## EXPERIENCES AND OPINIONS OF RESIDENTS ALONG ELEVATED, DEPRESSED, AND ON-GRADE FREEWAY SECTIONS IN HOUSTON, TEXAS

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# TABLE OF CONTENTS

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ABSTRACT	iv
SUMMARY OF FINDINGS	vii
IMPLEMENTATION STATEMENT	ix
LIST OF TABLES	xii
LIST OF FIGURES	xvi
INTRODUCTION	1
Purpose of Study	1 2
CHARACTERISTICS OF RESPONDENTS.	9 13
General	13 13 16 16
Living Quarters	19 19 23
Length of Stay	23 25 25
Transportation	25 25 27 27
Relationships Between Selected Characteristics	29
Summary	31

OPINIONS OF RESPONDENTS CONCERNING LOCATION OF RESIDENCY	33
Reasons for Locating at Present Address	33 37 43
OPINIONS OF RESPONDENTS CONCERNING LOCATION AND DESIGN OF KATY FREEWAY	52
Preferred Distance from Residence	52 54 54 57 57
OPINIONS OF PRIOR RESIDENTS CONCERNING THE IMPACT OF KATY FREEWAY	63
Anticipated Effects Construction Period Effects After Period Effects. Noise. Travel Time. Other. Effects on Neighborhood. Value of Homes Travel Habits. Traffic on Streets Hazards. Complaints Heard Displaced People and Meeting Places. Overall Effect on Neighborhood Summary.	63 65 65 71 82 83 84 90 90 93 93 95
APPENDIX A - SUPPLEMENTAL DATA	98
APPENDIX B - SAMPLING PROCEDURES AND RELIABILITY 10	)9

iii

## ABSTRACT

The purpose of surveying residents near an existing urban freeway was to obtain their experiences and opinions concerning its location and design and its effect upon people living nearby. The Katy Freeway in Houston was selected as the study area for the following reasons: (1) it had three major designs below grade (depressed), on grade, and above grade (elevated); (2) it passed through an established residential neighborhood; and (3) it had been in operation long enough (since December, 1968) to produce some "after" effects but not too long to obliterate "before" period impressions.

To determine whether the residents might prefer one freeway location or design over another in relation to where they live, the systematic sample of residents was stratified according to three major freeway designs (depressed, on grade, and elevated) and three distance bands (Zone 1, abutting; Zone 2, not abutting and up to 600 feet from the freeway; Zone 3, 600 to 1,200 feet from the freeway). Since the sampling rate was not the same for all zones within freeway design subareas, the data collected were adjusted so that the results presented reflect the whole population of residents represented by the sample.

The respondents were mainly white males about 48 years old. Their formal education averaged nine years, and their 1969 family income averaged about \$5,800. They lived primarily in

iv

single family frame houses that averaged about 34 years old. About 60 percent of them had lived in the study area at least seven years. The respondents said that the primary advantage to living at their address was the convenient access to the freeway, and the primary disadvantage was the physical deterioration of the neighborhood. The vast majority of the respondents were pleased to have the freeway serving them, primarily because it was convenient, safer, and faster.

17

Nearly 75 percent of them said that the freeway was located properly with respect to the neighborhood. About 80 percent indicated that they preferred to live where they were living and that the freeway did not annoy them in any way. However, the majority preferred to live near the depressed freeway section. Noise was the freeway annoyance factor most often mentioned, but the naming of this factor was concentrated in Zone 1. Those in the depressed freeway design subarea complained the least about noise.

The vast majority liked the appearance of the freeway and said that no changes were needed in its design to make it more useful. The preferred design was a depressed freeway.

For the prior resident respondents who had lived in the neighborhood at least seven years, the major positive effect named was that the freeway saved them travel time; and the major negative effect was that the freeway raised the noise level a noticeable amount. Again, most of the complaints about noise came from Zone 1 respondents, particularly those who lived in the on grade and elevated freeway design subareas. Considering all

v

the effects of the freeway, more than 75 percent of them indicated that they had been benefited more than harmed by it, and 63 percent indicated that the neighborhood was better off because of the freeway.

To a limited extent, Chi-Square  $(\chi^2)$  was used to determine whether there were significant differences in the answers among the nine strata based on freeway design and distances of residences from freeway sections.

vi

#### SUMMARY OF FINDINGS

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The purpose of this survey was to obtain the experiences and opinions of residents living near the Katy Freeway concerning the effects of freeway location and design in a residential area. The Katy Freeway had been opened to traffic for more than two years. The time span of the study covered periods before, during, and after construction of the freeway. Therefore, it was necessary to interview some residents who had lived there at least seven years; 60 percent of the residents interviewed satisfied this criterion.

To determine whether residents might prefer one freeway location or design over another in relation to where they lived, the sample of residents was stratified according to three major freeway design subareas (depressed below grade, on grade, and elevated above grade) and three distance Zones (Zone 1, abutting; Zone 2, not abutting and up to 600 feet from the freeway; Zone 3, from 600 to 1,200 feet from the freeway). Since the sampling rate was not the same for all freeway design subareas or distance zones, the data presented in this report were adjusted to reflect the whole population of residents represented by the sample.

Before the principal findings are presented, some of the characteristics of the respondents (the study design called for them to be heads of households, but 10 percent were substitutes

vii

for heads of households that could not be interviewed), upon which this report is based, are as follows:

 They were mainly males averaging 48 years of age. Their households averaged about three persons, with a 1969 family income of \$5,800. The average educational level was about nine years. 21

- 2. They lived primarily in single-family frame houses averaging 34 years old, five rooms, and one bath.
- 3. About half of them owned their homes. The average rent was \$67 monthly. The average estimated value of the single-family residences was approximately \$10,000.
- 4. They had averaged living at their present addresses for 11 years and in the neighbrohood for nearly 16 years.
- 5. About 75 percent of them owned and drove an automobile or truck. Using the automobile as their principal mode of transportation, they used and crossed the Katy Freeway frequently.
- 6. In general, those living in the depressed freeway design subarea had lower income and educational levels, lived in lower quality dwellings (mainly singlefamily type), and paid lower rent than those of the other freeway design subareas. Also, a smaller percentage of them were Black and a larger percentage were older and blue collar employees.
- 7. In general, the percentage of Black, owner, and older respondents decreased as the distance from the freeway increased. So did the average age of dwellings. On the other hand, the average family income of respondents and the percentage of respondents living in apartment houses increased as the distance from the freeway increased.

The main findings from the respondents opinions concerning the location of their residences are:

 Wanting to be in a good neighborhood was the reason most frequently given for locating at present addresses.

- 2. The new and prior residents tended to have different sets of reasons for locating at their present addresses.
- 3. Having convenient access to the freeway was the greatest advantage mentioned.

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- 4. The nearness of the freeway and its related noise were the most mentioned disadvantages.
- 5. The overwhelming majority of the residents (82 percent) liked where they were living.
- 6. Changes in racial composition, changes in the owner/ renter ratio, and deterioration of residential structures were mentioned as the primary changes that had occurred in the neighborhood.

Listed below are some principal findings from the responses to questions about the location and design of the freeway.

- Approximately 75 percent of the respondents thought the freeway had been properly located with respect to their neighborhood.
- The degree of preference for current locations of residence increased with the distance from the freeway. Over 75 percent of the respondents in Zone 1 of the elevated design subarea preferred to live further from the freeway.
- 3. Freeway noise was a major annoyance, especially with persons living next to the freeway.
- 4. The majority of all respondents approved of the appearance of the freeway.
- 5. The respondents tended to prefer living next to a depressed section the most and next to an elevated section the least.
- 6. Overall, the respondents preferred to travel on depressed sections the most and elevated sections the least.

The primary findings concerning the prior resident respondents' opinions of the effects of Katy Freeway on themselves

#### and the neighborhood are as follows:

- 1. In regards to anticipated effects, over 50 percent of the respondents indicated that the freeway would be of value to them, primarily from the standpoint of convenience to use or ready access.
- Only about 20 percent of them said that they had construction period problems, primarily noise and dust from trucks and bulldozers.
- 3. In regard to after period effects, only in Zone 1 did a majority of respondents experience negative effects. Noise was the most frequently mentioned negative effect; whereas, time saved by using the freeway was the most mentioned positive effect.
- 4. A smaller percentage of the prior residents from the depressed freeway design subarea mentioned negative effects, such as noise, than did those from the other two freeway design subareas. Generally, those 60 years and older were more negative about the freeway then those under 60 years old.
- 5. Very few of the prior residents said that the new freeway increased their travel time to certain places. Those of Zone 1, especially in the elevated freeway design subarea, were more conscious of circuitous travel to get on or across the freeway than those of the other zones.
- 6. The positive freeway effects upon the neighborhood dominated the negative freeway effects.
- 7. The effect upon housing values was neutral to positive but definitely not negative.
- 8. Travel habits tended to be unaffected except in those zones nearest the freeway and in the elevated design subarea.
- 9. The freeway did not cause or eliminate many hazards.
- 10. Displacees tended to locate outside the neighborhood.
- More respondents thought the neighborhood had been made better off than those who thought the neighborhood was worse off.

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## IMPLEMENTATION STATEMENT

Numerous factors must be evaluated in the location and design of a freeway. These factors often have interrelated results such that there are off-setting or negative consequences when any one factor is optimized. Yet, it is obvious that choice is facilitated when desirable features can be accommodated in a freeway project without penalty to other essential features. The far more difficult problem is when an alternative would involve a conflict and thus a trade-off in costs and other effects. This report presents the viewpoints of residents near a freeway. Even these viewpoints are not always in full accord. Thus the findings are of an advisory nature, it being understood that the <u>ceteris paribus</u> assumption seldom holds, and that in many respects freeway problems are as individualistic as human health.

# LIST OF TABLES

# Table No.

1.	Number of Dwelling Units, Number of Dwelling Units Sampled, and Expansion Factors by Zones Within Freeway Design Subareas	10
2	Sex, Race or Nationality Background, Age, and Education of Respondents by Zones Within Design Subareas, Zones and All Zones	14
3	Household Composition, Occupation, Employment Status and Family Income of Respondents by Zones Within Design Subareas, Zones, and All Zones	17
4	Type, Age, Outer Construction Material, Condition, Heated Area, Number of Rooms, Degree of Ownership Monthly Rent, and Estimated Value of Living Quarters of Respondents by Zones Within Design Subareas, Zones, and All Zones	20
5	Length of Respondent Residency at the Present Address and in the Neighborhood by Zones Within Design Subareas, Zones, and All Zones	24
6	Owners and Drivers of Automobiles or Trucks in Respondent Households and Modes of Transportation Used by Those Living in Respondent Households by Zones Within Design Subareas, Zones, and All Zones	26
7	Purposes of Trips Made by those Living in Respondent Households that Involved Crossing and Using the Freeway by Zones Within Design Subareas, Zones and All Zones	28
8	Relationships Between Selected Characteristics of Respondents for All Design Subareas Combined	30
9	Responses of Respondents by Type of Resident to the Question Concerning the Main Reason for Locating at Present Address for All Design Subareas Combined.	34
10	Percentage of Respondents Living Within Various Distances From Place of Employment	35

# Table No.

40

ંત્ર

11	Responses to Questions Concerning the Location of Residency at the Present Address by Zones Within Design Subareas, Zones, and All Zones	39
12	Responses to Questions Concerning Changes Observed in the Neighborhood After Moving There by Zones Within Design Subareas, Zones, and All Zones	41
13	Responses to Questions Concerning the Location of Katy Freeway in Neighborhood by Zones Within Design Subareas, Zones, and All Zones	53
14	Responses to Questions Concerning the Preferred Distance and Degree of Annoyance from the Freeway by Zones Within Design Subareas, Zones, and All Zones	55
15	Responses to Questions Concerning Freeway Appearance in Neighborhood by Zones Within Subareas, Zones, and All Zones	58
16	Responses to Questions Concerning Freeway Usefulness to Neighborhood by Zones Within Design Subareas, Zones, and All Zones	59
17	Responses to Questions Concerning Preferred Design Section of Freeway to Live by and Drive or Ride on by Zones Within Subareas	60
18	Age, Family State, Employment Status, Family Income and Degree Home Ownership of Prior Residents for All Design Subareas Combined	64
19	Responses of Prior Residents to Questions Concerning Anticipated Effects of the New Katy Freeway for All Design Subareas Combined	66
20	Responses of Prior Residents to Questions Concerning Problems Caused During Construction of Katy Freeway by Zones Within Design Subareas, Zones, and All Zones	67
21	Responses of Prior Residents to Questions Concerning After Period Effects of Katy Freeway on Individuals by Zones Within Design Subareas, Zones, and All	
	Zones	69.

# Table No.

22	Responses of Prior Residents to Questions Concerning Noises from Katy Freeway and Other Sources by Zones Within Design Subareas, Zones, and All Zones
23	Responses of Prior Residents to Questions Concerning Changes in Travel Time to Selected Places Due to Katy Freeway By Zones Within Design Subareas, Zones,
· .	And All Zones 80
24	Responses of Prior Residents to Questions Concerning After Period Effects of Katy Freeway on Neighborhood for All Design Subareas Combined
25	Responses of Prior Residents to Questions Concerning the Influence of Katy Freeway on Value of Homes in Neighborhood for all Design Subareas Combined
26	Responses of Prior Residents to Questions Concerning Changes in Neighborhood Travel Habits and Traffic Congestion Due to Katy Freeway by Zones Within Design Subareas, Zones, and All Zones
27	Responses of Prior Residents to Questions Concerning Hazards and Complaints Heard in Neighborhood Due to Katy Freeway by Zones Within Design Subareas, Zones, and All Zones
28	Responses of Prior Residents to Questions Concerning People and Places Displaced by Katy Freeway for Zone 1 and All Design Subareas Combined
29	Responses of Prior Residents to Questions Concerning the Overall Effect of Katy Freeway on People Who Had to Move and on the Neighborhood for Zone 1 and All Subareas Combined
APPENDI	X A TABLES
1	Critical Dates Involved in the Planning and Construction of Katy Freeway Through the Study Area
2	Katy Freeway Right of Way Takings in Different Uses Prior to Purchase Date by Freeway Design Subareas 100
3	Modes of Transportation Used by Respondent Households to Travel to and from Selected Destinations for All Design Subareas Combined 101

57

.

÷

έ.

# Table No.

Λ.

4	Responses of New and Prior Residents to Questions Concerning the Degree and Ways of Annoyance from Katy Freeway for All Design Subareas Combined 103
5	Responses of Prior Residents by Age Groups to Questions Concerning Anticipated Effects of the New Katy Free- way for Zone 1 and All Zones of Design Subareas Combined
6	Responses of Prior Residents by Age Groups to Questions Concerning Problems Caused During Construction of Katy Freeway for Zone 1 and All Zones of Design Subareas Combined 105
7	Responses of Prior Residents by Age Groups to Questions Concerning After Period Effects of Katy Freeway on Individuals for Zone 1 and All Zones Combined
8	Responses of Prior Residents by Age Groups to Questions Concerning Noises from Katy Freeway and Other Sources for Zone 1 and All Zones
9 <sup>°</sup>	Responses of Interviewers to Questions Concerning Sight of Freeway and Noise by Zones and All Zones

## LIST OF FIGURES

## Figure No.

1	Map of Houston showing the location of the study area segment along the Katy Freeway
2	Map of the depressed freeway design subarea 6
3	Map of the on grade freeway design subarea
4	Map of the elevated freeway design subarea 8
5	Map of Houston showing the location of places of employment of respondents classified according to prior (old) and new residents
6	Graph showing the relationship of the percentage of affirmative answers concerning noise and the mean sound pressure level (dBA) to Distance from Katy Freeway in depressed freeway design subareas76
7	Graph showing the relationship of the percentage of affirmative answers concerning noise and the mean sound pressure level (dBA) to distance from Katy

The opinions, findings and conclusions expressed in this report are those of the authors and not necessarily those of the Texas Highway Department or the Federal Highway Administration.

