - 49%	0	0	0	0
Down 50 - 100%	0	0	0	0
Don't Know	3	4	4	6
No Answer	2	3	24	38
Total Respondents	67	98*	64	100

* Percentages may not add to 100% due to rounding.

Table 49. Distribution of Residents' Opinions on the Change in Travel Time to Work Due to Construction on U.S. 59

Percentage Change	Non-Relocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	1	5	6	24
Up 25 - 49%	2	10	7	28
Up 10 - 24%	3	14	3	12
Up 5 - 9%	0	0	0	0
Up 0 - 4%	0	0	1	4
No Change	3	14	4	16
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	1	4
Down 10 - 24%	1	5	2	8
Down 25 - 49%	0	0	0	0
Down 50 - 100%	0	0	0	0
Don't Know	2	10	0	0
No Answer	9	43	1	4
Total	21	101*	25	100

* Percentages may not add to 100% due to rounding.

Table 50. Distribution of Residents' Opinions About the Change in Shopping Travel Time Due to the Construction on U.S. 59

Percentage Change	Non-Relocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	2	10	5	20
Up 25 - 49%	3	14	3	12
Up 10 - 24%	1	5	2	8
Up 5 - 9%	1	5	3	12
Up 0 - 4%	1	5	1	4
No Change	2	10	8	32
Down < 5%	2	10	1	4
Down 5 - 9%	0	0	1	4
Down 10 - 24%	0	0	0	0
Down 25 - 49%	0	0	0	0
Down 50 - 100%	0	0	1	4
Don't Know	1	5	0	0
No Answer	8	38	0	0
Total	21	102*	25	100

* Percentages may not add to 100% due to rounding.

Instrumented Vehicle Travel Time

Travel times are presented in Figure 28. The average travel time for instrumented vehicle runs on U.S. 59 in 1991 was three minutes and 44 seconds, while the average travel time on the frontage road was six minutes and 44 seconds. The travel time on U.S. 59 alternately decreased and increased between one percent and 14 percent each year until 1996, while the travel time on the frontage road alternately decreased and increased three percent to 43 percent each year during that time. In 1996, the average travel time on U.S. 59 was three minutes and seven seconds, while the travel time on the frontage road was six minutes and eight seconds. Therefore, travel time decreased 16.6 percent on U.S. 59 and 8.8 percent on the frontage road during the first six years of construction.

Accidents

Business Managers' Opinions

During Construction. Most business managers thought that the number of accidents on U.S. 59 either increased (36 percent) or did not change (43 percent) (Table 51). Eighteen percent did not know how the number of accidents had changed or did not answer the question. One manager said that there were 20 percent more severe accidents.

After Construction. There was no consensus on how the number of accidents changed after construction, but this situation could be due to the fact that construction was still occurring when the survey was administered. Twenty-seven percent of the respondents thought that the number of accidents increased while 28 percent thought that the number of accidents did not change after construction. Forty-three percent did not know how they had changed or did not answer the question. One manager wanted the freeway to be made safer in spots that cause wrecks. Another thought that there were fewer accidents after construction.

Non-Relocated Residents' Opinion

There was no consensus on the impact of construction on the number of accidents on U.S. 59. Forty-three percent of the respondents said they did not know how the number of accidents changed or did not answer the question. Most of the residents who gave an opinion (34 percent) thought that the number of accidents on U.S. 59 increased due to construction, while 15 percent thought they decreased (Table 52). Ten percent thought the number of accidents did not change. Regarding a different type of car accident, one resident has had cars come off of the freeway and onto her property four times in the past 42 years.

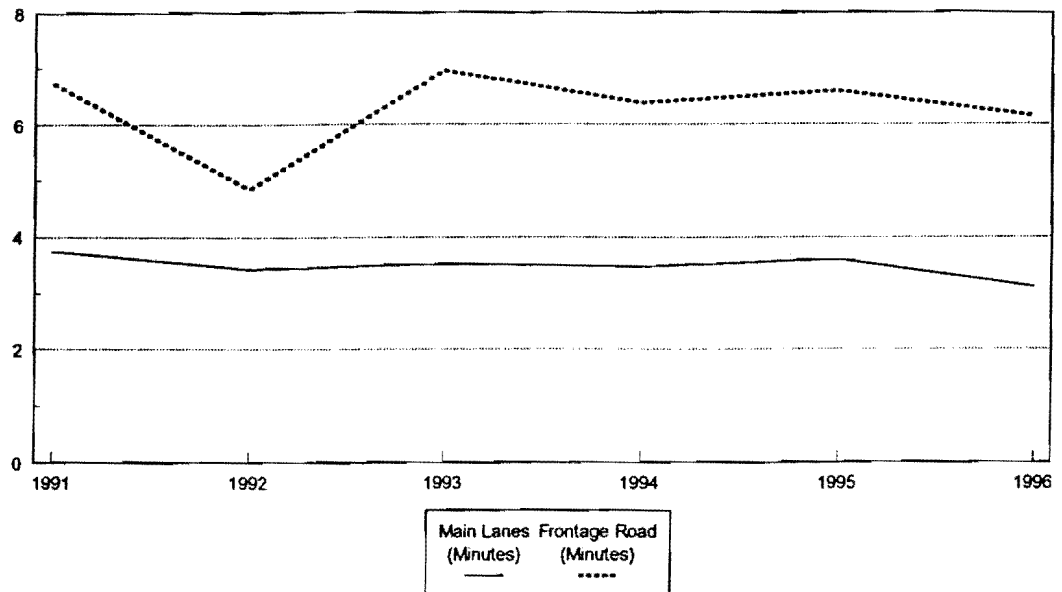


Figure 28. Travel Times Through the U.S. 59 Construction Area in Houston, Texas

Relocated Residents' Opinion

There was no consensus on the change in the number of accidents on U.S. 59 by relocated residents. Thirty-six percent thought that the number of accidents increased, 24 percent thought they did not change, and 32 percent thought they decreased (Table 52).

Actual Accidents

The number and type of accidents on U.S. 59 between Kelley and Hopper Roads in Houston by type of accident damage for 1991 to 1995 are shown in Figure 29. There was an average of 1.8 fatalities per year during that time, with a range of zero to four per year. Injury or possible injury accidents averaged 199 per year, with a range of 178 to 216 per year. There was an average of 163 noninjury accidents per year with a range of 115 to 184 per year. Total accidents ranged from 317 to 390 per year, with an average of 363 per year. The fewest noninjury and total accidents occurred in 1995, when some of the construction had been completed.

IMPACT ON USER COSTS: ESTIMATES USING MicroBENCOST

The MicroBENCOST computer program was used to analyze the benefits and costs to motorists of the highway widening construction. In general, the program

Table 51. Responding Houston Business Managers' Estimates of the Change in the Number of Accidents on U.S. 59 During Construction

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	6	9	0	0
Up 25 - 49%	7	10	0	0
Up 10 - 24%	11	16	5	8
Up 5 - 9%	0	0	11	17
Up 0 - 4%	1	1	1	2
No Change	29	43	18	28
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	2	3
Down 10 - 24%	0	0	0	0
Down 25 - 49%	0	0	0	0
Down 50 - 100%	1	1	0	0
Don't Know	10	15	8	13
No Answer	2	3	19	30
Total Respondents	67	98*	64	101*

* Percentages may not add to 100% due to rounding.

Table 52. Distribution of Responding Residents' Opinions About the Construction Impact on the Number of Accidents on U.S. 59

Percentage Change	Non-Relocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	0	0	1	4
Up 25 - 49%	1	5	3	12
Up 10 - 24%	3	14	2	8
Up 5 - 9%	2	10	1	4
Up 0 - 4%	1	5	2	8
No Change	2	10	6	24
Down < 5%	1	5	2	8
Down 5 - 9%	0	0	0	0
Down 10 - 24%	1	5	0	0
Down 25 - 49%	0	0	0	0
Down 50 - 100%	1	5	6	24
Don't Know	1	5	0	0
No Answer	8	38	2	8
Total	21	102*	25	100

* Percentages may not add to 100% due to rounding.

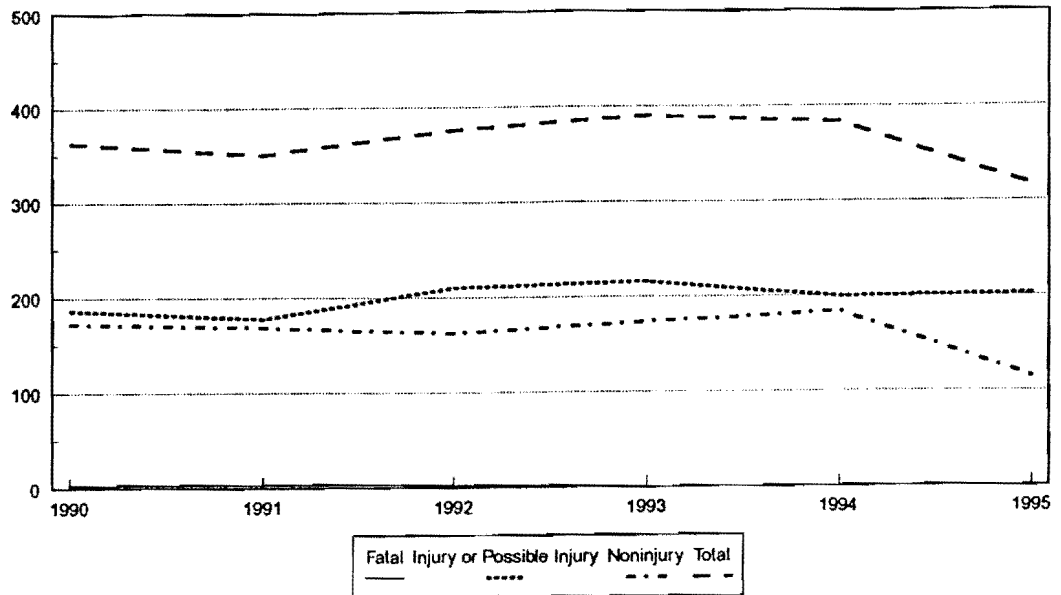


Figure 29. Number of Accidents per Year Between Kelley and Hopper Roads on U.S. 59 in Houston, Texas, 1990-1995

compares the motorist costs before an improvement with those existing after an improvement has been made.

The information needed to run this model includes the type of construction, the cost of the construction, the length and number of segments of the project, the number of days that lanes were closed, and the average daily traffic (ADT) and average speed for the segments. Widening construction is classified as an added-capacity problem in MicroBENCOST. A 2.85 km (1.77 mi) section of the project between Crosstimbers and Little York was studied. The construction costs for this segment were \$53.4 million as of October 1997, but the construction was not complete yet so costs are underestimated for this analysis. The ADT for Bennington and Tidwell from the Environmental Impact Assessment was used. Lane closures were not logged for this project so this information was not included in the model, leading to further underestimation of the costs of the project.

The cost figures are summarized in Table 53. The benefit-cost ratio was 5.98, which means that the motorists are receiving \$5.98 in benefits for every dollar spent on the project. As mentioned previously, costs are still accruing because the project has not yet been completed, and lane closures were not included in the model. Therefore, this number overestimates the user benefit-cost ratio of this project.

Table 53. Summary of Discounted Benefits, Costs, and the Benefit-Cost Ratio

Motorist Benefits	Benefit Value (\$)
Delay Savings	240,892,750
Reduced Vehicle Operating Cost	6,668,560
Accident Reduction	922,880
Total Discounted User Benefits	248,484,190
Discounted Construction Costs	53,441,417
Discounted Maintenance Costs	1,684,000
Salvage Value	13,578,000
Total Discounted Costs Less Salvage Value	41,547,417
Gross Benefit-Cost Ratio	5.98

SUMMARY

The three main aspects of user costs include the traffic volume, travel time, and number of accidents. There was no consensus among the business managers, relocated residents, and non-relocated residents of the impact on most of these aspects. In many cases, approximately half of the respondents did not answer the question or stated that they did not know the answer to the question. The two exceptions are the business managers' opinions of the change in the number of accidents and travel time, which they thought increased or did not change. The actual number of accidents did not change much in magnitude between 1991 and 1995, but were lowest in 1995, when some construction had been completed. Between 1991 and 1996, travel time increased or decreased only three percent to 14 percent from the 1991 value on the main lanes, but it increased or decreased three percent to 43 percent on the frontage roads. In 1996 it was 16.6 percent lower on the main lanes and 8.8 percent lower on the frontage roads than it was in 1991, and was the lowest value of any year between 1991 and 1996. A benefit-cost ratio was estimated, but it overestimates the benefit-cost ratio since the construction costs are still accruing and the lane closures were not included in the model.

IMPACT ON GROSS TAX REVENUES FOR CITY AND COUNTY

INTRODUCTION

Gross business sales, and therefore sales tax revenues, for abutting businesses may decrease during highway construction. Gross business sales, and consequently sales tax revenues, may be permanently affected after construction ends. Land values, and thus property taxes, may also be affected by the construction. In this section, estimation of these tax revenue consequences is described. Note that the highway widening may create additional demand for tax revenue dollars, but this aspect of the tax revenue impact is not investigated here.

IMPACT ON BUSINESS TAX RECEIPTS

The first step in estimating the impact on gross business sales of constructing a new highway was to classify the businesses in the study according to business type. Business type refers to whether they are retail, service, or manufacturing businesses. Many managers who provided their actual sales represented business extremes in their industry classification. Some managers who did not report their sales were not in industries represented by businesses that reported their sales. Therefore, the collected data could not be used to estimate total industry sales for abutting businesses.

Before and During Construction

Before Construction

The number of businesses that reported their gross sales for at least one year between 1988 and 1990 and between 1991 and 1994, along with the average annual total gross sales of these businesses, is presented in Table 54. To evaluate the impact on gross sales tax revenues, the percent of gross sales that are taxable was estimated from the sales and taxable sales obtained from the State Comptroller's Office for each business classification (Table 55). The gross sales for each business type was then multiplied by this percentage to estimate the amount of sales that were taxable (Table 56). This amount of taxable sales was then multiplied by the tax rates for the city to estimate the dollar amount of the tax revenue, \$467,798 (Table 57).

During Construction

The above procedure was repeated using 1991 gross sales for the 24 businesses. The gross sales for each business type was multiplied by the estimated percentage subject to sales tax (Table 58) to arrive at the amount of sales that were taxable (Table 59). This amount of taxable sales was then multiplied by the tax rates for the city to estimate the dollar amount of the tax revenue, \$337,876 (Table 60). Therefore, sales tax receipts from these businesses decreased 27.8 percent during construction.

Table 54. Gross Sales of Abutting Businesses on U.S. 59 in Houston, Texas, That Reported Sales Before and During Construction

Industry	Number of Outlets Reporting Sales for at Least One Year Between 1988-1990 and 1991-1994	1988-1990 Average Annual Total Gross Sales (\$)	Real Average Annual Total 1988-1990 Gross Sales (\$) (1996 = 100)
Retail Trade	13	36,517,758	46,246,085
Services	11	43,827,333	55,224,555
All Businesses	24	80,345,092	101,470,640

Table 55. Estimated Amount Subject to Sales Tax for Houston, Texas, Businesses, 1988 - 1990

Industry	Year	Gross Sales (\$)¹	Amount Subject to Sales Tax (\$)	Percent Subject to Sales Tax (%)²
Retail Trade	1988	16,156,697,024	8,137,276,869	50
	1989	17,044,825,710	8,734,662,279	51
	1990	18,425,494,563	9,328,880,126	51
Services	1988	4,318,933,805	1,913,494,214	44
	1989	4,915,377,737	2,136,224,685	43
	1990	6,071,845,277	2,395,075,447	39
Manufacturing	1988	10,447,218,715	2,376,050,855	23
	1989	11,499,943,958	2,584,793,588	22
	1990	12,663,005,751	2,654,570,068	21
All Major Divisions	1988	64,812,305,039	16,823,397,396	26
	1989	73,348,287,297	18,377,089,622	25
	1990	77,935,627,103	19,837,544,679	25

¹ Source: State Comptroller's Office.

² column 4 / column 3.

Table 56. Estimated Before-Construction Gross Sales Subject to Sales Tax for Abutting Businesses with Reported Gross Sales Before and During Construction

Industry	1988-1990 Average Annual Total Gross Sales (\$) (1996 = 100) ¹	Average Percent Subject to Sales Tax 1988-1990 (%) ²	Estimated Real 1988-1990 Average Annual Total Gross Sales Subject to Sales Tax (\$) (1996 = 100) ³
Retail Trade	46,246,085	51	23,585,503
Services	55,224,555	42	23,194,313
All Businesses ⁴	101,470,640	25	46,779,816

¹ From Table 54.

² From Table 55.

³ Column 2 * column 3.

⁴ Estimated taxable sales for all businesses is the sum of that for all listed industries.

Table 57. Estimated Sales Tax Revenue from Sales of Businesses Abutting Construction with Reported Gross Sales Before and During Construction

Industry	Estimated Real Average Annual 1988-1990 Gross Sales Subject to Sales Tax (\$) (1996 = 100) ¹	Sales Tax Rate, 1988-1990 ²	Estimated Real Average Annual 1988-1990 Houston Sales Tax Revenue (\$) (1996 = 100) ³
Retail Trade	23,585,503	0.010	235,855
Services	23,194,313	0.010	231,943
All Businesses ⁴	46,779,816	0.010	467,798

¹ From Table 56.

² Source: state comptroller's office.

³ Column 2 * column 3.

⁴ Estimated sales tax revenue for all businesses is the sum of that for all listed industries.

**Table 58. Estimated Amount Subject to Sales Tax for Houston, Texas,
Businesses, 1991 - 1994**

Industry	Year	Gross Sales (\$)¹	Amount Subject to Sales Tax (\$)	Percent Subject to Sales Tax (%)²
Retail Trade	1991	18,342,314,526	9,493,070,426	52
	1992	19,976,035,668	10,245,103,488	51
	1993	20,736,597,417	10,620,630,435	51
	1994	22,351,084,445	11,077,303,944	50
Services	1991	6,410,976,671	2,476,782,310	39
	1992	6,555,223,507	2,615,475,207	40
	1993	7,122,119,763	2,683,342,764	38
	1994	7,918,848,091	2,950,450,975	37
Manufacturing	1991	12,451,994,124	2,685,181,239	22
	1992	13,550,061,078	2,648,545,322	20
	1993	12,446,577,901	2,585,048,718	21
	1994	13,707,749,776	2,531,394,881	18
All Major Divisions	1991	77,638,716,763	20,235,168,517	26
	1992	82,969,118,896	21,095,665,682	25
	1993	81,024,636,629	21,844,234,317	27
	1994	84,632,516,509	22,603,617,166	27

¹ Source: state comptroller's office.

² Column 4 / column 3.

Table 59. Estimated Gross Sales Subject to Sales Tax for Businesses Abutting Construction with Reported Gross Sales Before and During Construction

Industry	Estimated Average 1991-1994 Gross Sales (\$) ¹	Estimated Real 1991-1994 Gross Sales (\$) (1996 = 100)	Estimated Average Percent Subject to Sales Tax, 1991-1994 ²	Estimated Real 1991-1994 Gross Sales Subject to Sales Tax (\$) (1996 = 100) ³
Retail Trade	25,967,438	28,913,262	51	14,745,764
Services	44,193,083	48,825,085	39	19,041,783
All Businesses ⁴	70,160,521	77,738,347	26	33,787,547

¹ From 24 businesses that reported actual sales for at least one year before construction, 1988 through 1990, and at least one year during construction, 1991 through 1994.

² From Table 58.

³ Column 3 * column 4.

⁴ Taxable gross sales for all businesses is the sum of the listed industries' gross sales.