## INTRODUCTION

### Purpose of the Study

The planning and building of urban freeways affect the lives and fortunes of many members of the urban community, particularly those living on or near the freeway right of way. Theppersonal experiences of and ensuing adjustments by these people represent a source of information that can serve as an input for use by agencies that design and build urban freeways.

The purpose of this report is to present the results of a survey of urban residents conducted to identify certain social, economic, and environmental effects of a freeway that was built in their neighborhood. While the study is not exhaustive, in that it does not specify all the effects and interrelationships, it is indicative of the preceptions that people have about how their lives and situations are affected by a freeway in their neighborhood.

This is the first in a series of surveys planned under a research study entitled "Social, economic and Environmental Factors in Highway Decision Making" conducted for the Texas Highway Department in cooperation with the Federal Highway Administration of the Department of Transportation. These surveys are considered "building block" studies that should have immediate application to the emerging problems of highway planning.

#### Study Area

The area selected for study is along a segment of Houston's Katy Freeway (Interstate Highway 10) that extends from Houston Avenue westward to Arabelle Street, as indicated in Figure 1. White Oak Bayou and two sets of railroad tracks constitute the general north-south boundaries of the study area. The maximum width is eleven city blocks and the minimum width is four blocks. The study area segment of Katy Freeway has been opened to traffic since December 1, 1968, following the planning, right of way purchase, and construction phases dating back to 1957. (See schedule of dates in Table 1 of Appendix A.)

Prior to the construction of Katy Freeway, most of the private properties within the right of way of the freeway in the study segment were in residential usage (See Table 2 of Appendix A). Only a few commercial businesses were affected, and these were located along the major arterial streets, e.g., Durham, Shepherd, Yale, Houston Heights, and Houston Avenue. In addition, three churches and parts of two public parks were involved in the freeway right of way.

The land usage within the study area is characterized by residential and small retail activities. Much of the new commercial enterprise is located along the Katy Freeway, which is the only major east-west traffic artery passing through the study area. Most of the other commercial activity is located along the above named north-south traffic arteries that cross the Katy Freeway.



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Figure 1. Map of Houston showing the location of the study area segment along the Katy Freeway.

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Overall, the area is dominated by modest single-family dwellings and sprinkled with apartment houses, duplexes, and garage apartments. On the fringes of the study area, light to heavy industrial activities have been present before and after the construction of the Katy Freeway. Some of the people living within the study area are employed by these industrial firms. In addition, one large city park (Memorial) is situated near the study area.

A major traffic artery (Washington Avenue), just south of the study area, runs more or less parallel to the Katy Freeway. In fact, the latter was so located to relieve traffic congestion on this street, which it did. Both routes serve downtown Houston.

A resident who had lived in the study area for at least seven years was regarded as a before construction period resident. Actually, this is a fairly long time period to ask such residents for their opinions regarding freeway effects. However, it was thought desireable to study a freeway that had been open to traffic at least two years. Also, no other freeway segment in Houston had a more favorable schedule of dates and could still meet other requirements, than the one selected for study. One of these requirements was to choose a study segment where the freeway design varied significantly with some sections being depressed below grade, others being on grade, and still others being elevated above grade. This requirement was based on the hypothesis that nearby residents prefer one design over another.

With the exception of the above differences in design, the Katy Freeway study area segment has about the same design throughout. It has five traffic lanes serving each direction. However, service roads are not continuous along the three sections with differing design features.

Another study requirement was to be able to obtain the opinions of residents living at varying distances from the freeway. It was hypothesized that residents prefer one distance over another. The above study segment had residential neighborhoods of sufficient width to make three zone comparisons for each of the three study sections of different freeway designs. The following criteria were used to define the distance zones:

Zone 1 - Properties abutting the freeway right of way.

Zone 2 - Properties not abutting the freeway and no more than 600 feet away from freeway.

Zone 3 - Properties 600 feet to 1,200 feet from freeway.

Within the study area, the neighborhoods adjacent to the respective design sections of the freeway were given the following freeway design subarea names:

Depressed - Sections I and II

On Grade - Sections I and II

Elevated - Only one section

These design subareas, with their respective sectional and zonal boundaries, are shown in Figures 2-4.





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Figure 3. Map of the on grade freeway design subarea.





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## Study Sample

Since time and resources were limited for this study, a less than 100 percent sample was necessary, at least for residents located in Zone 2 and 3. An attempt was made to obtain responses from all residents of Zone 1, since it was assumed that the greatest impact of the freeway would be felt by those living on abutting properties, regardless of differences in freeway design. Also, there was a smaller number of abutting residences. On the other hand, the number of Zone 2 and 3 residences was greater. Therefore, the number to be sampled in Zones 2 and 3 was set at 60 each. With each zone traversing all the design subareas, the 60 was divided three ways so that 20 residences would be sampled in each zone of each design subarea. Thus, stratified disproportionate sampling was the result.

Listings from the <u>Houston City Directory</u>, 1969 issue, were used to draw a systematic sample from each zone of each area. (The specific sampling procedures and reliability are described in Appendix B). Table 1 shows the number of dwelling units, number of dwelling units sampled, and expansion factors by zones within freeway design subareas. It shows that 229 (or nine percent) of the total 2,465 study area residences were sampled.

A questionnaire was designed and pretested. Then personal interviews were conducted with the heads of household, if possible, of the sample residences. The questions asked were in regard to: 1) characteristic information on the respondents and their

Freeway Design		Zone									
Subarea	1	2	3	All Zones							
Depressed		-		•							
Number of Dwelling Units Number of Dwelling Units Sample Expansion Factor	102 d 77 1.32	616 20 30.80	861 20 43.05	1,579 117 13.84							
On Grade	· .										
Number of Dwelling Units Number of Dwelling Units Sample Expansion Factor	19 d 15 1.27	178 20 8.90	253 20 12.65	450 55 8.91							
Elevated											
Number of Dwelling Units Number of Dwelling Units Sample Expansion Factor	25 d 17 1.47	172 20 8.60	239 20 11.95	436 57 8.35							
All Design Subareas											
Number of Dwelling Units Number of Dwelling Units Sample Expansion Factor	146 d 109 1.34	966 60 16.00	1,353 60 22.22	2,465 229 10.76							

Number of Dwelling Units, Number of Dwelling Units Sampled nd Expansion Factors by Zones Within Freeway Design Subareas<sup>1</sup>

Table 1

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<sup>1</sup>An expansion factor is the inverse of the sampling ratio or proportion.

households; 2) the respondents' opinions concerning the location of their present dwellings; 3) the respondents' opinions concerning the location, design, and impact of Katy Freeway on the residents; and 4) the respondents' opinions concerning their driving and riding experience on Katy Freeway. Opinions concerning the impact of Katy Freeway were solicited only from those respondents who had lived in the study areas before construction began on the study segment of the freeway. A total of 138, or 60 percent, of the sample respondents lived in the study areas during the "before" period. Respondents were asked open-end questions as well as questions requiring yes or no answers. Some questions could be regarded as "check" questions.

The answers to all questions were coded and tabulated to obtain absolute sample frequencies for the nine zone-subarea strata. Then the appropriate expansion factors, appearing in Table 1, were applied to the absolute sample frequencies to obtain expanded population frequencies. The zonal frequencies within freeway design subareas were combined to obtain zone and total frequencies. The absolute sample and expanded population frequencies were used to generate the percentage or relative frequencies that appear in the tables. The actual numbers of respondents from the sample upon which the percentage frequencies are based also are shown. The averages given in this report were weighted to take into account unequal sampling rates among the nine strata.

Chi-square  $(\chi^2)$  tests of significance were used on appropriate frequency sets to ascertain the degree of independence of the frequencies. The  $\chi^2$  tests were limited to the data on the personal characteristics of respondents and data derived from responses to objective (such as the yes-no type) questions. Questions (such as the open-end questions) that generated many different answers usually produced many frequency cells with small or zero values, thus causing the  $\chi^2$  results to be of questionable value. The  $\chi^2$  tests were made using only the absolute numbers in the sample frequencies.

## CHARACTERISTICS OF RESPONDENTS

#### General

General characteristics of the respondents are presented and discussed below. These include personal characteristics, household composition, occupation and employment status, and family income. The data in the tables are expressed in percentages for nine zones within three freeway design subareas, three zones, and all zones (combined). It might be well to emphasize again that the percentages for the three zones and all zones were expanded to take into account unequal sampling rates among the nine strata; whereas, the percentages for the nine zones within the three design subareas are based on actual or absolute sample numbers.

#### Personal

The personal characteristics of the respondents (e.g. sex, race or nationality background, age, and education) are presented in Table 2. Although it was not practicable to interview every male head of household, about two-thirds of the respondents were males. Of the female respondents, about 30 percent were substitutes for the head of household. Using absolute sample numbers in the  $\chi^2$  test, the overall difference among the male-female frequencies of the nine zone-subarea strata was not significant at the .05 probability level.

Satisfactory representation on the basis of race or nationality background was obtained in the sample, with the Anglos representing a little over one-half of the respondents from all zones. The

-	D	epress	sed	(	On Gra	ade	E	levat	ed	All Design Subareas			
Characteristics		Zone			Zone				Zone	Zone	Zone	Zone	A11
·	1	2	3	1	2	3	1	2	3	1	2	3	Zones
<sup>3</sup>		. u		(d.	ata ez	xpres	sed in	n per	centa	ges) <sup>2</sup>			
Sex Male	75	65	70	53	75	75	71	65	60	72	67	69	68
Female	25	35	30	47	25	25	29	35	40	28	33	31	32
Race or Natl. Backgroun	nd												
Anglo	52	55	50	20	50	60	23	55	85	43	54	58	56
Mexican-American	23	20	30	0	10	15	12	5.	10	18	15	24	20
Black	25	25	20	80	40	25	65	40	5	39	30	18	24
Age													1. B
Less than 30 years	20	20	5	7	20	40	18	-30	30	17	22	16	19
30 - 39	9	10	35	13	15	15	0	15	10	8	12	27	20
40 - 49	17	30	20	13	10	15	23	10	10	18	23	17	19
50 - 59	18	0	20	20	15	0	6	20	20	16	6	16	12
60 or more	36	40	20	47	40	30	53	25	30	41	37	24	30
Education						• •					•		
Less than 5 years	18	10	15	0	0	0	12	5	5	15	7	10	9
5 - 8	35	40	40	27	25	25	35	25	25	34	35	35	35
9 - 12	40	50	45	73	55	55	41	65	40	45	53	46	49
More than 12	7	0	0	0	20	20	12	5	30	6	5	9	7
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)

Sex, Race or Nationality Background, Age, and Education of Respondents by Zones Within Design Subareas, Zones and All Zones

<sup>1</sup>The percentages were expanded to take in account unequal sampling rates among the nine zones within the three freeway design subareas.

<sup>2</sup>Except that data in parentheses are absolute numbers. The percentages were derived by using the "Number of Respondents" as the base.

 $^3$ Using absolute sample numbers in  $\chi^2$  test, the overall difference among the nine zones within subareas is not significant at the .05 probability level.

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#### Table 2

percentage of Blacks decreased as the distance from the freeway increased, as indicated by the zone breakdown. The opposite was true for the Anglos. However, this was not the case for zones within the depressed freeway design area, where the percentages were about constant from zone to zone. The ethnic representation of all zones more closely approximates the current citywide racial and nationality distribution than does the 1960 Census which reported the following for Houston: Anglo - 70%; Black - 23%; and Mexican-American - 7%.

Again, good representation on basis of age was obtained in the sample, with the majority of the respondents being from 30 to 60 years of age. The average age of the respondents was 48 years and varied little from zone to zone. The largest age group was that of 60 or more years which had 30 percent of the respondents. Zone 1 had the highest percentage of this older group, with the percentage declining as the distance from the freeway increased. Nearly 50 percent of the respondents of Zone 1 in the on grade and elevated design subareas were 60 or more years old, whereas, only 36 percent of those of Zone 1 in the depressed freeway design subarea were in this age group.

The educational level of respondents in the sample averaged about nine years. Almost 50 percent of them were in the 9-12 year group. Respondents in the on grade and elevated design subareas had attained a higher level of education than those of the depressed freeway design subarea, there being a two-year (based on averages) differential between them. Zone 1 respondents averaged almost one year less education than those of the other zones.

### Household Composition

The family stage, size of household, and number of children of respondents are presented in Table 3. About one-half of the respondent households had children, with Zone 2 having a lower percentage than Zones 1 and 3. Also, the on grade design subarea had a lower percentage of households with children than the other design subareas.

Most of those living alone were widows. Married couples composed the majority of the "couple or other" group. About 50 percent of the respondent households had one or two members, and only 11 percent had six or more. There were no children in 48 percent of the households.

## Occupation, Employment Status, and Family Income

The occupation, employment status, and family income of the respondents are also presented in Table 3. In regard to occupation, more than 40 percent of the heads of households were blue collar employees (not a salesman or not doing office type of work). Another 30 percent were retired, semi-retired, or were housewives. Of the seven percent of white collar employees, very few lived in the depressed freeway design subarea.

Regarding the employment status, about two-thirds of the respondents were fully employed. The same was true on a zone basis. But the percentage of retired, unemployed, and other (such as housewives or semi-retired persons) respondents fluctuated considerably from zone to zone. The percentage of unemployed respondents was highest in Zone 3 of the depressed freeway. All

		Depressed			<u>On Grade</u>			Elevated			Desi	gn Sul	bareas
Characteristics	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	All Zones
				(dat	a exp	ressed	l in	perce	ntage	s) <sup>2</sup>			'` ''
Family Stage													
Single person	13	25	5	34	15	10	29	25	25	19	23	10	15
Couple or other <sup>3</sup>	35	35	20	13	35	45	29	50	40	. 32	38	28	33
Family with children	52	40	75	53	50	45	42	25	35	50	39	62	52
Size of Household													
1 or 2	49	60	30	53	45	60	71	70	75	53	59	44	50
3 - 5	38	30	50	40	45	40	12	25	25	34	32	44	39
6 or more	13	10	20	7	10	0	17	5	0	13	9	12	11
Number of Children													
None	48	60	25	47	50	55	5 <b>9</b>	75	65	50	61	38	48
1 - 2	29	20	35	40	30	35	23	5	35	29	19	35	28
3 - 5	21	20	35	13	20	10	18	15	0	19	19	24	22
6 or more	2	0	5	0	0	0	0	5	0	2	1	3	2
Occupation													
Owner of business	6	5	5	0	5	5	0	5	0	5	5	4	5
Professional ,	7	5	5	0	10	0	6	0	10	6	5	5	5
White Collar Employee <sup>4</sup>	5	0	0	47	25	15	6	10	30	11	6	8	7 .
Blue Collar Employee	57	50	65	20	40	55	53	60	25	51	50	56	53
Retired and other <sup>5</sup>	25	40	25	33	20	25	35	25	35	27	34	27	30
Employment Status													
Retired	16	5	20	7	5	15	29	15	30	17	7	21	15
Fully Employed	75	70	60	53	80	80	53	70	55	68	72	63	67
Unemployed	1	0	20	13	5	Ō	0	10	0	3	3	13	8
Other <sup>6</sup>	8	25	0	27	10	5	18	5	15	12	18	3	10

## Table 3

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Household Composition, Occupation, Employment Status and Family Income of Respondents by Zones Within Design Subareas, Zones, and All Zones

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#### Table 3 (continued)

Depressed On Grade Elevated All Design Subareas Characteristics 3 Zones (data expressed in percentages)<sup>2</sup> Income Level<sup>7</sup> Less than \$3,000 \$3,000 - \$4,999 \$5,000 - \$6,999 . 16 \$7,000 - \$8,999 \$9,000 - \$10,999\$11,000 or more No response (77) (20) (20) (15) (20) (20) (17) (20) (20) (109) (60) (60) (229) Number of Respondents

Household Composition, Occupation, Employment Status and Family Income of Respondent by Zones Within Design Subareas, Zones, and All Zones

<sup>1</sup>See footnote 1 of Table 2.