Table 60. Estimated Sales Tax Revenue from Businesses Abutting Construction with Reported Gross Sales Before and During Construction

Industry	Estimated Real Average 1991-1994 Gross Sales Subject to Sales Tax (\$) (1996 = 100) ¹	Sales Tax Rate, 1991-1994 ²	Estimated Real Average 1991-1994 Houston Sales Tax Revenue (\$) (1996 = 100) ³
Retail Trade	14,745,764	0.010	147,458
Services	19,041,783	0.010	190,418
All Businesses ⁴	33,787,547	0.010	337,876

¹ From Table 59.

² Source: state comptroller's office.

³ Column 2 * column 3.

⁴ Estimated taxable sales for all businesses is the sum of that for all listed industries.

Before and After Construction

Before Construction

The number of businesses by type of business that reported their 1988 and 1996 gross sales for the after-construction survey is presented in Table 61. The gross sales are not presented in tables to avoid disclosing sales of individual firms. The above procedure was repeated using 1988 gross sales data reported by the 10 businesses. The gross sales for each business type was then multiplied by the estimated percentage subject to tax to estimate the amount of sales that was taxable. This amount of taxable sales was then multiplied by the tax rates for the city to estimate the dollar amount of the tax revenue, \$142,502.

After Construction

The above procedure was repeated using 1996 gross sales data. The estimated gross sales for each business type was multiplied by the estimated percentage subject to sales tax to arrive at the amount of sales that was taxable. This amount of taxable sales was then multiplied by the tax rates for the city to estimate the dollar amount of the tax revenue, \$88,798. Therefore, sales tax receipts from these businesses increased 37.7 percent after construction.

CHANGES IN PROPERTY TAX RECEIPTS

The value of existing abutting property described in the Property Value chapter was used to estimate the proposed impact of the construction on property tax receipts from property abutting the construction on U.S. 59. The following procedures are used to estimate the existing/remaining abutting property tax impacts on Houston.

- Step 1. The land and improvement values of properties abutting the newly widened section of U.S. 59 were obtained from the Harris County Appraisal Office. A total value was generated by adding the land and improvement value.
- Step 2. Exemptions were subtracted from the total values to get assessment figures. Exemptions are given for homesteads or for senior citizens. The homestead exemption from Harris County and the Houston Independent School District (HISD) taxes is \$5,000 in property value and 20 percent of the tax due on the remaining property value. It is the maximum of \$5,000 or 20 percent of the property value for the Houston city tax. The senior citizen exemptions are \$156,240 in property value for Harris County, \$34,600 in property value for the city of Houston, and \$15,000 for HISD.
- Step 3. City and HISD tax rates for Houston and Harris County tax rates are presented in Table 62. The tax rates are multiplied by the respective property values less exemptions and the result is added to the county tax to generate the total tax.

Table 61. Number of Businesses Abutting Construction on U.S. 59 in Houston, Texas, with Reported Gross Sales Before and After Construction

Industry	Number of Businesses
Retail Trade	6
Services	2
Manufacturing	2
All Major Divisions	10

The property tax revenues for all abutting properties are graphed in Figure 30. The property tax revenue alternately increased and decreased every few years between 1984 and 1996 in real terms. Average property tax receipts during the right-of-way acquisition period, 1988 to 1990, were 14 percent less than the receipts before the acquisition period, 1984 to 1987. Receipts were 19 percent lower during construction, 1991 to 1996, than during the acquisition period.

The property tax revenue for properties existing from 1984 to 1996 is presented in Figure 30. Average property tax revenue during the right-of-way acquisition period was 11 percent lower than it was during the pre-acquisition period. It was 14 percent higher during the construction period than it was during the right-of-way acquisition period. Therefore the loss in property tax revenue for all abutting property was probably influenced by the loss of property more than the change in property tax rates or property values.

The property tax revenue for properties lost to right-of-way, that is, those existing in 1984 but losing their value before 1996, is presented in Figure 30. Property tax revenue declined six percent during the acquisition period and another 91 percent during construction. The property tax revenue from remainder properties is presented in Figure 30. The rest of the properties were not easily classifiable into the above categories.

TOTAL TAX RECEIPTS

City of Houston

Sales Tax Revenue

The estimated sales tax receipts for Houston are presented in Figure 31. Sales tax rates were constant at \$0.01 per dollar sales from 1984 through 1994 but receipts declined prior to right-of-way acquisition and this time period coincided with the oil bust

Table 62. City and ISD Tax Rates for Houston, Texas, and Harris County Tax Rates for Various Years

Year	Harris County Tax Rates per \$100 Valuation	Houston Tax Rates per \$100 Valuation	
		City	HISD
1984	0.47793	0.495	0.704500
1985	0.47793	0.495	0.704500
1986	0.47793	0.530	0.704500
1987	0.47793	0.530	0.706100
1988	0.49293	0.630	0.797914
1989	0.56000	0.630	0.881893
1990	0.56000	0.630	1.000000
1991	0.59011	0.630	1.050000
1992	0.60032	0.630	1.384000
1993	0.60044	0.630	1.384000
1994	0.62665	0.665	1.384000
1995	0.62462	0.665	1.384000
1996	0.64735	0.665	1.384000

Source: Harris County.

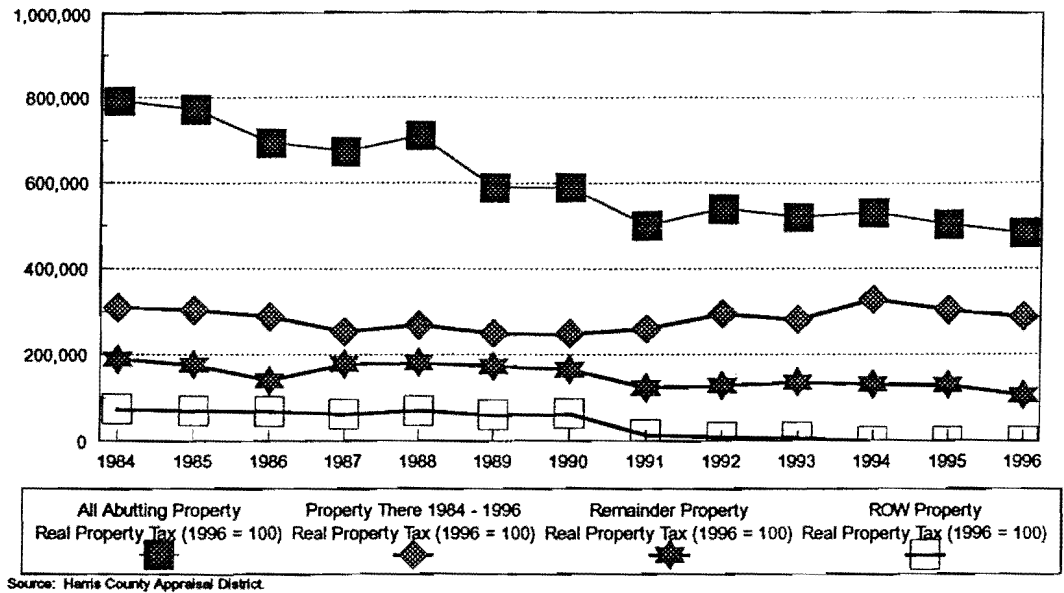


Figure 30. Estimated Total Property Taxes Paid on Property Abutting Construction on U.S. 59 in Houston, Texas

in Houston. Receipts increased one to eight percent each year during right-of-way acquisition. This began when Houston started recovering from the oil bust. During construction, the sales tax receipts alternately increased and decreased two to five percent per year.

Property Tax Revenue

The estimated property tax receipts for Houston are presented in Figure 32. Property tax rates were \$0.630 per \$100 evaluation from 1988 through 1993 and \$0.665 per \$100 evaluation in 1994 and 1995. Estimated Houston property tax receipts decreased three to eight percent per year prior to construction and most of the time during construction. Property values changed from one to four percent each year from 1988 to 1995 so the change in tax rates influenced the rest of the changes.

Harris County

Sales Tax Revenue

Houston MTA sales tax revenues on Harris County sales are presented in Figure 33. Houston MTA sales tax rates were \$0.01 per dollar sales from 1984 through

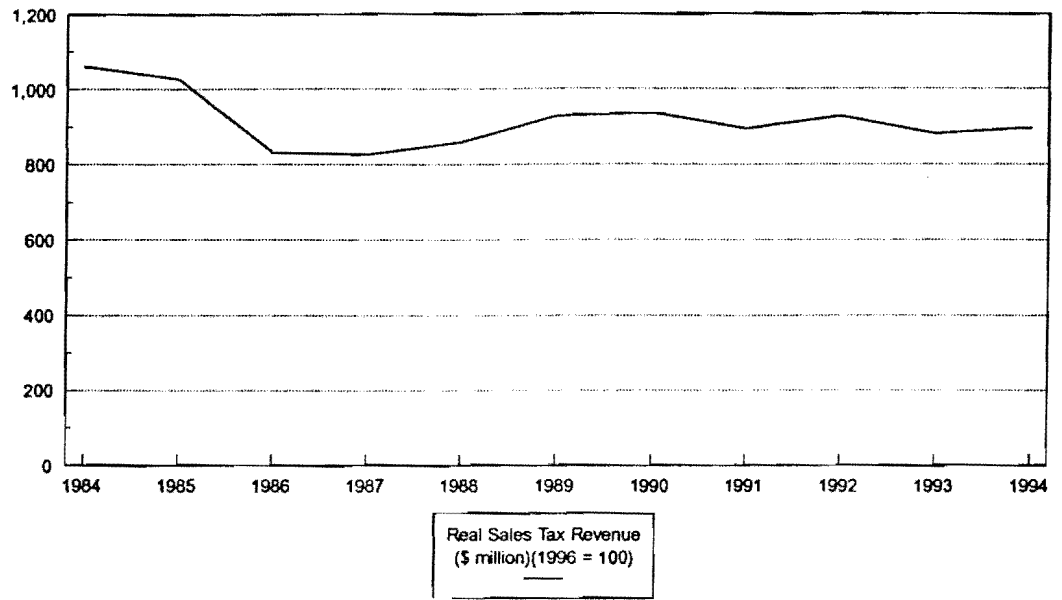


Figure 31. Houston Sales Tax Revenue for Various Years

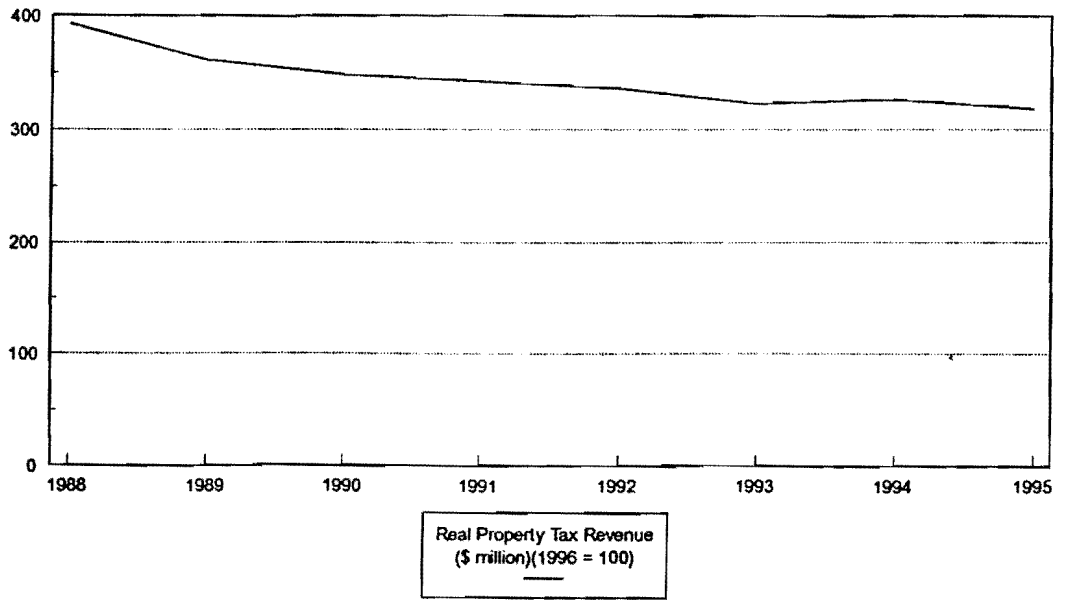


Figure 32. Houston Property Tax Revenue for Various Years

1994. Sales tax revenue decreased 30 percent the year after the oil bust. In most other years it increased from less than one percent to 12 percent. It decreased four percent in 1993 and six percent in 1991.

Property Tax Revenue

The Harris County property tax receipts are presented in Figure 34. The Harris County property tax rates are presented in Table 62. Trends are hard to discern as the property values are not reported consistently due to lawsuits. For the years available, annual property tax receipts have increased or decreased three percent to four percent.

SUMMARY

Sales tax revenue from 24 abutting businesses who reported their sales for at least one year before (1988 - 1990) and during (1991 - 1994) construction decreased 27.8 percent during construction while Houston sales tax receipts only decreased 0.9 percent and Harris County sales tax receipts increased four percent. Sales tax revenue from 10 abutting businesses who reported their sales for 1988 and 1996 decreased 37.7 percent during construction, while Houston sales tax receipts increased 4.2 percent and Harris County sales tax receipts increased 17 percent. Therefore, the sales tax receipts of abutting businesses with reported sales figures were negatively affected by the construction. After-construction sales figures are not available for comparison.

Average abutting property tax revenues from properties unaffected by right-of-way acquisition increased while Houston property tax revenue decreased between the property acquisition period and the construction period. Property tax revenue from all abutting properties decreased one and one half times as much as Houston property tax revenue. Houston MTA property tax revenue increased seven percent.

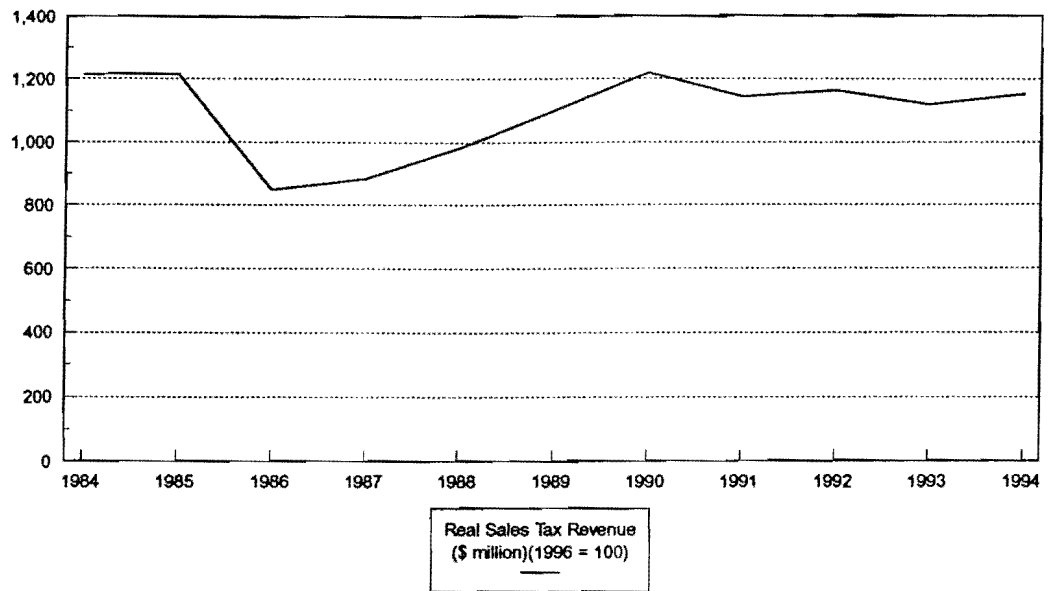


Figure 33. Houston MTA Sales Tax Revenue on Harris County Sales for Various Years

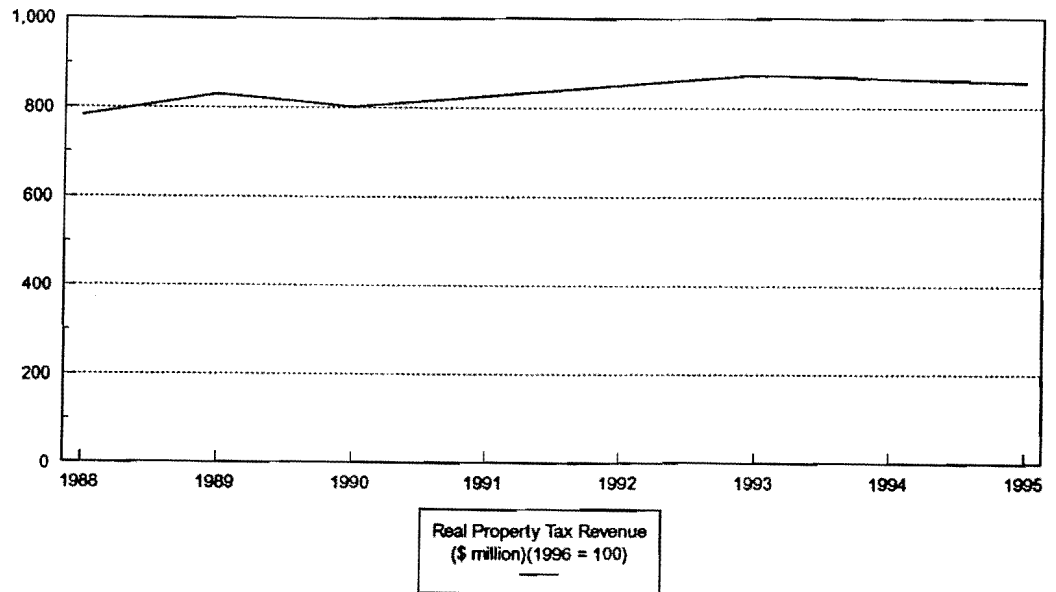


Figure 34. Harris County Property Tax Revenue for Various Years

ESTIMATED IMPACT OF THE CONTRACTOR'S EXPENDITURES

Output and employment multipliers were developed from the 1986 Texas Input-Output Model to produce statewide estimates of impacts from U.S. 59 widening expenditures. Impact estimates were made using the most applicable expenditure category in the input-output model, which is Category 20, New Road/Highway Construction. The 1986 total output multiplier for New Road/Highway Construction is 3.69 dollars of output per dollar of expenditures. The estimated employment multiplier in 1986 for New Road/Highway Construction is 53.7601 jobs per million dollars of expenditures. This includes the direct impact of the construction expenditures, the indirect impacts on the suppliers, and the induced effect of increased consumer spending. Since costs have fallen since 1986, the multiplier can be adjusted using the Annual Price Trends for Federal-Aid Highway Construction, which gives a composite index for Texas of 114.60 for 1986 and 109.98 for 1995. An adjusted employment multiplier of 56.02 is generated by dividing the 1995 composite index by the 1986 composite index, and dividing the 1986 employment multiplier for New Road/Highway Construction by the ratio of the indices.

Output Impacts

Applying the output multiplier to the \$114 million dollars of construction expenditures as of October 1997 indicates that widening U.S. 59 has generated about \$421 million in additional output so far. It is unknown how much of this increase benefitted the Houston area. Note that construction has not been completed so output generated by the construction is underestimated in this analysis.

Employment Impacts

Applying the employment multiplier calculated above to the \$114 million of construction expenditures in Houston indicates that widening U.S. 59 has generated approximately 6,386 new jobs for the Texas economy so far. It is unknown how much employment was generated in the Houston area. Note that construction has not been completed so employment generated by the construction is underestimated in this analysis.

IMPACT ON ENVIRONMENT AND GENERAL APPEARANCE

Impacts on the environment were assessed using the answers to opinion questions on the surveys described in the Business Impact and Residential Impact chapters. The impacts are divided into three categories: those on residents, those on the individual abutting businesses, and those on all abutting businesses. The general impacts are those on noise level, air pollution level, and the general appearance of U.S. 59.