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<sup>2</sup>See footnote 2 of Table 2.

<sup>3</sup>Includes married couples, two single persons living together, or other adults with grandchildren.

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 $^4$ An employee who was a salesman or worked in an office.

<sup>5</sup>Other is composed mainly of housewives.

<sup>6</sup>Includes housewives and semi-retired persons.

<sup>7</sup>Represents annual family income for 1969.

zones within the elevated design subarea had a higher percentage of retired respondents than the corresponding zones within the other two design subareas.

Finally, Table 3 shows that 60 percent of the respondents had a family income in 1969 of less than \$7,000 per year. The average for all respondents was \$5,774. On a zonal basis, the average incomes were \$5,201 for Zone 1, \$5,441 for Zone 2, and \$6,089 for Zone 3. This shows that the average income increased as the distance from the freeway increased. It should be recalled that the percentage of Black respondents followed the inverse of this pattern. The percentage of Zone 3 respondents of each freeway design subarea was larger for the higher income groups than for those of Zones 1 and 2.

## Living Quarters

The description, condition, age, size, degree of ownership, level of rent, and estimated value of the living quarters of respondents in the sample are shown in Table 4 and discussed below.

## Description, Condition, Age, and Size

Almost three-fourths of the respondents lived in single family residences, with the others living in duplexes, garage apartments, or apartment houses. The percentage of those living in apartment houses increased as the distance from the freeway increased. A very small percentage of those of the depressed freeway design subarea lived in apartment houses compared to those of the other design subareas.

## Table 4

Type, Age, Outer Construction Material, Condition, Heated Area, Number of Rooms, Degree of Ownership, Monthly Rent, and Estimated Value of Living Quarters of Respondents by Zones Within Design Subareas, Zones, and All Zones

	Depressed				On Grade			levat		All Design Subareas <sup>1</sup>				
Characteristics		Zone								Zone			A11	
	1	2	3	1	2	- 3	1	2	3	1	2	3	Zones	
				(d.	ata e:	xpres	sed in	n per	centa	ges) <sup>2</sup>				
Type of Dwelling														
Single Family	84	90	70	93	55	65	76	65	60	84	79	67	73	
Duplex and Garage Apt.	16	5	25	0	30	15	6	20	15	12	12	9	10	
Apartment House	0	5	5	7	15	20	18	15	25	4	9	24	17	
Age of Dwelling														
Less than 8 years	3	5	10	0	5	0	0	5	10	2	5	8	6	
8 - 15	1	10	20	0	10	0	12	10	15	3	10	15	13	
16 - 25	17	5	25	13	10	25	17	20	5	16	9	22	16	
26 - 35	23	10	15	20	25	10	12	30	5	21	16	12	15	
More than 35	56	70	30	67	50	65	59	35	65	58	60	43	50	
Outer Construction Mater	ial													
Wood	82	80	65	86	75	75	88	90	50	84	81	64	72	
Asbestos	9	10	30	. 7	15	20	0	5	20	7	10	26	19	
Masonry	5	0	5	7	5	5	12	5	10	6	2	6	4	
Other	4	10	0	0	5	0	0	0	20	3	7	. 4	5	
Condition of Dwelling														
Excellent	10	5	5	26	20	15	0	5	20	11	8	10	9	
Good	42	55	50	47	55	45	41	55	60	42	55	51	52	
Fair	39	25	25	20	25	35	53	25	15	39	25	25	26	
Poor	9	15	20	7	0	5	6	15	5		12	14	13	
Heated Area							_							
Under 500 sq. ft.	14	20	35	13	40	35	18	30	20	15	26	32	29	
500 - 999	55	45	25	53	35	30	59	55	25	55	45	26	35	
1000 - 1499	29	30	35 5	27	25	35	18	15	45	26	26	37	32	
1500 or more	2	5		7	0	0	5	0	10	. 4	3	- 5	4	

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#### Table 4 (continued)

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Type, Age, Outer Construction Material, Condition, Heated Area, Number of Rooms, Degree of Ownership, Monthly Rent, and Estimated Value of Living Quarters of Respondents by Zones Within Design Subareas, Zones, and All Zones

	·De	epress	sed	(	On Gra	ade	E	levate	ed	All Design Subareas			
Characteristics										Zone			A11
	1	2	3	1	2.	.3	. 1	2	3	1	2	3	Zones
				(data	expre	essed	as p	ercent	tages	) <sup>2</sup>			
Number of Rooms		_				·				• •		• •	
1 - 3	8	, 5	25	13	15	15	18	10	.0	10	8	19	14
4 - 5	60	45	45	60	60	60	29	70	45	55	52	48	50
6 or more	32	50	30	27	25	25	53	20	55	35	40	33	36
Degree of Ownership <sup>3</sup>													
Owner	61	60	40	67	50	40	59	35	50	62	54	42	48
Renter	39	40	60	33	50	60	41	65	50	38	46	58	52
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)
Monthly Rent													
Less than \$45	10	38	25	0	11	8	57	0	10	18	23	19	20
\$45 — \$64	52	37	59	20	45	8	29	46	20	44	40	43	43
65 - 84	31	25	0	60	22	42	0	23	10	28	23	10	15
85 - 104	.7	0	8	20	22	26	14	15	10	9	8	12	11
105 or more	0	0	8	0	0	8	0	8	.50	0	2	14	11
No Response	0	0	0	0	11	8	0	8	0	0	.4	2	7
Number of Respondents	(29)	(8)	(12)	(5)	(10)	(12)	(7)	(13)	(10)	(41)	(31)	(34)	(106)
Estimated Value of Dwell	ling <sup>4</sup>												
Less than \$5,000	9	11	14	7	18	15	15	38	0	10	17	12	14
\$5,000 - \$7,999	18	28	30	21	46	15	23	2.4	17	19	29	24	26
8,000 - 10,999	31	33	7	30	18	38	23	15	25	28	29	16	2 <b>2</b>
11,000 - 13,999	11	17	21	14	0	24	8	15	25	11	14	22	18
14,000 - 16,999	13	6	14	14	9	8	23	8	25	14	6	15	11
17,000 or more	18	5	7	7	9	0	8	0	8	14	5	6	7
Don't know	0	0	7	7	0	0	0	Ò	0	4	0	5	3
Number of Respondents	(65)	(18)	(14)	(14)	(11)	(13)	(13)	(13)	(12)	(92)	(42)	(20)	(173)

<sup>1</sup>/<sub>2</sub>See Footnote 1 of Table 2. <sup>3</sup>/<sub>3</sub>See Footnote 2 of Table 2. <sup>3</sup>Using absolute sample numbers in  $\chi^2$  test, the overall difference among the nine zones within <sup>4</sup>subareas is not significant at the .05 probability level. <sup>4</sup>Includes only single family residences.

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Nearly two-thirds of the respondents lived in wood-framed buildings. Only four percent lived in masonry structures. About half of the dwellings were considered by the interviewers as being in good condition. As a whole, the dwellings in the on grade design subarea were in better condition than those in the elevated and depressed freeway subareas, especially the latter. Actually, these predominantly wood frame dwellings were in fair condition considering that they averaged 34 years of age. In fact, 50 percent of them were more than 35 years old. The average age decreased with distance from the freeway, perhaps due to the newer apartment houses in Zones 2 and 3.

The average heated area of the dwellings was 858 square feet. Only four percent of the dwellings had 1,500 or more square feet of heated area. A lower percentage of dwellings under 500 square feet was located in Zone 1 than in Zones 2 and 3. The highest percentage of dwellings with 1,500 or more square feet was located in Zone 3 of the elevated design subarea.

The average number of rooms in the dwellings was five, but 36 percent of them had six or more rooms. A higher percentage of the dwellings with six or more rooms was found in the elevated design subarea than in the other design subareas. About 75 percent of the dwellings had one or two bedrooms, and 95 percent had only one bathroom.

### Degree of Ownership, Rent Paid, and Estimated Value

The living quarters of the respondents were 48 percent owned and 52 percent rented. The percentage of owned dwellings decreased as the distance from the freeway increased, with this being the pattern for every freeway design subarea. However, according to the  $\chi^2$  test based on actual sample numbers, the overall differences among the nine zones within subareas were not significant at the .05 probability level.

Those respondents who rented their living quarters paid an average monthly rent of \$67, with 63 percent of them paying less than \$65. In some cases, these monthly rent figures included part of the utilities. The average monthly rent was about \$30 higher in the elevated design subarea compared to the depressed freeway subarea. This difference was partly due to the better quality of dwellings in the elevated subarea, especially in Zone 3. The average estimated value of all single family residences was \$9,851, 80 percent of which were valued under \$14,000. There were differences of more than \$1,000 between the averages of the above mentioned design subareas.

### Length of Stay

The length of respondent residency at the present address and in the neighborhood is presented in Table 5.

# Table 5

Length of Respondent Residency at the Present Address and in the Neighborhood by Zones Within Design Subareas, Zones, and All Zones

	D	epres	sed		On Gra	ade	E	levat	ed	A11	Desig	n Sub	areas <sup>1</sup>
Length of Residency	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	A11
	1	. 2	3	1	2	3	1	2	3	1	2	3	Zones
				(data	expr	essed	in p	ercen	tages	) <sup>2</sup>			
At Present Address													
Less than 2 years	32	20	35	20	35	45	35	55	45	32	29	39	35
2 - 6	16	30	35	27	10	20	0	10	5	15	23	27	24
7 - 11	9	5	15	6	10	15	6	0	0	8	5	12	9
12 or more	43	45	15	47	45	20	59	35	50	45	43	22	32
In the Neighborhood <sup>3</sup>				:									
Less than 2 years	22	10	30	20	30	30	12	50	45	20	21	33	27
2 - 6	13	25	30	20	5	5	12	15	0	14	19	20	20
7 - 11	4	10	5	13	4	14	0	0	0	4	7	6	6
12 or more	61	55	35	47	50	40	76	35	55	62	53	41	47
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

 $^{3}$  The boundaries of the neighborhood were assumed to be the same as those of the design subareas.

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### At Present Address

Almost one-third of the respondents had lived at their present address for 12 or more years with the average length of stay being about 11 years. The Zone 1 respondents had lived the longest at their present addresses.

### In Neighborhood

Almost one-half of the respondents had lived in the neighborhood for 12 or more years, with the average being about 16 years. Again, the Zone 1 respondents had lived the longest in the neighborhood.

### Transportation

Information concerning owners and drivers of automobiles or trucks, modes of transportation used, purposes of trips made crossing or using Katy Freeway (as indicated by those living in the respondent households) is presented in Table 6 and discussed below.

# Owners and Drivers of Vehicles

According to Table 6, nearly three-fourths of the respondents owned and drove an automobile or truck. In some cases, other members of the households were the owners and/or drivers. of an automobile or truck. Nearly one-fourth of the respondent households had no owners or drivers of such vehicles. Almost one-half of the respondent households in Zone 1 of the elevated design subarea had no owners or drivers of vehicles.

Owners	s ai	n d	Drivers	of	Automo	obil	es	or	Trucks	in	Respondent	Households	and	Modes
(	of 3	Tra	nsporta	tior	n Used	by	Tho	se	Living	in	Respondent	Households	bу	
			Zon	es V	Vithin	Des	ign	Su	ıbareas	, Zo	ones, and A	11 Zones		

		epres			On Gra			levate			)esigr		
Items	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	A11
	1	2	3	1	2	3	1	2	3	1	- 2	3	Zone
				(d.	ata e	xpres	sed in	n per	centa	ges) <sup>2</sup>			
Owner of Automobile or	the second s												
Respondent	84	70	75	82	90	70	58	75	70	79	75	73	74
Others	3	5	0	0	0	5	0	0	10	2	3	3	3
None	13	25	25	18	10	25	42	25	20	19	22	24	23
Driver of Automobile of													
Respondent	81	75	70	73	80	75	53	90	70	75	79	71	74
Others	8	5	5	7	0	5	0	0	5	6	3	5	4
None	11	20	25	20	20	20	47	0 10	25	19	18	24	22
Mode of Transportation	Used												
Automobile or Truck	95	95	95	80	100	90	88	100	95	92	97	94	9.5
Bus	27	40	30	47	40	30	29	55	35	30	43	31	35
Taxi	10	5	10	13	10	10	12	15	15	10	8	11	10
Walk	47	80	30	20	55	70	65	45	70	46	69	45	54
Other	1	0	0	0	0	0	0	5	5	1	1	1	1
Number of Responses	(139)	(44)	(33)	(23)	(41)	(40)	(33)	(44)	(44)	(195)(	(129)(	117)	(441)
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)(	( 60) (	60)	(229)

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<sup>2</sup>See Footnote 2 of Table 2.

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# Table 6

### Modes of Transportation Used

According to Table 6, 95 percent of the respondent households used an automobile or truck for transportation. Buses (city and school) were used by only one-third of the households. Walking was one of the modes used for over one-half of the respondent households, especially for travel to local grocery stores or to school.

Modes of transportation used by respondent households to travel to and from selected destinations (place of employment, schools, grocery stores, other shopping facilities, church, doctors and dentists, parks, other recreational facilities, homes of relatives and friends, and downtown) are presented in Table 3 of Appendix A.

### Travel Involving Katy Freeway

Table 7 shows the purposes of trips made by those living in the respondent households that involved crossing and using the Katy Freeway. The percentage of respondent households that crossed the freeway for the named purposes ranged between six percent going to and from schools and 48 percent going to and from certain shopping facilities. Those of the Zone 1 households tended to cross the freeway more than those of the other two zones.

The percentage of respondent households that used the freeway for the named purposes ranged between three percent going to and from school and 65 percent going to and from downtown Houston. In general, a higher percentage of the respondent

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Purposes of Trips Made by those Living in Respondent Households that Involved Crossing and Using the Freeway by Zones Within Design Subareas, Zones, and All Zones

	De	epres	sed	(	On Gra	ade	E	Levato	ed	A11 1	Design	n Suba	areas
Purpose of Trips	Zone 1	Zone 2	Zone 3	All Zones									
	<u> </u>		·····			-		<u></u>		. 2			
				(d.	ata e:	kpress	sed in	n per	centa	ges)			-
Crossing Freeway													
Place of employment	31	30	20	13	30	30	6	. 35	30	24	31	24	27
Schools	10	5	10	0	0	5	12	··O	5	9	3	8	6
Grocery stores	61	50	30	40	65	10	41	25	15	55	48	24	35
Other shopping facilities	7.1	55	45	53	70	25	53	25	50	65	52	42	48
Churches	22	25	5	7	20	0	47	20	5	24	23	4	13
Doctors and dentists	39	20	20	20	35	30	41	15	35	37	22	25	24
Parks	25	30	15	7	30	10	18	5	30	21	26	17	21
Other recreational		÷ .											
facilities	16	20	30	7	15	. 20	24	20	45	16	19	31	25
Homes of relatives and													
friends	57	35	30	60	35	45	41	50	35	55	38	34	37
Downtown	20	25	15	7	40	40	24	20	50	18	27	26	26
Jsing Freeway						1					÷.		
Place of employment	48	40	40	26	45	45	35	50	35	43	43	40	41
Schools	4	5	5	33	0	0	Õ	- 0	0	3	3	3	3
Grocery stores	14	20	20	Ō	25	5	12	10	10	12	19	15	17
Other shopping facilities	43	40	35	20	55	50	24	50	50	36	45	40	42
Churches	10	5	10	7	15	0	6	20	10	9	10	8	9
Doctors and dentists	27	30	45	7	20	35	6	35	25	21	29	40	34
Parks	26	2.5	30	27	15	25	18	30	20	25	24	27	26
Recreational facilities	34	40	30	33	30	60	18	45	60	31	39	41	40
Homes of relatives and		• -	• -					•-				• =	
friends	53	60	40	33	50	55	24	70	60	46	61	46	52
Downtown	62	70	70	47	55	60	29	60	55	55	65	65	65
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)

See Footnote 1 of Table 2.

 $^2$  See Footnote 2 of Table 2. Also, these percentages represent positive responses.

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households used the freeway for more distant trips (downtown, homes of relatives and friends, and other shopping and recreational facilities) than for shorter trips in or near the neighborhoods.

### Relationships Between Selected Characteristics

It was considered important to relate the opinions and experiences of respondents to major characteristics such as length of residency in neighborhood (prior versus new resident), degree of ownership (owner versus renter), and age of respondent (under 60 years versus 60 and over). Analytically, these three characteristics were regarded as the most likely to yield worthwhile results. In fact, a large number of questions were asked prior residents only. The relationships between the above named characteristics are presented in Table 8 and discussed here.

A study of the percentages in Table 8 reveals a close relationship between prior residents and owners. The same was true for new residents and renters. When these two characteristics were compared with age of respondents, it was found that the prior residents were essentially owners divided about evenly into two age groups (under 60 years and 60 and over). On the other hand, the new residents were mainly renters under 60 years of age.

The above relationships were strong for the Zone 1 respondents, but they were not so strong for the Zone 2 and 3 respondents. Zones 2 and 3 had a somewhat higher percentage of owners who were 60 and over than did Zone 1. Also, Zone 3 had a higher percentage of

Characteristics		bareas Combined
of Respondents	Absolute	Expanded <sup>2</sup>
	(data expressed	in percentages)
Prior Residents <sup>4</sup>	60	53
Owners	49	41
Under 60 years	19	17
60 and over	30	24
Renters	11	12
Under 60 years	9	9
60 and over	2	. 3
New Residents	40	47
Owners	4	7
Under 60 years	3	- 5
60 and over	1	2
Renters	36	40
Under 60 years	33	37
60 and over	3	3
Number of Responder	nts (229)	(229)

Table 8

Relationships Between Selected Characteristics of Respondents for All Design Subareas Combined

<sup>1</sup>Based on absolute sample totals.

<sup>2</sup>See Footnote 1 of Table 2.

<sup>3</sup>See Footnote 2 of Table 2.

<sup>4</sup>A prior resident is a respondent who lived in the neighborhood at least seven years or prior to construction of Katy Freeway.

respondents under 60 years old than did Zones 1 and 2.

### Summary

It was found that the majority of the respondents were males, averaging 48 years of age. Their education averaged about nine years; 50 percent of the households were made up of no more than two persons.

About two-thirds of the respondents were fully employed, and about one-half of them were blue collar employees. Their average family income was \$5,774 in 1969.

About three-fourths of the respondents lived in wood framed, single family residences. The average age of the dwellings was 34 years; about one-half of the structures were in good condition. The heated area averaged 858 square feet, and the average number of rooms was five. Forty-eight percent of the dwellings were owner-occupied. The others were rented, with the average monthly rent being \$67. The average estimated value of the single family residences was approximately \$10,000.

The respondents had lived at their present addresses an average of 11 years and in their present neighborhoods an average of 16 years. About 75 percent of them owned and drove an automobile or truck. However, 95 percent of the respondent households used an automobile or truck for transportation. Members of the respondent households frequently crossed the Katy Freeway, especially to shop for groceries and other goods. Also, the freeway was used frequently for travel, especially to places a

considerable distance from the neighborhood.

The characteristics used most frequently in analyzing the responses to questions were length of residency and age of respondent.

# OPINIONS OF RESPONDENTS CONCERNING LOCATION OF RESIDENCY

This section examines the results of the responses to a series of questions that were designed to explore: (1) the reasons for locating at present addresses; (2) the advantages and disadvantages of living at current addresses; and (3) the observed changes in the neighborhood.

# Reasons for Locating at Present Address

As indicated by the data in Table 9, wanting to be in a good neighborhood was the reason most frequently given for locating at present addresses.<sup>1</sup>

Being close to work<sup>2</sup> and schools and staying at the family home place were the next most important reasons. When the responses were classified according to the length of time the respondents had resided in the neighborhood, some noticeable differences between prior and new residents emerged. The prior residents gave the following responses as the most important reasons for locating at their present addresses: (1) good neighborhood; (2) old home place; (3) area of no liquor sales; and (4) closer to schools. The new residents gave different

<sup>&</sup>lt;sup>1</sup>The category "Other Reasons" contains all unique responses as well as several responses that were not related to the location or composition of the neighborhood, for example, need for a larger house, had to move from previous address, did not like previous neighbors and decided to move, etc.

<sup>&</sup>lt;sup>2</sup>The actual distances from home to place of work for new and prior residents are presented in Table 10 and Figure 5. The data reveal that for the shortest home-to-work trips, 42 percent of the prior residents traveled less than three miles as compared to 32 percent of the new residents. For trips of 3-5.9 miles, 36 percent of the new residents (compared to 26 percent of the prior residents) were involved. Only 9 percent of all employed respondents had home-to-work trips greater than nine miles.

Responses		esidents <sup>1</sup>		lesidents	A11
Question	Absolute <sup>2</sup>	Expanded <sup>3</sup>	Absolute <sup>2</sup>	Expanded <sup>3</sup>	Residents
	(dat	a expressed	in percent	ages) <sup>4</sup>	
lain Reason for Located at Pre					
Good neighborhood	31	27	9	8	21
Close to work	6	3	7	10	9
01d home place	10	10	3	5	9
Close to schools	7	9	12	11	8
Close to parents or children	7	2	12	13	7
Centrally located	5	5	7 .	8	6
Convenient access to freeway	0	0	14	14	6
Close to shopping facilities	2	8	0	0	4
Clese to downtown	1	3	1	1	2
Area of no liquor sales	4	10	0	0	
Other reasons	55	44	52	50	50
None or don't know	2	9	3	1	1
Number of Responses	(179)	(179)	(117)	(117)	(285)
Number of Respondents	(138)	(138)	( 91)	( 91)	(229)
See Footnote 4 of Table 8.				······································	
See Footnote 1 of Table 8.					
See Footnote 1 of Table 2.					

# Responses of Respondents by Type of Resident to the Question Concerning the Main Reason for Locating at Present Address for All Design Subareas Combined

<sup>4</sup>See Footnote 2 of Table 2.

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# Table 9

# Table 10

Percentage of Respondents Living Within Various Distance From Place of Employment

Distance to Place		e of Respondent	
of Employment	Prior Residents <sup>2</sup>	New Resident	s Total
	(data expr	essed in percen	tages) <sup>3</sup>
Less than 3 miles	42	32	36
3 - 5.9	26	3.6	32
6 - 8.9	24	22	23
9 - 12	4	10	7
More than 12	4	0	2
Number of Responde	ents (54)	(63)	(117)

<sup>1</sup>Actual sample respondents who were employed at the time of interview. It includes only those who had a single principle place of employment.

<sup>2</sup>See Footnote 3 of Table 8.

<sup>3</sup>Except that data in parentheses are absolute numbers. The percentages are not expanded to take into account unequal sampling rates among the zones by design subareas.



Figure 5. Map of Houston showing the location of places of employment of respondents classified according to prior (old) and new residents.

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. N. reasons and named the following as the most important ones: (1) convenient access to freeway; (2) close to parents or children; (3) close to schools; and (4) close to work. Of the top four reasons, only one was named by both groups, i.e., being close to school. Locating in the neighborhood after the freeway was begun, the new residents put primary emphasis on having convenient access to the freeway. This suggests that once located, a freeway will likely become a positive neighborhood feature in attracting new residents.<sup>3</sup>

Although only two percent of the prior residents stated that being close to parents or children was a reason for locating at their present addresses, the new residents gave that reason a very high priority. With regard to the importance of living in a good neighborhood, the younger, more mobile new residents were less concerned about the overall quality of the neighborhood than they were about certain of its specific features. On the other hand, for the prior residents, living in a good neighborhood was the most important reason they had for locating at their present addresses.

### Advantages and Disadvantages in Living There

Open-ended questions were asked eliciting opinions about the advantages and disadvantages of living at current addresses. These responses are presented in Table 11 by zones within design subareas.

<sup>&</sup>lt;sup>3</sup>A zone by subarea breakdown revealed that convenient access to the freeway tended to be more important to those residents in Zones 2 and 3 than to those residents in Zone 1.

Having convenient access to the freeway was the greatest advantage mentioned. Within the design subareas, this advantage tended to be less pronounced as the distance from the freeway to the residence increased. The primary exception to this occurred in the elevated section subarea where the absence of frontage roads made access more difficult (see footnote 3).

The next most mentioned advantage concerned the proximity of residences to various kinds of economic activities: places of work, shopping facilities, downtown, and grocery stores. Although there were differences in rates of responses concerning these advantages, there appeared to be no pattern in the variation when the responses were categorized by the location and design criteria.

Another set of advantages given by the respondents emphasized the importance they attached to their proximity to sources of social activities such as friends, relatives, schools, and churches. Also, significant mention was made of the closeness to the city bus line as an important advantage of their residential location. This particular advantage was the most important to residents in the elevated design subarea, where the rate of automobile ownership was the smallest.<sup>4</sup>

The nearness of the freeway and its related noise were disadvantages most mentioned by residents living in Zone 1. As the second part of Table 11 shows, being too close to the freeway and hearing the freeway noise accounted for 22 percent and

See: Table 6, page 26.

_		press			n Gra		E1	evate	d	A11 1	Desig	n Sub	areas <sup>1</sup>
Responses to Questions	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	All Resident
	•			(da	ta ex	press	ed in	perc	entage	es) <sup>2</sup>			
reatest Advantage in Living 7	[here?								_				
Convenient access to freeway	27	30	20	40	35	30	18	55	3.5	27	35	25	29
Close to work	13	30	10	0	25	30	12	25	10	11	28	14	
Close to other shopping				•				23	10	11	20	14	19
facilities	5	5	25	7	15	10	0	5	10	5	7	20	1/
Close to downtown	9	10	10	20	20	10	6	25	25	10	15	13	14
Close to grocery store	6	- 5	15	7	0	5	ŏ	5	10	5	4	12	13
Close to friends	10	5	15	20	5	5	12	0	10	12	4	12	9
Close to schools	6	15	0	0	10	15	0	10	5	12	4 13	. – –	9
Close to parents or children	13	5	10	ŏ	5	10	0	0	5	9	13 4	4	7
Close to city bus line		5	0	ŏ	5	10	12	15	10	9	•	9	7
Close to church	5	5	0	13	0	5	12	10	10		7	4	5
Close to doctor	0	5	Ő	13	0	0	0	0	-	5	•	1	2
Other advantages	32	45	20	33	50	35	41	30	0 30	33	3	0	1
None	6	- 5	15	0	0	10					43	25	32
	(110)	-	(28)	(21)	(34)		18	5	5	8	4	12	8
and the second of the second sec	(110)	(34)	(20)	(21)	(34)	(35)	(19)	(35)	(31)(	(121)(	(103)	(94)	(348)
reatest Disadvantage in Livin	o The	ro?											
Neighborhood is deteriorating	<u>, 110</u>												
physically	, 9	15	30	7	20	15	12	2.5	10	9	18	<u>م</u> (	20
Changing Racial Composition o		10	50	,	20	17	12	25	10	9	10	24	20
neighborhood	4	15	15	0	5	15	0	10	20	3	10	3.6	• •
Neighborhood or freeway	7	17	17	v	5	17	U	10	20	3	12	16	13
noise	16	5	10	40	15	5	35		10	• •	•	~	
Neighborhood changing to rent		2	10	40	10	5	33	15	10	22	9	9	9
property	0	15	5	0	5	E	0	^	0	•	• •		•
foo far from work	· 0	0	5	0	5 0	5 0	0	0	0	0	10	4	6
foo much stealing	3	0	10	0	0	0	0	0	0	0	0	3	2
Commercial encroachment	3	0	10	0			0	0	0	2	0	6	3
Sommercrar encroachment	3	U	U	U	5	5	0	0	5	2	1	2	1

Table 11

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Responses of Respondents to Questions Concerning the Location of Residency at the Present Address by Zones Within Design Subareas, Zones, and All Zones

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# Table 11 (continued)

Responses of Respondents to Questions Concerning the Location of Residency at the Present Address by Zones Within Design Subareas, Zones, and All Zones

	D	epres	sed	01	n Gra	le	E10	evate	1	A11 1	Desig	n Suba	areas <sup>1</sup>
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	A11
	· 1	2	3	1	2	3	1	2	3	1	2	3	Residents
				(dat	ta exp	press	ed in	perc	entage	es) <sup>2</sup>			
Greatest Disadvantage in Livin	g The:	re? (	conti	nued)									
Too far from parents or													
children	0	0	0	0	0	5	0	0	0	0	0	1	1
Too far from shopping													
facilities	6	0	0	0	0	0	0	0	0	4	0	0	+
Too close to freeway	14	0	0	20	0	0	41	0	0	20	0	0	1
Other disadvantages	22	5	25	13	20	35	29	20	25	22	11	26	20
None	40	60	30	40	55	35	24	55	45	37	58	34	42
Number of Responses	(89)	(23)	(26)	(18)	(25)	(24)	(24)	(25)	(23)	(131)	(73)	(73)	(277)
Whether They Liked Living Ther	e?									i.			
Yes	87	70	80	73	85	85	86	95	100	83	78	84	82
No	5	15	10	20	10	· 0	18	0	0	9	11	6	8
Indifferent	8	15	10	7	5	15	6	5	0	8	11	10	10
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)

<sup>1</sup>See Footnote 1 of Table 2.

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<sup>2</sup>See Footnote 2 of Table 2.

+ = Less than one-half of one percent.

Table 12	able 12	2
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Responses of Respondents to Questions Concerning Changes Observed in the Neighborhood After Moving There by Zones Within Design Subareas, Zones, and All Zones

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	De	epress	sed	(	On Grade			levat	ed	A11	Design	u Subareas <sup>⊥</sup>	
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone				A11
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
				(d.	ata er	xpres	sed in	n per	centa	ges) <sup>2</sup>			-
Had Neighborhood Changed	1? <sup>3</sup>												
Yes	58	65	35	60	50	50	76	.30	45	62	55	40	47
No	34	25	60	27	30	6	24	45	30	31	29	49	40
No answer	8	10	5	13	20	4	0	25	25	7	16	11	13
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)
Ways It Had Changed?													
In-migration of Mexican			• •										
Americans	22	46	29	22	50	50	0	33	44	18	46	37	40
Houses deteriorating	24	23	29	22	60	70	31	83	33	26	35	39	37
Homeowners moving out	13	31	29	0	30	40	15	50	22	12	33	30	30
Becoming rent property	7	23	14	11	0	30	8	67	22	7	24	20	21
Property changing to							-						
commercial	20	23	0	11	0	0	8	0	22	16	17	4	11
Katy Freeway serves													
it now	38	8	14	22	20	0	23	0	0	33	9	8	10
Old Residents dying													
out	11	15	0	2 <b>2</b>	10	0	8	33	11	12	16	2	9
In-migration of Blacks	4	0	14	0	0	0	0	0	11	. 3	0	10	5
Property changing to										•			
Apartments	0	0	0	0	10	0	8	0	0	2	2	0	1
Streets are in worse													
shape	0	0	0	11	0	.0	0	0	0	1	0	0	+
Other ways	9	15	0	22	20	20	46	0	11	19	15	7	12
No answer	2	0	14	11	0	0	0	0	0	1	0	8	4
Number of Responses	(68)	(24)	(10)	(14)	(20)	(21)	(19)	(16)	(16)	(101)	(60)	(47)	(208)
Number of Respondents	(45)	(13)	(7)	(9)	(10)	(10)	(13)	(6)	(9)	(67)	(29)	(26)	(122)

+ = Less than one-half of one percent.

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

 $^3\chi^2$  is significant at the .05 level.

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20 percent, respectively, of the responses given. By design subareas, the elevated design section and on grade design section residents were more concerned about the disadvantages of the freeway than were the residents along the depressed design section. Although respondents living in Zones 2 and 3 were concerned about the noise of the freeway, none of these respondents thought that the closeness of their residences to the freeway was itself a disadvantage of location.