RESIDENTS' OPINIONS

Noise Level

Non-Relocated Residents' Opinions

Seventy-two percent of the residents thought that the noise level increased five percent to 100 percent on U.S. 59 due to construction, while 19 percent thought that it decreased 25 percent to 100 percent (Table 63). Ten percent did not answer the question. One resident said that the heavy equipment and construction crews were very loud each day. Another thinks that a noise wall should be built up and down the freeway feeder roads. Note that in the environmental impact assessment, the increase in noise was predicted, but a noise wall was rejected because visibility was more important.

Relocated Residents' Opinions

Sixty-eight percent of the residents thought that the noise level decreased on U.S. 59 due to construction (Table 63). One resident (four percent) thought that there was no change, while six residents (24 percent) thought that it increased 25 percent to 100 percent.

Air Pollution Level

Non-Relocated Residents' Opinions

Fifty-eight percent of the residents thought that the air pollution level on U.S. 59 increased due to construction (Table 64). Ten percent thought that it did not change, while 20 percent thought that it decreased.

Relocated Residents' Opinions

Almost half (48 percent) of the relocated residents thought that the air pollution level on U.S. 59 decreased due to construction (Table 64). Twenty-four percent thought that it increased and the same number thought that it did not change.

Table 63. Distribution of Responding Abutting Residents' Opinions About the Change in Noise Level Due to Construction on U.S. 59

Percentage Change	Non-Relocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	10	48	5	20
Up 25 - 49%	2	10	1	4
Up 10 - 24%	0	0	0	0
Up 5 - 9%	3	14	0	0
Up 0 - 4%	0	0	0	0
No Change	0	0	1	4
Down < 5%	0	0	2	8
Down 5 - 9%	0	0	0	0
Down 10 - 24%	0	0	3	12
Down 25 - 49%	1	5	1	4
Down 50 - 100%	3	14	11	44
Don't Know	0	0	0	0
No Answer	2	10	1	4
Total	21	101*	25	100

* Percentages may not add to 100% due to rounding.

Table 64. Distribution of Residents' Opinions on the Change in Air Pollution Level Due to Construction on S.H. 199

Percentage Change	Non-Relocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	5	24	4	16
Up 25 - 49%	3	14	1	4
Up 10 - 24%	2	10	1	4
Up 5 - 9%	1	5	0	0
Up 0 - 4%	1	5	0	0
No Change	2	10	6	24
Down < 5%	1	5	0	0
Down 5 - 9%	0	0	2	8
Down 10 - 24%	1	5	3	12
Down 25 - 49%	0	0	2	8
Down 50 - 100%	2	10	5	20
Don't Know	0	0	0	0
No Answer	3	14	1	4
Total	21	102*	25	100

* Percentages may not add to 100% due to rounding.

General Appearance

Non-Relocated Residents' Opinions

Most residents (53 percent) thought that the general appearance of U.S. 59 deteriorated due to construction (Table 65). Twenty percent thought it improved while 29 percent did not answer the question. One resident noted that the state has property, including part of his property, that they are not keeping up and could beautify with trees and roses.

Relocated Residents' Opinions

Slightly over half (56 percent) of relocated residents thought that the general appearance of U.S. 59 improved due to construction (Table 65). Twenty-eight percent thought that it deteriorated and 12 percent thought it did not change.

Desirability as a Place to Live

Non-Relocated Residents' Opinions

There was no consensus about the impact of construction on the desirability of U.S. 59 as a place to live. Thirty-eight percent of the respondents thought that it was less desirable by 25 percent to 100 percent to live abutting U.S. 59 due to construction and 39 percent did not know how desirability had changed or did not answer (Table 66). Twenty-five percent thought desirability had increased.

Seven respondents said that flooding was a problem. One said that his pavement had been torn up and it had not been fixed. Another said that the overpass extends over the boundary line established by the state and it is right over the backyard of another resident. The construction caused major problems with the lights, gas, and water of another resident.

Relocated Residents' Opinions

There was no consensus on whether the desirability of living abutting U.S. 59 increased or decreased due to construction (Table 66). Fifty-two percent thought it increased and 40 percent thought that it decreased.

Table 65. Distribution of Opinions About the Change in the General Appearance of U.S. 59 Due to Construction in Houston, Texas

Percentage Change	Non-Relocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	1	5	6	24
Up 25 - 49%	2	10	5	20
Up 10 - 24%	1	5	1	4
Up 5 - 9%	0	0	2	8
Up 0 - 4%	0	0	0	0
No Change	0	0	3	12
Down < 5%	2	10	0	0
Down 5 - 9%	0	0	1	4
Down 10 - 24%	2	10	0	0
Down 25 - 49%	0	0	1	4
Down 50 - 100%	7	33	5	20
Don't Know	0	0	1	4
No Answer	6	29	0	0
Total	21	102*	25	100

* Percentages may not add to 100% due to rounding.

Table 66. Distribution of Residents' Opinions on the Change in Desirability of Living Abutting U.S. 59 Due to the Construction in Houston, Texas

Percentage Change	Non-Relocated Residents		Relocated Residents	
	Number of Residences	Percent of Residences	Number of Residences	Percent of Residences
Up 50 - 100%	2	10	8	32
Up 25 - 49%	1	5	3	12
Up 10 - 24%	2	10	1	4
Up 5 - 9%	0	0	0	0
Up 0 - 4%	0	0	1	4
No Change	0	0	1	4
Down < 5%	0	0	1	4
Down 5 - 9%	0	0	0	0
Down 10 - 24%	0	0	0	0
Down 25 - 49%	1	5	2	8
Down 50 - 100%	7	33	7	28
Don't Know	2	10	1	4
No Answer	6	29	0	0
Total	21	102*	25	100

* Percentages may not add to 100% due to rounding.

OPINIONS ON THE EFFECTS OF INDIVIDUAL BUSINESSES

Noise Level

During Construction

Fifty-five percent of the business managers thought that the noise level increased during construction, while 33 percent did not think the noise level changed near their business during the construction (Table 67).

After Construction

Fifty-two percent of the business managers thought that the noise level did not change after construction, while 33 percent thought the noise level increased near their business after the construction (Table 67).

Air Pollution Level

During Construction

Forty-nine percent of the business managers thought that the air pollution level near their business increased during construction, while 42 percent thought it did not change (Table 68). Twelve percent of responding managers commented on the increased dust. Car lots had to have their cars washed more frequently because of it, and others had to perform more maintenance on their air filters because of the air pollution level. In preparation for construction, contaminated soil was burned. Some people complained of headaches afterwards.

After Construction

Fifty-three percent of the business managers thought that the air pollution level near their business did not change after construction, while 26 percent thought it increased (Table 68).

EFFECTS ON ALL U.S. 59 BUSINESSES

Noise Level

During Construction

Fifty-nine percent of the business managers thought that the noise level increased on U.S. 59 during construction, while 31 percent thought it did not change (Table 69).

Table 67. Responding Business Managers' Estimates of the Change in Noise Level During Construction Near Their Business on U.S. 59 in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	17	25	5	8
Up 25 - 49%	8	12	3	5
Up 10 - 24%	9	13	6	9
Up 5 - 9%	1	1	6	9
Up 0 - 4%	3	4	1	2
No Change	22	33	33	52
Down < 5%	0	0	2	3
Down 5 - 9%	1	1	2	3
Down 10 - 24%	1	1	0	0
Down 25 - 49%	0	0	1	2
Down 50 - 100%	2	3	1	2
Don't Know	0	0	0	0
No Answer	3	4	4	6
Total Respondents	67	97*	64	101

* Percentages may not add to 100% due to rounding.

Table 68. Business Managers' Estimates of the Change in Air Pollution Level Near Their Business on U.S. 59 During Construction in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	16	24	1	2
Up 25 - 49%	6	9	0	0
Up 10 - 24%	8	12	4	6
Up 5 - 9%	1	1	8	13
Up 0 - 4%	2	3	3	5
No Change	28	42	34	53
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	1	2
Down 10 - 24%	0	0	0	0
Down 25 - 49%	0	0	0	0
Down 50 - 100%	1	1	1	2
Don't Know	3	4	3	5
No Answer	2	3	9	14
Total Respondents	67	99*	64	102*

* Percentages may not add to 100% due to rounding.

Table 69. Responding Business Managers' Estimates of the Change in Noise Level on U.S. 59 During and After Construction in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	18	27	3	5
Up 25 - 49%	6	9	2	3
Up 10 - 24%	15	22	2	3
Up 5 - 9%	1	1	11	17
Up 0 - 4%	0	0	0	0
No Change	21	31	29	45
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	1	2
Down 10 - 24%	0	0	0	0
Down 25 - 49%	0	0	0	0
Down 50 - 100%	0	0	0	0
Don't Know	4	6	2	3
No Answer	2	3	14	22
Total Respondents	67	99*	64	100

* Percentages may not add to 100% due to rounding.

After Construction

Forty-five percent of the business managers thought that the noise level did not change on U.S. 59 after construction, while 28 percent thought it increased (Table 69).

Air Pollution Level

During Construction

Fifty-three percent of the business managers thought that the air pollution level on U.S. 59 increased during construction, while 36 percent thought it did not change (Table 70).

After Construction

Fifty-nine percent of the business managers thought that the air pollution level on U.S. 59 did not change after construction, while 21 percent thought it increased (Table 70).

General Appearance of U.S. 59

During Construction

Sixty-seven percent of the business managers thought that the general appearance of U.S. 59 deteriorated during construction. Seventeen percent thought it looked better and 10 percent said that it did not change (Table 71). Two managers mentioned that they didn't cut the grass like they used to. One manager said there was no change because they took some dilapidated buildings out, but there were some trashy areas of the construction. Another manager said that they ran some of the homeless out and it was disruptive to crime.

After Construction

Forty-two percent of the business managers thought that the general appearance of U.S. 59 improved after construction. Forty-two percent did not answer the question. Nine percent thought it did not change and eight percent thought that it looked worse (Table 71).