Overall, the respondents referred to broad social and economic changes as the sources of the two major disadvantages: (1) the physical deterioration of the neighborhood<sup>5</sup>; and (2) the changing racial and ethnic composition of the neighborhood<sup>6</sup>. In addition to the disadvantages mentioned, the change of property from private residential to commercial and rental was a disadvantage of some importance to the respondents, except for those living in the elevated design section. This subarea, as noted in a previous section of this report, contained a relatively large percentage of multi-family, commercial apartments.

<sup>5</sup>The qualitative judgments of the interviewers about the condition of the residences tended to support these opinions. See Table 4.

<sup>0</sup> This	is	reflected	in	the	percent	age	chang	ges i	in the	<pre>racial/</pre>
		composition								

Type of Resident	Anglo	Black	Mexican-American
Prior	60%	34%	6%
New	38%	29%	33%
A11	51%	32%	17%

The last part of Table 11 presents a briefed, overall evaluation by the residents regarding how they liked living at their present residences. An overwhelming majority (82 percent) liked where they were living. Those who either disliked their present location or were indifferent to it numbered 8 percent and 10 percent, respectively. There was no significant difference among the responses from residents in the various design subareas and zones.

# Changes Observed in Neighborhood

In addition to naming advantages and disadvantages, the respondents were asked to evaluate the ways in which their neighborhood had changed since they had located at their current addresses. The responses, shown in Table 12, are instructive in that they reflect an awareness that the neighborhood was in a decline. With the exception of the opening of the Katy Freeway, no generally agreed upon positive changes had occurred. Changes in racial composition, changes in the owner/renter ratio, deterioration of residential structures, and commercialization of previously residential properties were the changes most mentioned by the 122 respondents who had indicated that changes had occurred.<sup>7</sup>

<sup>&#</sup>x27;Only five of these respondents were classified as new residents. The remaining eighty-six new residents stated that the neighborhood had not changed. Thus, the second part of Table 12 is heavily biased by responses from residents who lived in the study area prior to construction of the freeway.





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Depressed

Depressed



### On Grade



#### Elevated

Depressed, on grade, and elevated sections of Katy Freeway passing through the residential study area.



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Residences along Katy Freeway in Zone 1 of the depressed freeway design subarea.









Residences along Katy Freeway in Zone 1 of the on grade freeway design subarea.









Residences along Katy Freeway in Zone 1 of the elevated freeway design subarea.





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Depressed

Depressed



On Grade



Elevated

Residences near Katy Freeway in Zone 2 of the depressed, on grade, and elevated freeway design subareas.



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Depressed



Depressed

### On Grade



### Elevated

Residences and apartment house near Katy Freeway in Zone 3 of the depressed, on grade, and elevated freeway design subareas.



Depressed

Elevated

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On Grade

On Grade

Commercial development along Katy Freeway in Zone 1 of the depressed, on grade, and elevated freeway design subareas.



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Church, elementary school, park, and bayou along Katy Freeway in the study area.

# OPINIONS OF RESPONDENTS CONCERNING LOCATION AND DESIGN OF KATY FREEWAY

### Location With Respect to Neighborhood

When asked about the specific location of the freeway, 74 percent of the respondents thought it had been properly located. Table 13 shows that they evaluated the freeway's location primarily with respect to their neighborhood and its use by neighborhood residents. They thought that the freeway was centrally located and convenient to use for travel to other parts of Houston. Removal of a dump ground from the neighborhood and cleaning up portions of White Oak Bayou were considered as important effects of building the freeway along its existing route.

Of the 8 percent who thought that the freeway was improperly located, inconvenient access to the facility and the dissection of the neighborhood were listed as the most important reasons.

Another important feature of the responses of those who favored the freeway's location was their tendency to give no answer when asked why they thought the freeway had been properly located. Of the 202 responses, 31 percent were classified as no answer. In most of these cases, the respondent trusted the judgment of the experts and their ability to locate a freeway where it should be.

Tab:	le 1	.3
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Responses of Respondents to Questions Concerning the Location of Katy Freeway in Neighborhood by Zones Within Design Subareas, Zones, and All Zones

	D	epress	sed		On Grade			levat	ed	All Design Subareas			
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	A11
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
				(d.	ata e	xpres	sed in	n per	centa	ges) <sup>2</sup>		<u></u>	
Was the Freeway Properl	y Loca	ated?											
Yes	80	95	55	60	85	80	42	80	70	71	90	62	74
No	7	5	15	20	5	5	29	. 5	0	12	5	11	8
Mix opinions	0	0	0	0	5	0	0	0	0	0	1	0	+
No answer	13	0	30	20	5	15	29	15	30	17	4	27	18
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)
Reasons Why Yes?													
Centrally located	21	26	18	22	6	25	29	31	28	22	24	22	23
Gives better access	10	26	9	11	29	6	0	13	64	9	25	19	21
Convenient to use	13	10	36	11	24	13	14	6	14	13	12	26	19
Cleaned up bayou and d	ump												
grounds	<b>்</b> 3	21	0	33	24	13	14	13	21	8	20	7	14
Saves travel time	2	0	9	0	6	0	0	13	0	1	3	5	4
Other reasons	15	5	9	0	35	0	14	12	0	13	12	0	9
No answer	45	26	36	44	29	50	43	31	7	45	28	20	31
Number of Responses	(67)	(22)	(13)	(11)	(26)	(17)	(8)	(19)	(19)	(86)	(67)	(49)	(202)
Number of Respondents	(62)	(19)	(11)	(9)	(17)	(16)	(7)	(16)	(14)	(78)	(52)	(41)	(171)
Reasons Why No?													
Can't get out easily	0	0	33	0	0	0	40	. 0	0	17	0	30	22
Split up neighborhood	Õ	100	0	33	Ō	Ō	20	ŏ	Ō	16	64	0	16
Too close to abutting houses	20	0	Ō	67	100	Ō	40	Ō	0	38	18	0	7
Too dangerous	20	0	Ō	0	0	Ō	0	100	0	7	18	0	5
Too noisy	0	õ	õ	33	Ő.	ŏ	õ	0	õ	7	0	õ	1
Other reasons	60	0	33	0	õ	100	õ	ŏ	õ	22	õ	40	28
No answer	20	Ő	33	ŏ	ŏ	0	õ	õ	ŏ	7	ŏ	30	26
Number of Responses	(6)	(1)	(3)	(4)	(2)	(1)	(5)	(1)	$(\tilde{0})$	(15)	( <u>3</u> )	(4)	(22)
Number of Respondents	(5)	(1)	(3)	(-4)	(1)	(0)	(-5)	(1)	(0)	(13)	(3)	(4)	(22)
t = Loco then one helf				( ))	( 1)					(1)	( ))	\ <del>7</del> /	(20)

+ = Less than one-half of one percent.

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

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# Preferred Distance from Residence

Given the location of the freeway, the respondents were queried about the relative distances that they would prefer to live from the freeway. The data in Table 14 show that the majority of respondents preferred their current locations. Within the design subareas, the degree of preference for current locations increased with the distance from the freeway. Of the 16 percent of the respondents who preferred locations further from the freeway, the intensity of this preference was pronounced among Zone 1 respondents, particularly in the elevated design subarea where 76 percent of the respondents in Zone 1 preferred to live further from the freeway.

### Degree of Freeway Annoyance

The primary reason for preferring more distant locations was a desire to escape from the noise of freeway traffic. This result is reinforced by the responses given to a specific question about annoyances caused by the freeway. The last two parts of Table 14 reveal the significant differences occurring among the Zone 1 respondents and the respondents from Zones 2 and 3, with regard to freeway annoyances.<sup>8</sup> The Zone 1 respondents were more annoyed than the others; and they were primarily annoyed by noise and fumes generated by freeway traffic.

In Appendix A, Table 4, these responses are presented in a classification by new and prior residents. These data show a tendency for prior residents to be more annoyed, particularly by noise, than the new residents.

	De	epress	sed	(	On Grade			levate	ed	All Design Subareas				
esponses to Questions	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	All Zones	
				(da	ata ez	xpress	sed in	n per	centa	ges) <sup>2</sup>				
referred distance from		- Contraction of the second	·											
Closer	0	0	0	0	0	0	0	5 <sup>3</sup>	0	0	1	0	+	
Farther	39	10	20	26	30	5	76	10	0	44	14	14	16	
About where now living	60	85	70	67	65	95	24	85	100	54	81	80	79	
No preference	1	5	10	7	5	0	0	0	0	2	4	6	5	
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	<b>(</b> 22 <b>9</b> )	
easons Why Farther From	n?													
Get away from freeway	_													
noise	73	100	50	50	83	100	92	100	0	77	93	53	72	
Would be safer	13	0	25	0	0	0	0	0	0	8	0	23	13	
Get away from fumes,	·													
smoke and dust	10	0	0	0	0	0	8	0	0	. 9	0	0	. 1	
Other reasons	20	0	50	25	33	0	15	0	· 0	19	13	46	31	
Don't know	0	0	0	50	0	0	0	0	0	4	0	0	1	
Number of Responses	(35)	(2)	(5)	(5)	(7)	(1)	(15)	(2)	(0)	(55)	(11)	(6)	(72)	
Number of Respondents	(30)	(2)	(4)	(4)	(6)	(1)	(13)	(2)	( 0)	(47)	(10)	(5)	(62)	
oes the Freeway Annoy !	You?4													
Yes	53	15	15	53	35	10	82	10	0	58	17	11	16	
No	47	85	85	47	65	90	18	90	9.5	42	82	88	83	
No answer	0	0	0	0	5	0	0	0	5	0	1	1	1	
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)	
ays in Which it Does?								•						
Noise	80	67	34	88	100	0	78	100	0	81	81	26	52	
Funes	2	0	Ó	12	0	õ	7	50	100	3	5	- ~	6	
Dust	5	ŏ	õ	12	õ	õ	Ó	Ó	0	5	ő	ý	1	
Litter	õ	ŏ	Ő	0	. 0	ŏ	7	ŏ	0	2	Ő	Ő	. +	

# Table 14

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Responses of Respondents to Questions Concerning the Preferred Distance and Degree of Annoyance from the Freeway by Zones Within Design Subareas, Zones, and All Zones

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### Table 14 (continued)

Responses of Respondents to Questions Concerning the Preferred Distance and Degree of Annoyance from the Freeway by Zones Within Design Subareas, Zones, and All Zones

Responses to Questions		zone			On Gra Zone			levat Zone			Design Zone		
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
				(da	ata e	xpres	sed in	n per	centa	ges) <sup>2</sup>			
Ways in Which it Does?	(cont:	inued	)										
Sight of Traffic	5	0	0	12	0	0	7	0	0	6	0	0	1
Other Ways	20	33	33	0	17	100	14	0	0	16	24	41	29
No answer	0	0	33	0	0	0	7	0	0	1	0	26	11
Number of Responses	(46)	(3)	(3)	(10)	(7)	(2)	(17)	(3)	(1)	(73)	(13)	(6)	(92)
Number of Respondents	(41)	(3)	(3)	(8)	(6)	(2)	(14)	(2)	(1)	(63)	(11)	(6)	(80)

<sup>2</sup>See Footnote 2 of Table 2.

<sup>3</sup>One respondent preferred to be closer to the freeway because he thought his property would be worth more.

<sup>4</sup>Using actual sample numbers in  $\chi^2$  test, the overall difference among the nine zones within design subareas is significant at the .05 probability level.
#### Appearance and Usefulness of Freeway to Neighborhood

Next, some questions were posed to determine opinions about the appearance and usefulness of the freeway. These results are presented in Tables 15 and 16. With the exception of respondents from Zones 1 and 3 of the elevated design subarea, more than 90 percent of the respondent's approved of the appearance of the freeway. Suggested changes to improve the appearance included planting of shrubs and flowers, using brighter colors, and removing billboards.

Although 67 percent of all responses indicated that no changes were needed to make the freeway more useful, a need for more and better located signs identifying ramps was mentioned. Responses to specific questions about on and off ramps and crossovers revealed that the residents in the elevated design subarea were the most concerned about a lack of these facilities.

## Preferred Design Section of Freeway

Table 17 presents the responses to a series of questions concerning the kind of design sections that respondents would prefer to live near or travel on. As might be expected, the respondents tended to prefer those design sections that they currently lived near. The only exception was in Zone 1 of the elevated design subarea in which the respondents preferred living near either a depressed or on grade section. For all design subareas, respondents of Zones 1 and 2 listed, in order of

Responses of Respondents to Questions Concerning Freeway Appearance in Neighborhood by Zones Within Subareas, Zones, and All Zones

	D	epress	sed	(	On Gra	ade	EI	levat	ed	A11 1	Design	n Suba	areas
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	A11
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
	4	· · · · · · · · · · · · · · · · · · ·		(d.	ata ez	kpress	sed in	n per	centag	ges) <sup>2</sup>			
ike Appearance of Free	<u>way?</u>	95	90	93	100	100	82	95	8.5	96	96	91	93
Yes No <sup>3</sup>	$100 \\ 0$	9 J 0		<u>כ</u> פ ר	100	0	82 12			30	90	3	2
		-	5 5	/	-	•		5	-	2	1 2	6	۲ ۲
No answer	0	5	2	0	0	0	6	0	15	Ţ	_ 3	6	2
and flowers Paint with brighter	. 7	0	5	0	0	10	6	5	5	6	1	6	4
colors	0	0	0	0	F		6	•	15	1	г	2	2
Remove billboards	0	0	0	7	5 10	0	0	0 5	15	1	3		2
	4	0	0 0	13	10	0	12	5	0		1	0	1
Cut grass more often		0	10	1) 7	0	0	29	<u>ר</u>	0	17	1	6	· 1
Other changes	16	v		60	•	65		26	-	17 64	1 0 2	0 6 /	71
None	70	90	65	60	75		41	65	60	04	83	64	71
No answer	6	10	20	13	10	25	6	20	25	/	12	22	17
Number of Responses	(79)	(20)	(20)	(15)	(20)	(20)	(17)	(21)	(21)	(111)	(61)	(61)	(233)
•													

<sup>1</sup>See Footnote 1 of Table 2.

 $^2$ See Footnote 2 of Table 2.

 $^{3}$  The presence of billboards and grass and weeds not cut often enough were the negative

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4 reasons given. 4 Using actual sample numbers in  $\chi^2$  test, the overall difference among the nine zones within design subareas is not significant at the .05 probability level.

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Responses of Respondents to Questions Concerning Freeway Usefulness to Neighborhood by Zones Within Design Subareas, Zones, and All Zones

	D	epres	sed		On Gra	ade	E.	levat	ed	A11 1	Desig	n Sub	areas
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone							A11
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
		· · ·		(d	ata e	xpres	sed in	n per	centa	ges) <sup>2</sup>	<u></u>		
Changes That Would Make	it Me	ore U	seful	?									
Better location of sig	ns												
for ramps	1	0	5	0	0	15	0	10	10	1	2	8	5
Needs more ramps	5	0	0	0	5	15	0	5	5	4	2	4	3
Remove bottlenecks goi	ng					•							
to town	0	5	0	7	5	0	0	0	0	1	4	0	2
Needs more warning sig	ns												
for off ramps	4	0	5	0	0	0	0	0	0	3	0	3	2
Needs more overpasses	3	0	0	0	0	5	12	0	0	2	0	1	1
Needs more walkways	4	0	0	0	0	0	0	0	0	3	0	0	+
Other changes	15	0	5	20	10	0	41	5	5	20	3	4	4
None	61	85	70	66	75	35	24	60	55	55	79	61	67
No answer	10	10	20	7	10	35	23	20	25	12	12	23	19
Number of Responses	(79)	(20)	(21)	(15)	(21)	(21)	(17)	(20)	(20)	(111)	(61)	(62)	(234)
Enough On and Off Ramps	?												
Yes	81	75	70	66	95	60	65	60	55	75	76	65	70
No	4	10	10	7	5	15	18	20	25	12	11	14	13
No answer	9	15	20	27	Ō	25	17	20	20	13	13	21	17
Enough Overpasses and U	nderpa	asses	?										
Yes	86	85	60	80	90	70	47	75	75	78	84	65	73
No	8	0	25	0	0	0	35	0	5	12	0	17	10
No answer	6	15	15	20	10	30	18	25	20	10	16	18	17
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

59

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Responses of Respondents to Questions Concerning Preferred Design Section of Freeway to Live by and Drive or Ride on by Zones Within Design Subareas

Responses to QuestionsZone Zone Zone Zone Zone Zone Zone Zone		
(data expressed in percentages <sup>2</sup> )   (data expressed in percentages <sup>2</sup> )   Section Preferred to Live Near?   Depressed 70 45 35 20 5 30 35 25 25 57   On Grade 5 10 0 33 40 30 18 25 10 11   Elevated 3 5 0 7 20 20 12 35 35 5   Depressed or on grade 1 5 0 7 15 5 0 0 5 2   None 1 10 5 0 10 0 5 0 1   No answer 20 25 60 33 20 5 35 10 25 24   Number of Respondents (77) (20) (20) (15) (20) (17) (20) (20) (109)		A11
Gection Preferred to Live Near?   Depressed 70 45 35 20 5 30 35 25 25 57   On Grade 5 10 0 33 40 30 18 25 10 11   Elevated 3 5 0 7 20 20 12 35 35 5   Depressed or on grade 1 5 0 7 15 5 0 0 5 2   None 1 10 5 0 0 1 0 5 0 1   No answer 20 25 60 33 20 5 35 10 25 24   Number of Respondents (77) (20) (20) (15) (20) (20) (109)	2 3 2	Zones
Depressed 70 45 35 20 5 30 35 25 25 57   On Grade 5 10 0 33 40 30 18 25 10 11   Elevated 3 5 0 7 20 20 12 35 35 5   Depressed or on grade 1 5 0 7 15 5 0 0 5 2   None 1 10 5 0 0 10 0 5 0 1   No answer 20 25 60 33 20 5 35 10 25 24   Number of Respondents (77) (20) (20) (15) (20) (20) (109)		
On Grade 5 10 0 33 40 30 18 25 10 11   Elevated 3 5 0 7 20 20 12 35 35 5   Depressed or on grade 1 5 0 7 15 5 0 0 5 2   None 1 10 5 0 0 10 0 5 0 1   No answer 20 25 60 33 20 5 35 10 25 24   Number of Respondents (77) (20) (20) (15) (20) (20) (17) (20) (20) (109)		
Elevated 3 5 0 7 20 20 12 35 35 5   Depressed or on grade 1 5 0 7 15 5 0 0 5 2   None 1 10 5 0 0 10 0 5 0 1   No answer 20 25 60 33 20 5 35 10 25 24   Number of Respondents (77) (20) (20) (15) (20) (20) (17) (20) (20) (109)	34 32	34
Depressed or on grade 1 5 0 7 15 5 0 0 5 2   None 1 10 5 0 0 10 0 5 0 1   No answer 20 25 60 33 20 5 35 10 25 24   Number of Respondents (77) (20) (20) (15) (20) (20) (17) (20) (20) (109)	19 7	12
None 1 10 5 0 10 0 5 0 1   No answer 20 25 60 33 20 5 35 10 25 24   Number of Respondents (77) (20) (20) (15) (20) (20) (17) (20) (20) (109)   Why Preferred Depressed Section? 25 24 20 25 24 20 25 20 20 20 20 (17) (20) (20) (109)	13 10	11
No answer 20 25 60 33 20 5 35 10 25 24   Number of Respondents (77) (20) (20) (15) (20) (20) (17) (20) (20) (109)   Why Preferred Depressed Section?	62	3
Number of Respondents (77) (20) (20) (15) (20) (20) (17) (20) (20)(109) Why Preferred Depressed Section?	75	6
Why Preferred Depressed Section?	21 44	34
	(60) (60)(2	229)
Less noisy 68 44 57 100 0 67 67 60 60 71	45 55	55
Safer for neighborhood 28 22 14 66 0 33 33 60 80 31	27 25	27
Looks better 7 22 14 0 100 0 17 0 20 6	21 12	16
Less fumes and dust $6  0  14  0  0  0  0  0  5$	0 9	6
No barrier to seeing		
other side $0 11 0 0 0 0 0 0 0$	90	4
0  ther reasons 11 0 0 0 0 0 0 0 11	0 0	1
No answer $4 11 20 0 0 0 0 0 5$	9 21	15
	(17) $(24)(1)$	
• • • • • • • • • • • • • • • • • • • •	(15) (18)	•
Why Preferred On Grade Section?		
Looks better $25 0 0 20 25 50 0 40 0 17$	20 39	26
Safer for neighborhood $0$ 50 $0$ $0$ 25 $17$ $0$ $0$ $0$	28 13	21
Like to see cars passing $0$ $0$ $0$ $0$ $40$ $12$ $0$ $33$ $20$ $0$ $25$	10 0	8
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	15 0	11
$N_0$ answer 50 50 0 0 25 40 33 40 100 25	37 62	45
Number of Responses $(4)(2)(0)(5)(9)(7)(3)(6)(2)(12)$		(38)
Number of Respondents $(4)(2)(0)(5)(3)(3)(6)(2)(12)$ Number of Respondents $(4)(2)(0)(5)(8)(6)(3)(5)(2)(12)$		(35)
(12)	(1)	(22)

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# Table 17 (continued)

Responses of Respondents to Questions Concerning Preferred Design Section of Freeway to Live by and Drive or Ride on by Zones Within Design Subareas

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	D	eprese	sed	(	On Gra	ade	E	levat	ed	A11 1	Desig	1 Sub	areas <sup>1</sup>
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone				
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
anna ann an 1869 Ann an 1869 Ann an 1869 an Ann an 1869 an Ann an Ann an Ann Ann Ann Ann Ann An				(da	ata e:	xpres	sed in	n per	centa	ges) <sup>2</sup>			
Why Preferred Elevated	Secti	on?											
Safer for neighborhood	0	100	0	0	75	0	0	43	14	0	66	9	36
Less noisy	0	0	0	100	25	0	50	29	43	34	21	27	24
Easier to get to other													
side	0	0	0	100	0	25	0	14	43	16	7	36	22
Other reasons	50	0	0	0	0	50	50	14	0	34	7	19	13
No answer	50	0	0	0	25	25	0	0	0	16	1	9	9
Number of Responses	(2)	(1)	(0)	(2)	(5)	(4)	(2)	(7)	(7)	(6)	(13)	(12)	(30)
Number of Respondents	(2)	(1)	(0)	(1)	(4)	(4)	(2)	(7)	(7)	(5)	(12)	(11)	(28)
Section Preferred to Dr:	ive o	r Ride	e on?										
Depressed	26	20	10	0	5	15	6	0	20	19	14	13	13
On grade	8	10	5	0	25	5	18	10	20	8	13	8	10
Elevated	0	5	0	0	5	5	0	10	25	0	6	5	5
Depressed or on grade	5	5	5	7	20	5	-0	10	0	· 5	9	4	6
Elevated or on grade	1	0	0	0	0	0	0	0	0	1	0	0	· +
Don't use	22	20	35	33	5	30	47	10	15	20	15	31	24
No answer	38	40	45	60	40	40	29	60	20	47	43	39	42
Number of Respondents	(77)	(20)	(20)	(15)	(20)	(20)	(17)	(20)	(20)	(109)	(60)	(60)	(229)

+ = Less than one-half of one percent.

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

61

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preference, depressed sections, on grade sections, and elevated sections. Forty-four percent of the respondents of Zone 3 gave no answer as to design preference, indicating that the type of design tends to be less important as people are further removed from the freeway. The primary reasons given for preferring a particular design section were: (1) depressed design section better looking; and (2) elevated design section - safer for neighborhood. Neighborhood safety was also considered an important feature in locating near a depressed design and an on grade design section.

The design sections that respondents preferred to travel also tended to be related to the design subareas in which they lived. Collectively, respondents preferred to travel on depressed sections the most and elevated sections the least.

## OPINIONS OF PRIOR RESIDENTS CONCERNING THE IMPACT OF KATY FREEWAY

As was mentioned earlier, many questions were asked only to residents who lived in the area prior to freeway construction. Some of the characteristics of these respondents are presented in Table 18 and discussed briefly before their responses are reported.

In terms of percentages based on expanded data, over 50 percent of the prior resident respondents were 60 years or older. Only 14 percent were less than 40 years of age. As might be expected, most of them were living alone or as couples (with perhaps another adult or a grandchild in a few cases). Only about one-half of them were fully employed. Thirty percent of them had family incomes of less than \$3,000 in 1969. Last, three-fourths of the prior resident respondents were homeowners.

The prior resident respondents were asked certain questions to obtain their opinions and experiences concerning any impact that the Katy Freeway might have had on them as individuals. Specifically, the questions were worded to determine the anticipated effects, construction period effects, and after period effects. These are discussed below.

#### Anticipated Effects

To gain knowledge of freeway effects that they had anticipated after hearing that the freeway would be built in its final location,

Characteristics of Respondents	All Design Sub Absolute <sup>2</sup>	areas Combined Expanded <sup>3</sup>
	(data expressed	
Age		. :
Less than 30 years	5	5
30 - 39	6	9
40 - 49	17	23
50 - 59	16	11
60 or more	56	5 2 ·
Family Stage		
Single person 5	26	21
Couple or other	35	32
Family with children	41	47
Employment Status		
Retired	27	2.8
Fully employed	55	51
Unemployed	6	, 7
Other	12	14
Family Income Level		· · · · · · · · · · · · · · · · · · ·
Less than \$3,000	28	30
\$3,000 - \$4,999	23	17
\$5,000 - \$6,999	14	9
\$7,000 - \$8,999	14	17
\$9,000 - \$10,999	12	15
\$11,000 or more	8	9
No response	1	3
Degree of Home Ownership		
Owner	83	77
Renter	17	23
Number of Respondents	(138)	(138)
see Footnote 4 of Table 8.		· · · · · · · · · · · · · · · · · · ·
2 See Footnote 1 of Table 8.		
See Footnote 1 of Table 2.		
<sup>4</sup> See Footnote 2 of Table 2.	•	

Age, Family Stage, Employment Status, Family Income, and Degree Home Ownership of Prior Residents for All Design Subareas Combined<sup>1</sup>

64

<sup>5</sup>See Footnote 3 of Table 3.

respondents were asked whether or not they had believed that the freeway would be of value to them and to give reasons why. The responses to this line of inquiry are presented in Table 19. The majority of the respondents anticipated favorable effects. Only a small percentage answered negatively.

Of those who answered affirmatively, two reasons often given pertained to the use of the freeway. Increased property values were also frequently anticipated. Of the few who answered negatively, only three reasons were often mentioned. Two of these related to traffic effects (increased volume on streets and noise), and one pertained to the removal of residences to provide right-of-way for the freeway.

When the responses were classified according to the ages of respondents, as presented in Table 5 of Appendix A, a considerably higher percentage of those under 60 years of age anticipated favorable effects than did those 60 years and over. Construction Period Effects

The prior resident respondents were asked if actual construction of the freeway caused them any problems. As shown in Table 20, less than 20 percent of them gave an affirmative answer. But, as expected, Zone 1 respondents experienced more such problems than did residents of other zones. In fact, the percentage of respondents that had problems declined as the distance from Katy Freeway increased. Using actual sample numbers in the  $\chi^2$  test, the overall difference among the nine zones within freeway design subareas is significant at the .05 probability level.

Responses of Prior Residents to Questions Concerning Anticipated Effects of the New Katy Freeway for All Design Subareas Combined

Table 19

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Responses to Questions	<u>All Design Sub</u> Absolute <sup>1</sup>	areas Combined Expanded <sup>2</sup>
	(data expressed	in percentages)
Would it be of Value to You?		
Yes	54	55
No	18	7
No answer	28	38
Number of Respondents	(138)	(138)
Reasons Why Yes?		
Would be convenient to use	32	40
Would give better access to other places	26	30
Would increase property values	27	20
Would stimulate neighborhood	9	15
Would save time getting places	12	8
Would reduce traffic on streets	7	5
Other reasons	11	2
No answer	3	+
Number of Responses	(94)	(94)
Number of Respondents	(74)	(74)
Reasons Why No?		
Would increase traffic on streets	4	15
Too many residences to be taken	32	13
Would increase noise level	24	8
Other reasons	52	69
No answer	8	2
Number of Responses	(30)	(30)
Number of Respondents	(25)	(25)

<sup>1</sup>See Footnote 1 of Table 8. <sup>2</sup>See Footnote 1 of Table 2. <sup>3</sup>See Footnote 2 of Table 2.

	D	epres	sed	I	On Gra	ade	E	levat	ed	A11 1	Design	1 Sub	areas
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	the second se		the second se		
	. 1	2	3	1	2	3	1	2	3	1	2	3	Zone
, , , , , , , , , , , , , , , , , , ,				(d)	ata e	xpress	sed in	n per	centa	ges) <sup>2</sup>			
Did Its Construction Ca	1100 D	rohle	" <sub>2</sub> 3	•		•		•					
Yes	54	21	12	78	8	8	38	29	0	54	20	9	17
No	46	79	88	28	92	92	62	71	100	46	80	91	83
Number of Respondents	(50)	(14)	(8)	(9)	(13)	(13)	(13)	(7)	(11)	(72)	(34)	(32)	(138)
Problems Caused?													
Minor inconveniences	37	66	0	14	0	0	20	50	0	31	55	0	37
Noise of trucks or bul	1												
dozers	15	66	0	43	0	100	20	0	0	21	48	23	37
Dust	44	0	100	29	100	0	20	50	0	38	14	77	34
Damaged streets	4	33	0	29	0	0	0	0	0	8	24	0	15
Street was closed	30	0	0	29	100	0	40	50	0	31	13	0	14
Caused drainage proble	m 4	0	. 0	14	0	0	60	0	0	13	0	0	3
Other reasons	7	0	0	14	0	0	0	0	0	8	0	0	2
Number of Responses	(38)	(5)	(1)	(12)	(2)	(1)	(8)	(3)	(0)	(58)	(10)	(2)	(70)
Number of Respondents	(27)	(3)	(1)	(7)	(1)	(1)	(5)	(2)	(0)	(39)	(6)	(2)	(47)

Responses of Prior Residents to Questions Concerning Problems Caused During Construction of Katy Freeway by Zones Within Design Subareas, Zones, and All Zones

Table 20

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<sup>1</sup>See Footnote 1 of Table 2.

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<sup>2</sup>See Footnote 2 of Table 2.

<sup>3</sup>Using actual sample numbers in  $\chi^2$  test, the overall difference among the nine zones within design subareas is significant at the .05 probability level.

The most frequently mentioned problems were noise and dust from the trucks and bulldozers. Those in the elevated design subarea had the fewest problems.

When the responses were classified by age of respondents, as shown in Table 6 of Appendix A, it was found that the respondents 60 years and older had more construction period problems than those of the younger age group.

#### After Period Effects

The time frame was changed once more to focus attention on after period effects of the Katy Freeway. First, a general open-end question was asked the prior resident respondents. Then, several questions of a specific nature followed. The responses to the open-end question are presented in Table 21. Only a small percentage of all the respondents indicated that the freeway caused negative effects. However, the majority of the Zone 1 respondents reported negative effects.

The most often mentioned positive effect pertained to time saved by using the freeway. Thus, the respondents had correctly anticipated a primary freeway effect. By the same token, the most often mentioned negative effect, noise, was also anticipated in advance. It is important to note that a smaller percentage of respondents from each zone within the depressed freeway design subarea indicated negative freeway effects than did those respondents from the corresponding zones within the on grade and elevated design subareas.