SUMMARY

Fifty percent to 60 percent of the responding business managers and non-relocated residents thought that noise and air pollution levels increased near their own business/residence and on U.S. 59 during construction while 20 percent to 30 percent thought they decreased. Most of the remaining respondents thought that the levels did

Table 70. Business Managers' Estimates of the Change in Air Pollution Level on U.S. 59 During and After Construction in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	17	25	1	2
Up 25 - 49%	4	6	0	0
Up 10 - 24%	12	18	0	0
Up 5 - 9%	3	4	12	19
Up 0 - 4%	0	0	0	0
No Change	24	36	38	59
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	1	2
Down 10 - 24%	0	0	0	0
Down 25 - 49%	0	0	0	0
Down 50 - 100%	0	0	0	0
Don't Know	6	9	3	5
No Answer	1	1	9	14
Total Respondents	67	99*	64	100

* Percentages may not add to 100% due to rounding.

Table 71. Responding Business Managers' Estimates of the Change in General Appearance During Construction of U.S. 59 in Houston, Texas

Percentage Change	During Construction		After Construction	
	Number of Businesses	Percent of Businesses	Number of Businesses	Percent of Businesses
Up 50 - 100%	3	4	1	2
Up 25 - 49%	4	6	5	8
Up 10 - 24%	3	4	8	13
Up 5 - 9%	2	3	11	17
Up 0 - 4%	0	0	1	2
No Change	7	10	6	9
Down < 5%	0	0	0	0
Down 5 - 9%	0	0	5	8
Down 10 - 24%	13	19	0	0
Down 25 - 49%	10	15	0	0
Down 50 - 100%	22	33	0	0
Don't Know	1	1	0	0
No Answer	2	3	27	42
Total Respondents	67	98*	64	101*

* Percentages may not add to 100% due to rounding.

change. After construction, 50 to 60 percent of the managers thought that the noise and air pollution levels did not change near their own business/residence and on U.S. 59. Seventy-seven percent of the managers and 53 percent of the non-relocated residents thought the general appearance of U.S. 59 deteriorated during construction. Forty-two percent of the managers thought it improved after construction, but 42 percent did not answer the question.

CONTRACTOR AND TXDOT PERFORMANCE

Businesses were asked to rate the performance of the contractor and the TxDOT personnel involved in widening U.S. 59 in Houston, Texas. Supporting comments were encouraged.

CONTRACTOR'S PERFORMANCE

During Construction

In June 1996, the project director rated the Williams Brothers contractor a 7.55 overall and the Traylor Brothers contractor a 7.85. A "7" rating is marginal and an "8" rating is "good." From the business managers' points of view, there were two contractors for the project so it is difficult to give a definite evaluation of the managers' impression of the contractor's performance. Business managers' evaluations were probably based on the contractor who worked near their business. These results are presented in Table 72. Half of the managers rated the contractor good or very good while 21 percent rated him fair. One-fourth rated him poor or very poor.

Several managers were pleased with the contractor's performance. Three managers said that they worked really fast, although one implied that it took them a long time to get started. One manager attributed the speed to their working at night.

One manager said that the contractor was pretty well organized and knew what he was doing. Compared to other projects, it was excellent. Another manager said they tried to make it as livable as possible. The opening and closing of exits was timed well in the opinion of another manager. One manager had problems at first because he had nothing but a dirt road and had to change how his deliveries were made. The state and the contractor fixed the problem. Another noted that there were too many influences beyond his ability to control.

Many managers were displeased with several aspects of the construction. Two managers thought the signing was inadequate. Three managers thought that road flooding problems had increased since the construction began. Two commented on the sparsity of off-ramps, and a third said that the closing of so many exit ramps would be a deterrent to out-of-town customers patronizing the abutting businesses. One manager thought the construction was disorganized, while two managers thought the contractor jumped around, and did not finish an area before starting another. The joke around the business was that the contractor was lost, jumped around, tore up everything, spread the damage, and prolonged the anguish. Another thought they tore up one area, fixed it, and tore it up again so they did not seem to get anything done.

One-fourth of the responding managers commented on the length of time the construction was taking. One manager said that there was too much play, but they had improved in the last two to six weeks. Another said that the crews talked too much. Similarly, too many stood around and weren't productive in the eyes of another manager.

Several comments concerned incidences that occurred at the individual businesses. The sidewalk was removed to install a gas line at one business and it was never replaced,

**Table 72. Evaluation of Contractor's Performance During Construction
Abutting U.S. 59 in Houston, Texas**

Evaluation	Contractor Performance	
	Number of Businesses	Percent of Businesses
Very Good	10	15
Good	24	36
Fair	14	21
Poor	7	10
Very Poor	1	1
Don't Know	9	13
No Answer	2	3
Total	67	99*

* Percentages may not add to 100% due to rounding.

so the manager had to haul some gravel in. Dirt was dumped right in front of one business instead of dumping it in the adjacent vacant lot. They left equipment out that blocked another business. Utilities were disrupted at several businesses. Two managers said that heavy equipment was run through their parking lots and tore up their concrete. One manager said that they didn't finish driveways. They tore up the fence at one business and it took them months to replace it. One manager received complaints about how to get to his business.

One resident paid for paving in front and on the side of his property. It was torn up during construction, and had not been fixed in 1994, when the residential survey was administered.

After Construction

As previously mentioned, the after-construction survey was administered while the freeway was still under construction. Half of the 38 responding business managers who gave comments said that the construction was taking too long or wanted the construction to be over. One commented on idle equipment.

Several managers were displeased with how the construction was carried out. They would have preferred it to occur in sections instead of having everything torn up at

once. Another thought that the ramps were closed without considering any of the businesses. One thought that an exit that was closed was supposed to be fixed.

TXDOT PERFORMANCE

During Construction

Business managers' evaluations of TxDOT performance are presented in Table 73. Slightly over half of the business managers said that TxDOT personnel did a good or very good job, while 11 percent said they did a fair job. Seventeen percent said they did a poor or very poor job and 20 percent did not have an opinion on their performance.

Several managers had positive things to say about TxDOT's performance. One said that Gary, the right-of-way man, did an A+ job and went to bat for them. Another said that they were very helpful in discussing a future location and that dealings with them had been fine. All of the complaints of another manager were taken care of. One said that Trudy Schreiner was always polite and helpful. They helped out and bent over backwards for another manager. Another noted that things were moving along and progress was being made. One said that things had gone very smoothly. Another noted that overall, they had done a pretty good job. As long as the exit was open, another manager thought that the construction was good.

Several had comments on the benefits of the project. One manager said they cleaned up the environment and breathed new life into the neighborhood. He noted that it was going to be a very good thing for everyone when it is finished. Another said that it was a big improvement. It will be a benefit and an opportunity for economic development in the eyes of another manager. Two managers said that it was wonderful they were doing it and they would be glad when it was finished. One was all for progress. Another said it was a good improvement and he was looking forward to it. U.S. 59 needed to be improved in the opinion of one manager. Another said it would be a significant change once it was finished and there was no alternative in order to improve it.

However, several managers were displeased with several aspects of the construction. One said that the flooding since they started construction was terrible. Two managers said that the signing was inadequate, and one said some managers were working on a petition because of the location of the exit signs. Four managers said that it was taking too long. One of the four thought that there was too much talking with the highway department personnel. Another said that they would drink coffee and supervise, while another thought it was a waste of money to have five people out watching two people working. Another would like to know the overrun. One manager said that their timetable was always off. The survey crew was totally incompetent as far as another manager was concerned. Another manager found it hard to get his telephone calls returned.

There were several comments on the freeway design. One manager said that frequently there were accidents at the exit in front of his property. Another said that the exit and entrance ramps were too close together and there was not enough sight distance,

Table 73. Evaluation of TxDOT Performance During Construction of U.S. 59 in Houston, Texas

Evaluation	TxDOT Performance	
	Number of Businesses	Percent of Businesses
Very Good	18	30
Good	13	21
Fair	7	11
Poor	6	10
Very Poor	4	7
Don't Know	12	20
No Answer	1	2
Total	61	100

which made it very dangerous. One manager said that another exit ramp was needed on Bennington going north. Three said that the project was not planned very well. One of the three said that more time should be spent with the people responsible for getting the work done. Another manager said that there needs to be an interim complaint period. They should spend more time on what the impacts will be. For example, more people are taking U.S. 59 to Intercontinental Airport.

Three residents noted that TxDOT shut up all the drains for the project and now any amount of rain causes flooding. Each time there is any rain, huge amounts of dirt are washed onto the roads, and one resident thinks that eventually the dirt supporting the bridge and underpass will wash away and the structure will fall.

After Construction

One manager said that everything was fine and another said that the construction was good. Another manager said that progress was quick with the construction. One manager was always prepared for improvements. Another said that it was needed and was a big asset. In the long run it would be OK. Not all managers were that pleased with the construction, however.

Many business managers were not pleased with aspects of the design. One manager would like longer entrance ramps. Two managers think the on- and off-ramps

are in bad places. One thought that the people came out too far east when they got off the feeder. Several were unhappy with the access to their businesses.

One manager would like the graffiti removed. Another thought that the area was five times worse now than before construction. A third thought that since it was in a low-income area, there was not much change as a result of the construction.

SUMMARY

During construction, half of the respondents rated the contractor and TxDOT personnel good or very good. In June 1996, the project director rated Williams Brothers contractor 7.55 and Traylor Brothers 7.85 where "7" is marginal and "8" is good. Many business managers thought that the construction was necessary and that TxDOT and contractor personnel were polite and helpful. Many were unhappy about the signing, the sparsity of exit ramps, and the length of time it was taking to complete the construction.

CONCLUSIONS

The following conclusions are based on the findings of this study. They are not the only conclusions that might be supported by the findings, but seem to be the most meaningfully supported.

1. The purchase of 281 properties for right-of-way affected property owners and tenants. Property owners who were displaced experienced the most negative economic effects. The more properties and amounts of right-of-way taken, the greater the effect.
2. During construction, abutting businesses lost 15 percent of their parking spaces, while five percent were lost at the end of construction. There were 17 percent more occupied parking spaces during construction and 20 percent fewer at the end of construction, but 70 percent of the respondents had fewer customers per day. Therefore, businesses were affected more negatively at the end of construction than during construction.
3. Managers' opinions about changes in their number of parking spaces, full-time employees, and part-time employees agreed with the numbers they reported before, during, and after construction at least 70 percent of the time. This relationship between opinions and facts supports our ability to rely on opinions, which are more readily available, when conclusions are made.
4. Real abutting residential property values fell more and commercial property values fell less than corresponding Houston and Harris County property values since 1989, while vacant land values have been affected in a similar manner.

REFERENCES

1. Buffington, J. L. and M. T. Wildenthal. *Estimated Economic Impact of Widening U.S. Highway 80 (Marshall Avenue) in Longview, Texas*. Research Report TX-92/968-1F, Texas Transportation Institute, The Texas A&M University System, College Station, Texas, November 1992.

APPENDIX A
DURING-CONSTRUCTION BUSINESS SURVEY

Date _____

Texas Transportation Institute
 Texas A & M University System
 College Station, Texas 77843-3135

CONFIDENTIAL
 Code No. _____

U.S. HIGHWAY 59 (EASTEX FREEWAY) WIDENING BUSINESS IMPACT SURVEY

Houston, Texas

Purpose of Survey

The Texas Transportation Institute is studying the economic impact of widening U.S. Highway 59 (the Eastex Freeway) through the city of Houston for the Texas Department of Transportation (TxDOT). TxDOT needs the findings of an impartial study to help it in planning freeway widening projects to maximize positive impacts and minimize negative impacts during and after construction, especially on abutting businesses. ALL ANSWERS TO THE FOLLOWING QUESTIONS WILL BE HELD CONFIDENTIAL. Your name or the name of your business will not be used in any way that would identify you.

Freeway Widening Impact on Your Business During Construction

- There are several ways that widening of the Eastex Freeway could have affected your business DURING the construction period. How do you think the construction activities impacted the following things? (Please give your best estimate of the percentage impact, up or down, on your business!)

Possible Effects	Up 50% to 100%	Up 25% to 49%	Up 10% to 24%	Up 5% to 9%	Up 0% to 4%	No ch	Dwn less th 5%	Dwn 5% to 9%	Dwn 10% to 24%	Dwn 25% to 49%	Dwn more th 50%
1. Number of usable parking spaces?											
2. Number of customers per day?											
3. Number of full-time employees?											
4. Number of part-time employees?											
5. Gross sales?											
6. Net profit?											
7. Property values?											
8. Noise level?											
9. Air pollution level?											
10. Other effects (state)? _____											

2. What length of time did your business' sales volume remain at about that level (Q1.5)? _____ months.

3. What do you think was the primary cause of this change, if any, in sales volume?

4. There are several ways that widening the Eastex Freeway could have affected the people, businesses and travelers in the city of Houston DURING the construction period. How do you think the construction activities impacted the following things? (Please give your best estimate of the percentage impact, up or down, on the city of Houston!)

Possible Effects	Up 50% to 100%	Up 25% to 49%	Up 10% to 24%	Up 5% to 9%	Up 0% to 4%	No ch	Dwn less th 5%	Dwn 5% to 9%	Dwn 10% to 24%	Dwn 25% to 49%	Dwn more th 50%
1. The time it takes to travel through Houston?											
2. Number of accidents on the Eastex Freeway?											
3. Traffic volumes on the Eastex Freeway?											
4. Employment in other parts of Houston?											
5. Gross sales volumes for all businesses on the Eastex Freeway?											
6. Gross sales volumes for all other businesses in Houston?											
7. Property values on the Eastex Freeway?											
8. Property values for all properties in Houston?											
9. Noise level on the Eastex Freeway?											
10. Air pollution level on the Eastex Freeway?											
11. General appearance of the roadside and area near the Eastex Freeway?											
12. Other effects (state)? _____ _____											

Information on Relocated Businesses

1. Did you have to move your business due to the state taking property to widen the Eastex Freeway? If yes, where was the original location?

Front of the property?___ Other location?___

If other location, where? _____

2. When did you start business abutting the Eastex Freeway?

Month Year

at this location? _____ _____

at other location? _____ _____

3. If you had to move, how much did you spend to relocate business that was not paid for by TxDOT?

Moving expenses? \$ _____

Land purchase? \$ _____

Building cost? \$ _____

Change in monthly rent (if tenant)? \$ _____

Other expenses (please list): _____

-
4. If you had to move, how much of the above expenditures for replacement facilities for business represents an improvement over the original facilities taken for right-of-way?

Purchase of property?

Land and buildings? \$ _____

Other improvements? \$ _____

Change in monthly rent (if tenant)? \$ _____

Evaluation of Performance of Contractor and TxDOT Personnel

1. How would you rate the overall performance of the Eastex Freeway project contractor? (Please check one below.)

Very good__ Good__ Fair__ Poor__ Very poor__ Don't know__

Comments_____

2. How would you rate the overall performance of the TxDOT personnel supervising the Eastex Freeway project? (Please check one below.)

Very good__ Good__ Fair__ Poor__ Very poor__ Don't know__

Comments_____

Other comments about widening the Eastex Freeway through the city of Houston?_____

Basic Information About Your Business

To help us to properly analyze the answers given by all the Eastex Freeway businesses, would you furnish the following information about your business? (Again, this information will be kept strictly confidential.)

1. What primary type is your business?

Retail sales__ Retail service__ Professional service__ Other (Please describe.)__

If both retail sales and service, please give:

percent sales ____ percent service ____

2. Do you own or lease this building?
Owned__Leased____
3. About how old is this building?
Number of years____Don't know____
4. How many parking spaces did you have for your customers in 1988 before widening the Eastex Freeway and from 1989-1994, during the freeway widening?
Number before_____ Number during_____
5. How many of your parking spaces were occupied by customers during the busiest hour of an average day in 1988 before the freeway widening and from 1989-1994 during the freeway widening?
Number before_____ Number during_____
6. What percent of your customers were from out of town in 1988 before the freeway widening and from 1989-1994 during the freeway widening?
Percent before_____ Percent during_____
7. How many people were employed by your business in 1988 before the freeway widening and from 1989-1994 during the freeway widening? (Please give the average annual number, including working owner and/or manager.)

	<u>1988</u>	<u>1989-1994</u>
Full-time	_____	_____
Part-time	_____	_____

8. What was the annual gross sales volume of this business in 1988 before the freeway widening and in 1989-1994 during the widening?

Before widening volume (\$)?

1988 _____

During widening volumes (\$)?

1989 _____ 1990 _____

1991 _____ 1992 _____

1993 _____ 1994 (first 6 months) _____

AND/OR check proper annual gross sales category as follows:

	<u>1988</u>	<u>1989-1994</u>
Less than \$100,000	_____	_____
\$100,000 to \$500,000	_____	_____
\$500,000 to \$1,000,000	_____	_____
More than \$1,000,000	_____	_____

**APPENDIX B
RELOCATED BUSINESS SURVEY**

Date _____

Texas Transportation Institute
Texas A & M University System
College Station, Texas 77843-3135

CONFIDENTIAL
Code No. _____

**U.S. HIGHWAY 59 (EASTEX FREEWAY) DISPLACED BUSINESS IMPACT
SURVEY**

Houston, Texas

Purpose of Survey

The Texas Transportation Institute is studying the economic impact of widening U.S. Highway 59 through the city of Houston for the Texas Department of Transportation (TxDOT). TxDOT needs the findings of an impartial study to help it in planning highway widening projects to maximize positive impacts and minimize negative impacts during and after construction, especially on abutting businesses. TxDOT is particularly interested in obtaining information on displaced businesses. Please take a little time and answer all questions pertaining to you. Also, please return this form to us as soon as possible. ALL ANSWERS TO THE FOLLOWING QUESTIONS WILL BE HELD CONFIDENTIAL. Your name and the name of your business will not be used in any way that would identify you.

1. What is your current business address?

2. Did you have to relocate your business due to the widening?

Yes ____ No ____

If you had to relocate your business due to the widening of Highway 59, please give the following addresses:

address relocated from? _____

address relocated to? _____

3. How long did your business operate at each location?

Months Years

at old highway address? _____ _____

at relocation address? _____ _____

at current address? _____ _____

If you closed your business due to the state taking property to widen Highway 59, check here ___ and skip to the "Closed Business" section on the last page.

If you relocated your business due to the state taking property to widen Highway 59, check here ___ and continue.

Information on Relocated Businesses

3. How much of your business relocation expenditures were not paid for by TxDOT?

Moving expenses? \$ _____

Land/lot purchase? \$ _____

Building cost? \$ _____

Change in monthly rent (if tenant)? \$ _____

Other expenses (please list): _____

4. How much of the above expenditures for replacement facilities for business represents an improvement over the original facilities taken for right-of-way?
\$ _____

Purchase of property?

Land and building? \$ _____

Other improvements? \$ _____

Change in monthly rent (if tenant)? \$ _____

5. How was your business affected by the relocation? (Please give your best estimate of the percentage impact, up or down, on your business.)

Possible Effects	Up 50% to 100%	Up 25% to 49%	Up 10% to 24%	Up 5% to 9%	Up 0% to 4%	No ch	Dwn less th 5%	Dwn 5% to 9%	Dwn 10% to 24%	Dwn 25% to 49%	Dwn more th 50%
1. Number of usable parking spaces?											
2. Number of customers per day?											
3. Number of full-time employees?											
4. Number of part-time employees?											
5. Gross sales?											
6. Net profit?											
7. Property values?											
8. Noise level?											
9. Air pollution level?											
10. Other effects (state)? _____ _____											

6. How many people were employed by your business in 1988 before the highway widening and from 1989-1994 during the highway widening? (Please give the average annual number, including working owner and/or manager.)

	<u>1988</u>	<u>1989-1994</u>
Full-time	_____	_____
Part-time	_____	_____

7. What was the annual gross sales volume of this business in 1988 before the highway widening and in 1989-1994 during the widening?

Before widening volume (\$)?

1988 _____

During widening volumes (\$)?