	D	epress	sed		On Gra	ade	E	levate	≥d	A11 1	Design	n Sub	areas
esponses to Questions	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	All Zone
n an 1996. It is a fair ann an 1977 ann an Ann a				(d.	ata es	xpress	sed in	n per	centa	ges) <sup>2</sup>			
verall Effects? <sup>3</sup>										-			
Positive	26	21	50	0	38	53	8	58	46	21	28	50	38
Negative	48	7	0	67	8	8	76	14	9	56	8	4	9
Mixed	0	O	Ō	0	Ō	8	8	_0	ō	1	ō	2	1
None	10	51	12	22	54	23	0	14	27	9	47	18	31
No answer	16	21	38	11	0		8	14	18	13	17	26	21
Number of Respondents	(50)	(14)	(8)	( 9)	(13)	(13)	(13)	(7)	(11)	(72)	(34)	(32)	(138)
<u>'ositive Effects</u> ? Saves time getting										тж.			
places	54	100	50	0	100	88	100	75	100	60	95	70	78
Use it to go places	0	33	0	0	40	25	0	0	60	0	28	18	21
Get better police													
protection	Ó	0	0	0	0	0	0	25	0	0	5	0	2
Increased value of													
property	23	0	0	0	20	0	0	0	0	20	5	0	2
Others	23	0	75	0	0	0	0	. 0	0	20	0	39	25
Number of Responses	(13)	(4)	(5)	(0)	(8)	(9)	(2)	(4)	(8)	(15)	(16)	(22)	(53)
Number of Respondents	(13)	(3)	(4)	( 0)	(5)	(8)	(2)	(4)	(5)	(15)	(12)	(17)	(44)
egative Effects?								;					
Increased noise in hom	e 35	100	0	100	0	0	45	100	0	48	83	0	48
Increased traffic on													
streets	4	0	0.	0	0	50	0	0	100	2	0	66	19
Can't park in front of													
home	12	0.	0	33	. 0	0	18	0	0	17	Ö	0	6

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Responses of Prior Residents to Questions Concerning After Period Effects of Katy Freeway on Individuals by Zones Within Design Subareas, Zones, and All Zones

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#### Table 21 (continued)

Responses of Prior Residents to Questions Concerning After Period Effects of Katy Freeway on Individuals by Zones Within Design Subareas, Zones, and All Zones

	De	epress	sed	(	On Gra	ade	E	levate	ed	A11 1	Design	n Suba	areas
Responses to Questions	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	All Zone
				(d:	ata e	xpres	sed in	n pero	centag	ges) <sup>2</sup>			
	tinued	1)											
Have no access to	·												
property	8	0	0	17	0	0	55	0	0	23	0	0	9
propercy	-												
Increased dust and	÷												
	12	0	0	17	100	0	9	0	0	12	0	.0	5
Increased dust and	-	0 0	0 0	17 17	100 0	0 50	9 45	0	0 0	12 44	0 17	.0 34	5 23
Increased dust and fumes	12	•	•			-	-	-	-		0 17 (3)	-	-

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

 $^3$  The individual responses were placed arbitrarily into positive and negative categories.

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When the responses were classified by age of respondents, as shown in Table 7 of Appendix A, it was discovered that a much lower percentage of those 60 years and over indicated that the freeway had positive effects than did those under 60.

<u>Noise</u>. A specific negative effect that prior resident respondents were asked about was freeway noise. Their responses to a series of questions on noise are shown in Table 22. Less than one-third of them indicated that the freeway noticeably raised the noise level. But on a zone basis, over two-thirds of the Zone 1 respondents said the freeway noticeably raised the noise level. A smaller percentage of respondents from each zone within the depressed freeway design subarea indicated that the freeway noticeably raised the noise level than did those respondents from the corresponding zones within the on grade and elevated design subareas.

The  $\chi^2$  test indicated that the overall difference among zones within design subareas is significant at the .05 probability level.

Those who said that the freeway noticeably raised the noise level were asked if it was enough to annoy them. The percentage of affirmative answers followed about the same pattern as shown for the first question. Only a small percentage of all prior residents were annoyed by the increased noise level produced by the new freeway. Among residents who lived in Zone 1, those along the depressed freeway section were least annoyed. Actually, many of these said that noise annoyed them at first, but that

Responses of Prior Residents to Questions Concerning Noises from Katy Freeway and Other Sources by Zones Within Design Subareas, Zones, and All Zones

	· De	epres	sed	(	On Gra	ade	E	Levate	∋d	A11 I	)esign	a Suba	$areas^1$
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	A11
-	1	2	3	1	2	3	1	2	3	1	2	3	Zones
				( d )	ata e	xoress	sed in	ner	centa	ges) <sup>2</sup>		<u></u>	
Did Freeway Noticeably	Raise	Nois	e Lev	<u>∍1?</u> 3		-p		- P		5,			
Yes	76	21	25	100	62	15	85	86	0	81	35	17	30
No	24	79	75	0	38	85	15	14	100	19	65	83	70
Number of Respondents	(50)	(14)	(8)	(9)	(13)	(13)	(13)	(7)	(11)	(72)	(34)	(32)	(138)
Vas It Enough to Annoy	You?												
Yes	55	33	50	78	25	50	82	0	0	64	23	50	38
No	45	67	50	22	75	50	18	100	0	36	77	50	62
Number of Respondents	(38)	(3)	(2)	(9)	(8)	(2)	(11)	(6)	(0)	(58)	(17)	(4)	(79)
··· <b>*</b>		• •		3	• •	• •			• •	• •	• •		• •
Were There Other Noises	s More	Anno		<b>.</b>									
Yes	16	57	87	0	23	54	8	43	64	12	49	74	58
No	84	43	13	100	77	46	92	57	36	88	51	26	42
Number of Respondents	(50)	(14)	(8)	(9)	(13)	(13)	(13)	(7)	(11)	(72)	(34)	(32)	(138)
What Noises Were More A	Annovi	ng?											
Trains passing or		<u>o</u> .											,
switching	62	40	100	0	0	71	100	33	57	67	44	87	70
Industrial Noises	13	25.	0	· 0	33	29	0	67	Ó	11	30	5	15
Loud talking in street	ts 0	12	0	0	67	15	0	0	0	0	10	3	5
Traffic on neighborhoo								_	-			-	-
streets	25	0	0	0 -	0	0	0	0	43	22	0	8	8
Dogs barking	· 0	13	0	0	0	Ó	0	Ō	0	0	10	0	4
Number of Responses	( 8)	(8)	(7)	(0)	(3)	(8)	(1)	(3)	(7)	(9)	(14)	(22)	(45)
Number of Respondents	(8)	(8)	(7)	(0)	(3)	(7)	(1)	(3)	(7)	(9)	(14)	• •	(44)

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

<sup>3</sup>Using actual sample numbers in  $\chi^2$  test, the overall difference among the nine zones within design subareas is significant at the .05 probability level.

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they got accustomed to it as time passed.

Next, all prior residents were asked if there were other noises more annoying to them than noise from the new freeway. The majority of them answered in the affirmative. The percentage of affirmative answers was smallest for Zone 1 and increased as distance from the freeway increased. This pattern was true for all freeway design subareas. However, a higher percentage from each zone within the depressed freeway design subarea gave affirmative answers than did those from corresponding zones withim design subareas; this difference was significant at the .05 probability level.

Last, those who said that there were other noises more annoying than those from the freeway were asked to indicate the sources of these noises. Trains passing or switching were the primary source of these noises, especially for the zone closest to railroads (Zone 3).

When the responses to the above questions were classified by the ages of respondents, as shown in Table 8 of Appendix A, a higher percentage of those 60 years and over said that the freeway noticeably raised the noise level (enough to annoy them) than did those under 60 years of age.

To gain more insight about noises and the possible relationship between freeway noise and the sight of the freeway from the premises of all 229 respondents, the interviewers themselves made certain observations. These observations are shown in Table 9

of Appendix A. It was found that 32 percent of the respondents' premises were in sight of the freeway. One significant finding was that the interviewers detected freeway noises at almost all the premises that were in sight of the freeway. Noises from the freeway and streets ranked at the top of the list of noises heard. Train noise ranked high on the list for Zone 3. The noises heard by the interviewers were those that occurred during any hour of the day between 9:00 a.m. and 11:00 p.m. Monday through Firday, over a period of several weeks in October and November, 1970. The interviewers observed that noises annoyed them at 58 percent of the respondents' premises. The percentage of premises with bothersome noise decreased as the distance from the freeway increased. It was generally concluded that the least annoyance from noise occurred at premises located in the depressed freeway design subarea and in Zone 2 of any of the three design subareas. Zone 2 was further from the freeway and railroads than the other two zones.

Under another research project, Texas Transportation Institute researchers have been studying urban highway traffic noise reduction. Some of the data were collected in and near the study area selected for this study. A standard sound pressure meter was used to obtain an average sound pressure level (dBA) at distances of 50, 100, 200, and 400 feet from the pavement of

Katy Freeway at two study sites. One site was located in the depressed freeway design subarea at Radcliffe Street on the north side of Katy Freeway, and the other was located in the on grade freeway design subarea at Arlington Street, also on the north side of the freeway. The freeway is depressed 20 feet at the first site and five feet at the second site.

Measurements were taken in January, 1971, about one month after the interviews were completed for this study. At the first site, the measurements were taken at 7:30 a.m. and 2:00 p.m. At the second site, they were taken at 12:15 p.m. and 5:00 p.m.

Four other sites (two on each side of the Katy Freeway at distances of from two to three miles away) were used to establish the ambient or background noise level in the general area not close to freeways or railroads. The specific sites and times of measurement were as follows: the intersection of Dunlavy and Vermont Streets, at 11:43 p.m.; the intersection of 16th and Tulane Streets, at 8:30 a.m.; the intersection of Haddon and Ridgewood Streets, at 8:08 a.m.; and the intersection of 14th and Tulane Streets, at 1:12 a.m.

The mean sound pressure level (dBA) measurements for the two sites in the study area and the first two ambient noise sites are shown in Figures 6 and 7. Also, the affirmative answers (percentages)





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to some of the questions on annoyance by noise are presented in Figure 6 and 7 for comparative purposes. These affirmative answers were obtained from both respondents and interviewers. The data points are those of the zones, and they are roughly the mean distances of the respondents' premises in each zone from the freeway.

According to Figure 6, the freeway noise level, reflected by the mean sound pressure level (dBA) during the peak morning hours of traffic at the site in the depressed freeway design subarea, declined as the distance from the freeway increased. It declined more rapidly the first 200 feet than the last 200 feet. Also, the percentages of affirmative answers regarding annoyance from noise declined rapidly the first 400 feet but failed to change much at greater distances. Perhaps the reason interviewers were annoyed more than resident respondents was because they were concentrating upon noises for purposes of observation. Also, their responses pertained to all noises, not just those from the freeway. According to Figure 7, the mean sound pressure level (dBA) during the peak evening hours declined at about the same rate throughout the first 400 feet from the freeway at the site in the on grade freeway design The noise level at the previous site in the depressed subarea. freeway design area dropped somewhat faster for the first 200 feet than it did at this site. But the beginning and ending levels were about the same at both sites. Although the percentages

of affirmative answers relating to noise declined throughout the first 900 feet in this freeway design subarea, they did so at different rates. Also, they were at higher levels at nearly all data points than shown for the corresponding percentages of the depressed freeway design subarea.

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Figures 6 and 7 show that as the measured freeway noise level decreased the percentage of affirmative answers relating to noise decreased. Between the mean sound pressure levels (dBA) of 65 to 80, the percentage of affirmative answers relating to noise decreased very rapidly. As the mean sound pressure level (dBA) reflecting freeway noise approached the ambient noise level, the percentage of affirmative answers based on being annoyed by freeway noise also approached zero.

<u>Travel Time</u> - The prior residents were asked how the freeway affected their travel time to selected places. The responses of those who made such trips are presented in Table 23. Except for traveling to places of employment, no more than two percent of them indicated that the freeway caused their travel time to these places to increase. A much larger percentage said that travel times had decreased, especially to downtown Houston, to parks and other recreational facilities, and to doctors and dentists.

Except to places of employment and to parks, a higher percentage of Zone 1 respondents reported a travel time increase than did respondents in Zones 2 and 3. Most such Zone 1 respondents lived in either the depressed or elevated freeway design subarea. A higher percentage from the latter subarea said that their

Responses of Prior Residents to Questions Concerning Changes in Travel Time to Selected Places Due to Katy Freeway by Zones Within Design Subareas, Zones, and All Zones

	D	epres	sed		On Gr	ade	E	levat	ed	A11 1	Desig	n Sub	areas
Responses to Questions						Zone							
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
				(d.	ata e	xpress	sed in	n per	centa	ges) <sup>2</sup>			
To Place of Employment?													
Increased	6	36	0	0	0	0	14	0	0	7	28	0	15
Decreased	50	28	33	40	50	60	43	75	40	48	35	42	39
Remained same	44	36	67	60	50	40	43	25	60	45	37	58	46
Number of Respondents	(36)	(14)	(6)	(5)	(10)	(10)	(7)	(4)	(5)	(48)	(28)	(21)	(97)
To Schools?													,
Increased	0	0	0	0	0	0	40	0	0	10	0	0	1
Decreased	6	0	Ō	0	0	Ō	0.	Ō	0	-3	Ō	Ō	. +
Remained same	94	100	100	100	100	100	60	100	100	87	100	100	99
Number of Respondents	(16)	(5)	(6)	(2)	(4)	(5)	( 5)	(1)	(1)	(23)	(10)	(12)	(45)
To Grocery Stores?													
Increased	5	0	0	0	0	0	15	14	0	8	1	0	1
Decreased	11	Ō	0	Ō	23	8		14	Ō	9	16	2	9
Remained same	83	100	100	100	77	92	77	72	100	83	83	98	90
Number of Respondents	(46)	(2)	(7)	(8)	(13)	(13)	(13)	(7)	(11)	(67)	(22)		(120)
-		( -)	· · /	( -)	(-0)	(10)	(20)	( . ,	()		(/		(10)
To Other Shopping Facil													
Increased	5	0	0	0	0	0	15	0	0	6	0	0	+
Decreased	23	38	14	25	69	38	8	43	40	21	45	26	- 35
Remained same	72	62	86	75	31	62	77	57	60	73	55	74	65
Number of Respondents	(47)	(13)	(7)	(8)	(13)	(13)	(13)	(7)	(10)	(68)	(33)	(30)	(131)
To Churches?													
Increased	8	0	0	0	0	· 0	15	14	0	9	1	0	2
Decreased	13	25	14	0	0	0	8	Ö	0	10	17	8	12
Remained same	79	75	86	100	100	100	77	86	100	81	82	92	86
Number of Respondents	(39)	(12)	(7)	(7)	(13)	(9)	(13)	(7)	(9)	(59)	(32)	(25)	(116)
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## Table 23 (continued)

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Responses of Prior Residents to Questions Concerning Changes in Travel Time to Selected Places Due to Katy Freeway By Zones Within Design Subareas, Zones, and All Zones

	De	epres	sed	On Grade			Elevated			All Design Suba			areas
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	A11
	1	2	3	1	2	3	1	2	3	1	2	3	Zone
			······	(da	ata ez	pres	sed in	n pere	centa	ges) <sup>2</sup>			
To Doctors and Dentists	?`												
Increased	9	0	0	0	0	0	20	0	0	9	0	0	1
Decreased	33	54	43	0	38	25	0	14	30	25	47	35	40
Remained same	58	46	57	100	62	75	80	86	70	66	53	65	59
Number of Respondents	(45)	(13)	(7)	(8)	(13)	(12)	(10)	(7)	(10)	(63)	(33)	(29)	(125)
To Parks?								·					
Increased	0	0	0	0	0	0	12	0	0	2	0	7	4
Decreased	38	90	29	0	12	63	25	67	33	33	61	75	67
Remained same	62	10	71	100	88	37	63	33	67	65	39	18	29
Number of Respondents	(40)	(10)	(7)	(4)	(8)	(8)	(*8)	(3)	(3)	(52)	(21)	(18)	(91)
Other Recreational Faci	lities	s?											
Increased	. 0	- 0	0	0	0	0	22	0	0	-5	0	· · 0 ·	+
Decreased	61	75	50	0	50	89	11	50	57	47	69	35	- 51
Remained same	39	25	50	100	50	11	67	50	43	48	31	65	49
Number of Respondents	(36)	(12)	(6)	(4)	(8)	(9)	( 9)	(4)	(7)	(49)	(24)	(22)	(95)
Homes of Relatives and	Friend	ds?					•						
Increased	4	0	0	0	0	0	15	0	0	7	0	0	1
Decreased	27	7	57	25	54	38	15	57	55	24	21	44	29
Remained same	69	93	43	75	45	52	70	43	45	69	79	56	70
Number of Respondents	(45)	(14)	( 7)	(8)	(13)	(13)	(13)	(7)	(11)	(66)	(34)	(31)	(131)
Downtown													
Increased	2	0	0	0	0	0	9	0	0	3	Ũ	0	+
Decreased	47	29	71	50	54	75	18	43	60	42	35	71	76
	· 51	71	29	50	46	25	73	57	40	55	65	29	24
Remained same	71	/ -	~ ~ ~		• •								

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

travel time to other places increased due to more circuitous travel required to get on or across the freeway. More than onefourth of the Zone 2 respondents said that travel times to places of employment increased. These respondents were located in the depressed freeway design subarea.