1989 _____ 1990 _____

1991 _____ 1992 _____

1993 _____ 1994 _____

AND/OR check proper annual gross sales category as follows:

	<u>1988</u>	<u>1989-1994</u>
Less than \$100,000	_____	_____
\$100,000 to \$500,000	_____	_____
\$500,000 to \$1,000,000	_____	_____
More than \$1,000,000	_____	_____

Information on Closed Businesses

1. What were the primary reasons why you closed your business instead of relocating and continuing to operate it?

Reasons _____

2. What was your annual gross sales in 1988? \$ _____

In the last year of operation of the business? \$ _____

What was the last year your business operated? _____

3. How does your present income compare to what you earned from the highway business?

Up ____% Down ____% About the Same ____%

4. How many people were employed by your business before it closed?

Full-time ____ Part-time ____

5. Comments: _____

APPENDIX C
AFTER-CONSTRUCTION BUSINESS SURVEY

Date _____

Texas Transportation Institute
 Texas A & M University System
 College Station, Texas 77843-3135

CONFIDENTIAL
 Code No. _____

U.S. HIGHWAY 59 (EASTEX FREEWAY) WIDENING BUSINESS IMPACT SURVEY

Houston, Texas

Purpose of Survey

The Texas Transportation Institute is studying the economic impact of widening U.S. Highway 59 (the Eastex Freeway) through the city of Houston for the Texas Department of Transportation (TxDOT). TxDOT needs the findings of an impartial study to help it in planning freeway widening projects to maximize positive impacts and minimize negative impacts during and after construction, especially on abutting businesses. **ALL ANSWERS TO THE FOLLOWING QUESTIONS WILL BE HELD CONFIDENTIAL.** Your name or the name of your business will not be used in any way that would identify you.

Freeway Widening Impact on Your Business After Construction

- There are several ways that widening of the Eastex Freeway could have affected your business AFTER the construction period. How do you think the widened highway has impacted the following things? (Please give your best estimate of the percentage impact, up or down, on your business!)

Possible Effects	Up 50% to 100%	Up 25% to 49%	Up 10% to 24%	Up 5% to 9%	Up 0% to 4%	No ch	Dwn less th 5%	Dwn 5% to 9%	Dwn 10% to 24%	Dwn 25% to 49%	Dwn more th 50%
1. Number of usable parking spaces?											
2. Number of customers per day?											
3. Number of full-time employees?											
4. Number of part-time employees?											
5. Gross sales?											
6. Net profit?											
7. Property values?											
8. Noise level?											
9. Air pollution level?											
10. Other effects (state)? _____											

2. What length of time did your business' sales volume remain at about that level (Q1.5)? _____ months.

3. What do you think was the primary cause of this change, if any, in sales volume?

4. There are several ways that widening the Eastex Freeway could have affected the people, businesses and travelers in the city of Houston AFTER the construction period. How do you think the widened highway has impacted the following things? (Please give your best estimate of the percentage impact, up or down, on the city of Houston!)

Possible Effects	Up 50% to 100%	Up 25% to 49%	Up 10% to 24%	Up 5% to 9%	Up 0% to 4%	No ch	Dwn less th 5%	Dwn 5% to 9%	Dwn 10% to 24%	Dwn 25% to 49%	Dwn more th 50%
1. The time it takes to travel through Houston?											
2. Number of accidents on the Eastex Freeway?											
3. Traffic volumes on the Eastex Freeway?											
4. Employment in other parts of Houston?											
5. Gross sales volumes for all businesses on the Eastex Freeway?											
6. Gross sales volumes for all other businesses in Houston?											
7. Property values on the Eastex Freeway?											
8. Property values for all properties in Houston?											
9. Noise level on the Eastex Freeway?											
10. Air pollution level on the Eastex Freeway?											
11. General appearance of the roadside and area near the Eastex Freeway?											
12. Other effects (state)? _____ _____											

Information on Relocated Businesses

1. Did you have to move your business due to the state taking property to widen the Eastex Freeway? If yes, where was the original location?

Front of the property?___ Other location?___

If other location, where? _____

2. When did you start business abutting the Eastex Freeway?

Month Year

at this location? _____

at other location? _____

3. If you had to move, how much did you spend to relocate business that was not paid for by TxDOT?

Moving expenses? \$ _____

Land purchase? \$ _____

Building cost? \$ _____

Change in monthly rent (if tenant)? \$ _____

Other expenses (please list): _____

4. If you had to move, how much of the above expenditures for replacement facilities for business represents an improvement over the original facilities taken for right-of-way?

Purchase of property?

Land and buildings? \$ _____

Other improvements? \$ _____

Change in monthly rent (if tenant)? \$ _____

Other comments about widening the Eastex Freeway through the city of Houston?

Basic Information About Your Business

To help us to properly analyze the answers given by all the Eastex Freeway businesses, would you furnish the following information about your business? (Again, this information will be kept strictly confidential.)

1. What primary type is your business?
Retail sales___Retail service___Professional service___Other (Please describe.)___
If both retail sales and service, please give:
percent sales ___ percent service ___
2. Do you own or lease this building?
Owned___Leased___
3. About how old is this building?
Number of years___Don't know___
4. How many parking spaces did you have for your customers in 1988 before widening the Eastex Freeway and after 1994, after the freeway widening?
Number before_____ Number after_____
5. How many of your parking spaces were occupied by customers during the busiest hour of an average day in 1988 before the freeway widening and after 1994, after the freeway widening?
Number before_____ Number after_____

6. What percent of your customers were from out of town in 1988 before the freeway widening and after 1994, after the freeway widening?

Percent before _____ Percent after _____

7. How many people were employed by your business in 1988 before the freeway widening and after 1994, after the freeway widening? (Please give the average annual number, including working owner and/or manager.)

	<u>1988</u>	<u>After 1994</u>
Full-time	_____	_____
Part-time	_____	_____

8. What was the annual gross sales volume of this business in 1988 before the freeway widening and after 1994, after the widening?

Before widening volume (\$)?

1988 _____

After widening volumes (\$)?

1994 _____

1995 _____

1996 _____

AND/OR check proper annual gross sales category as follows:

	<u>1988</u>	<u>After 1994</u>
Less than \$100,000	_____	_____
\$100,000 to \$500,000	_____	_____
\$500,000 to \$1,000,000	_____	_____
More than \$1,000,000	_____	_____

**APPENDIX D
RESIDENTIAL SURVEY**

Date_____

Texas Transportation Institute
Texas A & M University System
College Station, Texas 77843-3135

CONFIDENTIAL
Code No.____

U.S. HIGHWAY 59 (EASTEX FREEWAY) WIDENING IMPACT RESIDENTIAL SURVEY

Houston, Texas

Purpose of Survey

The Texas Transportation Institute is studying the economic impact of widening U.S. Highway 59 through the city of Houston for the Texas Department of Transportation (TxDOT). TxDOT needs the findings of an impartial study to help it in planning highway widening projects to maximize positive impacts and minimize negative impacts during and after construction, especially on abutting businesses and residents. TxDOT is particularly interested in obtaining information on those that were displaced. Please take a little time and answer all questions pertaining to you. Also, please return this form to us as soon as possible. ALL ANSWERS TO THE FOLLOWING QUESTIONS WILL BE HELD CONFIDENTIAL. Your name and address will not be used in any way that would identify you.

1. What is your current address?

2. Did you have to relocate your place of residence due to the widening?

Yes ____ No ____

If you had to relocate your place of residence due to the widening of Highway 59, please give the following addresses:

address relocated from? _____

address relocated to? _____

3. How long did you live at each place of residence?

	<u>Months</u>	<u>Years</u>
at old highway address?	_____	_____
at relocation address?	_____	_____
at current address?	_____	_____

4. Did you own or rent each place of residence?
- at old highway address? own ___ rent ___
- at relocation address? own ___ rent ___
- at current address? own ___ rent ___

If you still live at your old address, please answer Questions 5 and 6.

If you have moved to another address abutting Highway 59 between Bennington and Mohawk Streets, please answer Questions 5, 6, 7, and 8.

If your place of residence was taken for widening Highway 59 and you have moved away from Highway 59, please answer Questions 7, 8, 9, and 10.

5. What effects of the widening of Highway 59 have you and your family experienced and observed? (Please give your best estimate of the percentage impact, up or down, observed by you and your family.)

Possible Effects	Up 50% to 100%	Up 25% to 49%	Up 10% to 24%	Up 5% to 9%	Up 0% to 4%	No ch	Dwn less th 5%	Dwn 5% to 9%	Dwn 10% to 24%	Dwn 25% to 49%	Dwn more th 50%
1. Number of accidents?											
2. Traffic volume?											
3. Travel time to and from work?											
4. Travel time to buy gas/food?											
5. Desirability as a place to live?											
6. General appearance of area?											
7. Residential property values?											
8. Noise level?											
9. Air pollution level?											
10. Other effects (state)? _____											

6. Other comments: _____

7. How much of your relocation expenditures were not paid for by TxDOT?

Moving expenses? \$ _____

Land/lot purchase? \$ _____

Building cost? \$ _____

Change in monthly rent (if tenant)? \$ _____

Other expenses (please list): _____

8. How much of the above expenditures for a replacement residence represents an improvement over the original residence taken for right-of-way? \$ _____

Purchase of property?

Land and building? \$ _____

Other improvements? \$ _____

Change in monthly rent (if tenant)? \$ _____

Other expenses (please list)?

_____ \$ _____

_____ \$ _____

_____ \$ _____

9. What effects of relocating have you and your family experienced or observed?
 (Please give your best estimate of the percentage impact, up or down, observed by you and your family.)

Possible Effects	Up 50% to 100%	Up 25% to 49%	Up 10% to 24%	Up 5% to 9%	Up 0% to 4%	No ch	Dwn less th 5%	Dwn 5% to 9%	Dwn 10% to 24%	Dwn 25% to 49%	Dwn more th 50%
1. Number of accidents?											
2. Traffic volume?											
3. Travel time to and from work?											
4. Travel time to buy gas/food?											
5. Desirability as a place to live?											
6. General appearance of area?											
7. Residential property values?											
8. Noise level?											
9. Air pollution level?											
10. Other effects (state)? _____ _____											

10. Other comments: _____