<u>Other</u> - The prior resident respondents were asked a series of additional questions, the responses to which are briefed below. They were asked whether there were places that they no longer visited because of the freeway. Only five percent of them answered in the affirmative. They were asked whether the new freeway was safer and more comfortable to use than other routes previously used. Two-thirds of the answers were in the affirmative.

Concerning freeway effects on fire and police protection, only four percent believed that such services were hindered. Less than one percent held the opinion that hospital and ambulance services were negatively affected. Nearly one-half of the respondents thought that all such services had been improved by the freeway.

In terms of their overall viewpoint, they were asked if they were benefited more than harmed by the freeway. Only two percent gave a negative answer, whereas 75 percent gave a positive answer.

## Effects on Neighborhood

In addition to being queried about the freeway's effects on their personal lives and activities, the prior residents were also asked to give their opinions about possible effects on their neighborhood. These responses are presented in Tables 24-29.

As shown in Table 24, 36 percent of the respondents felt that the presence of the freeway had generated positive effects. Among these effects were: (1) it made the neighborhood more accessible, and, at the same time, it made the rest of the city more accessible to neighborhood residents; (2) it resulted in the removal of some badly deteriorated structures and the elimination of dumping grounds; and (3) it increased the value of property and stimulated business activity.

The 14 percent who thought that the freeway had a negative impact listed the increased traffic on neighborhood streets and the division of the neighborhoods as the principal effects.

Approximately one-half of the prior residents either thought that the freeway had yielded no effects or had no answer about the overall effects. The high percentage of no answer responses was largely due to the inability of respondents, primarily those farthest removed from the freeway, to distinguish freewayrelated effects in the complexity of changes that had occurred.

#### Value of Homes

A specific effect, the change in the value of homes, was examined, and the opinions of the respondents are presented in Table 25. Forty percent of the prior residents thought that the freeway had enhanced the values of the homes in the neighborhood. Only 1 percent thought the values of the homes had been decreased, while 31 percent and 28 percent thought that there had been no influence or did not know the effects.

#### Travel Habits

Since travel on neighborhood streets is likely to be influenced by the opening of a freeway, the prior residents were questioned to determine the extent, if any, of these effects. As shown in Table 26, the majority of the responses (53 percent) were that neighborhood travel patterns had not been altered. On a design subarea basis, this result was more pronounced in Zones 2 and 3 than in Zone 1. Seventy-five percent of the respondents in Zone 3 of the depressed design subarea thought that no change had occurred in neighborhood travel patterns.

Among those who said that travel patterns had changed, Zone 1 residents were most numerous; this was particularly true along the elevated design section. A specific type of changed travel pattern, increased circuity of travel, was mentioned by

	<u>All Design S</u>	ubareas Combined
Responses to Questions	Absolute <sup>2</sup>	Expanded <sup>3</sup>
	(data expresse	d in percentages)
Overall Effects? <sup>5</sup>		
Positive	37	36
Negative	28	14
Mixed	3	5
None	10	16
No answer	22	29
Number of Respondents	(138)	(138)
Positive Effects?		
Made neighborhood more accessible	35	. 46
People use freeway to go places	30	28
Cleaned out slums	20	25
Removed dumping grounds	5	10
Increased value of properties	7	5
Stimulated business activity	7	4
Decreased traffic on streets	4	3
Cleaned out bayou	5	+
Others	15	20
Number of Responses	(69)	(69)
Number of Respondents	(54)	(54)
Negative Effects?		
Increased traffic on streets	13	28
Divided neighborhood	42	22
More commercial property	7	8
Neighborhood not as safe	10	3
Decreased value of property	5	2
More rent property	- 5 - 3	1
More litter	· 3	· <u>1</u>
More dust, smoke, or fumes	32	1 39
Others Number of Responses	(48)	(48)
Number of Respondents	(40)	(40)
у 	(40)	
+ = Less than one-half of one percent		····*
<sup>1</sup> See Footnote 4 of Table 8.		
<sup>2</sup> See Footnote 1 of Table 8.		
<sup>3</sup> See Footnote 1 of Table 2.		
<sup>4</sup> See Footnote 2 of Table 2.		
<sup>5</sup> See Footnote 3 of Table 21.		

# Responses of Prior Residents to Questions Concerning After Period Effects of Katy Freeway on Neighborhood for All Design Subareas Combined<sup>1</sup>

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Table 24

	All Design Su	ibareas Combined
Responses to Questions	Absolute <sup>2</sup>	Expanded <sup>3</sup>
	(data expressed	l in percentages)
Did Freeway Influence Value of Homes?		
Increased value	54	40
Decreased value	4	1
No influence	17	31
No answer	25	28
Number of Respondents	(138)	(138)
<sup>1</sup> See Footnote 4 of Table 8.		
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<sup>2</sup> See Footnote 1 of Table 8.		
<sup>2</sup> See Footnote 1 of Table 8. <sup>3</sup> See Footnote 1 of Table 2.		

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	D	Depressed			On Grade			Elevated			All Design Subareas			
Responses to Questions	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	Zone 1	Zone 2	Zone 3	All Zone	
				(d.	ata ez	xpres	sed in	n per	centa	ges) <sup>2</sup>				
Nays Freeway Affected 1		Habi	ts?				•	-		-				
People now use freeway	to to													
go places	20	29	0	0	15	15	8.	14	55	15	25	15	19	
Changed patterns of														
travel	14	14	13	33	8	23	38	43	9	21	16	15	16	
Caused circular travel	L													
to some places	30	7	12	44	8	8	23	29	18	30	9	12	12	
None	38	50	75	33	54	39	23	57	36	34	51	58	53	
No answer	8	0	0	0	15	15	8	0	9	5	3	6	5	
Number of Responses	(50)	(14)	(8)	(10)	(13)	(13)	(13)	(10)	(14)	(73)	(37)	(35)	(145)	
Reduced Traffic on Mind	or Str	eets?	3											
Yes	54	58	50	33	54	46	46	72	27	50	58	44	51	
No	34	28	25	56	46	46	39	28	46	44	32	35	34	
No answer	2	14	25	11	0	8	15	0	27	6	10	21	15	
Reduced Traffic on Majo	or Str	eets?	4											
Yes	58	28	62	67	54	85	46	86	46	57	39	65	52	
No	28	36	0	22	31	0	39	14	27	29	33	5	20	
No answer	14	36	38	11	15	15	15	0	27	14	28	30	28	
Number of Respondents	(50)	(14)	(8)	( 9)	(13)	(13)	(13)	(7)	(11)	(72)	(34)	(32)	(138)	

Table 26 Responses of Prior Residents to Questions Concerning Changes in Neighborhood Travel Habits and Traffic Congestion Due to Katy Freeway by Zones

<sup>3</sup>Using actual sample numbers in  $\chi^2$  test, the overall difference among the nine zones within design subareas is not significant at the .05 probability level.

<sup>4</sup>Using actual sample numbers in  $\chi^2$  test, the overall difference among the nine zones within design subareas is not significant at the .05 probability level.

Responses of Prior Residents to Questions Concerning Hazards and Complaints Heard in Neighborhood Due to Katy Freeway by Zones Within Design Subareas, Zones, and All Zones

	Depressed			(	On Gra	ade	E	levate	eđ	All Design Subareas <sup>1</sup>			
Responses to Questions	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	Zone	A11
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
				( d)	ata e	xnres	sed in	n pero	renta	$(2 es)^2$			
Did Freeway Cause Any H	lazard	s?		(-				a per	cenea,	5007			
Yes	22	- 7	12	22	31	31	23	0	0	22	11	15	14
Traffic	12	7	12	0	23	31	0	0	0	8	10	15	12
Drainage and other	2	Ó	0	11	0	0	8	Ō	0	4	0	0	1
None mentioned						-	-	-	-	-			-
specifically	8	0	0	11	8	0	15	0	0	10	1	0	1
No	72	86	88	67	69	54	69	86	82	71	83	78	79
No answer	6	7	0	11	0	15	8	14	18	7	6	7	7
and the second													
		<u>ds</u> ?											
Yes <sup>3</sup>	34	14	25	11	31	31	15	43	18	28	20	25	26
Traffic	. 8	0	12	0	8	31	Q	29	0	5	4	15	12
City dump	2	0	0	0	8	0	0	0	0	1	2	0	1
Slum houses	4	0	0	0	15	0	0	14	0	2	4	0	2
Fire traps	8	0	0	0	0	Q	0	0	0	5	0	0	1
Others	16	0	13	0	0	0	15	0	18	11	0	10	5
None mentioned													
specifically	4	14	0	11	0	0	0	0	0	4	10	0	5
No	60	79	63	78	69	62	77	43	72	65	73	64	65
No answer	6	7	12	11	0	7	8	14	9	7	7	11	9
Have You Heard Complair	to Ah	out T	<b>r</b> o ou o										
Yes <sup>3</sup>	24	14		56 S	14	23	46	57	0	32	19	6	14
Increased traffic	24	$14 \\ 14$	0	0	14 0	15	40	57	0	1	10	4	14 7
Caused too much noise	_	14	0	44	13	10	23	29	0	19	5	4	3
Caused more dust, smo		U	U	44	ТЭ	ų	43	27	U	Τ2	5	U	3
or fumes	оке 0	0	0	0	0	0	8	0	0	1	0	0	+
or rumes	U	U	U	U	U	U	0	U	0	Т	U	U	т

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## Table 27 (continued)

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#### Responses of Prior Residents to Questions Concerning Hazards and Complaints Heard in Neighborhood Due to Katy Freeway by Zones Within Design Subareas, Zones, and All Zones

	D	epres	sed	. (	On Gra	ade	E	levat	ed	A11	Desig	n Suba	areas
Responses to Questions	Zone	Zone		Zone			Zone			Zone			
	1	2	3	1	2	3	1	2	3	1	2	3	Zones
				(d.	ata e:	xpres	sed in	n per	centa	ges) <sup>2</sup>			
Have You Heard Complain	ts Ab	out F	reewa	y? (c	ontin	ued)							
Children are in more		_	_			_							
danger	2	0	0	0	0	0	0		0	1	0	0	+
Other complaints	0	0	0	0	0	0	31	0	. 0	5	· 0	Ó	1
None mentioned				1									х. С
specifically	6	· 0	0	12	12	8	0	28	0	5	4	2	3
No	76	86	100	. 44	85	77	46	43	100	66	81	94	86
No answer	0	0	. 0	0	0	0	8	0	0	2	0	.0	+
			i os	( 0)	(12)	(12)	(13)	(-)	(11)	(72)	(2/)	(22)	(1 2 0 )

<sup>1</sup>See Footnote 1 of Table 2.

<sup>2</sup>See Footnote 2 of Table 2.

<sup>3</sup>Of all respondents giving affirmative answers, a few mentioned more than one hazard or complaint which prevented the percentages of named hazards or complaints from adding up to equal the total percentage of affirmative answers.

12 percent of the respondents. Again mention of this effect was most prevalent in Zone 1 of all the design subareas and in all zones along the elevated design section.

### Traffic on Streets

When asked for their general impressions about the amount of traffic using major and minor streets in the neighborhood, the majority of the prior residents thought that travel on such streets had been reduced. Among zones within the design subareas there were no significant differences in the responses. Hazards

Some of the traffic that was generated or routed onto neighborhood streets was interpreted as a hazard caused by the freeway. As noted in Table 27, however, only 12 percent of the prior residents thought that such a hazard was created; while 79 percent said that no hazards had been created by the location and operation of the freeway. When asked if the freeway had resulted in the removal of hazards, another 12 percent stated that traffic hazards, primarily in the form of street intersections, had been eliminated. The majority of the respondents, however, said that the freeway had not removed any hazards. Complaints Heard

The last part of Table 27 indicates that there had been little negative discussion among the neighborhood about the freeway. Those complaints that were mentioned included increased traffic and increased noise, dust, and exhaust fume levels.

Responses to Questions	Zone 1 A Absolute <sup>1</sup>	11 Design Sub Absolute <sup>2</sup>	eareas Combine Expanded <sup>3</sup>
	(data	expressed in	percentages) <sup>4</sup>
Did Many Displaced People Remain in N	eighborhood?		•
Yes	8	8	6
No	85	69	48
No answer	7	23	46
How Far Away Did Some Move?			
Less than 1 mile	2	3	3
1 - 2.9 miles	4	3	2
3 - 5.0 miles	10	14	11
More than 5 miles	68	42	15
No answer	16	38	69
Did Close Friends and Relatives Move?	. *		
Yes	51	41	25
No	49	59	75
Did Freeway Remove Any Meeting Places	?		
Yes	33	25	17
Church	14	14	14
Cafe or tavern	14	7	1
Community center	3	1	+
None mentioned specifically	2	3	2
No	67	67	72
No answer	Ó	8	11
Number of Respondents	(72)	(138)	(138)

Responses of Prior Residents to Questions Concerning People and Places Displaced by Katy Freeway for Zone 1 and All Design Subareas Combined

Table 28

+ = Less than one-half of one percent.

<sup>1</sup>See Footnote 1 of Table 8. The percentages based on expanded totals were omitted, being almost identical to those based on absolute totals, due to the Zone 1 subareas expansion factors being nearly the same.

<sup>2</sup>See Footnote 1 of Table 8.

<sup>3</sup>See Footnote 1 of Table 2.

<sup>4</sup>See Footnote 2 of Table 2.

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Responses of Prior Residents to Questions Concerning the Overall Effect of Katy Freeway on People Who Had to Move and on the Neighborhood for Zone 1 and All Subareas Combined

Responses to Questions	Absolute	Absolute <sup>2</sup>	bareas Combine Expanded <sup>3</sup>
	(data	expressed in	percentages) <sup>4</sup>
are People Who Had to Move Better o	r Worse Off?		•
Better off	64	67	63
Worse off	1.5	9	5
Neither	13	13	16
No answer	8	11	16
n Neighborhood Better Off or Worse	Off?		
Better off	58	48	30
Worse off	7	7	5
Neither	4	4	3
Nerther	31	41	62
No answer	21		

<sup>2</sup>See Footnote 1 of Table 8. <sup>3</sup>See Footnote 1 of Table 2.

<sup>4</sup>See Footnote 2 of Table 2.
### Displaced People and Meeting Places

The final series of questions was asked to discover how the displacement of people and meeting places was evaluated by the prior residents. Since the effects of displacement may have been more obvious to the residents living next to the right-of-way (Zone 1), the responses of these persons are presented separately in Tables 28 and 29.

According to Zone 1 residents, most of the displacees did not relocate in the neighborhood. Only 7 percent of the Zone 1 respondents were unable to give an opinion on place of relocation, whereas 46 percent of the respondents from all zones did not answer. Further, 51 percent of the Zone 1 respondents had close friends or relatives that had been displaced; only 25 percent of all respondents mentioned the relocation of close friends and relatives.

When asked if any buildings that accommodated neighborhood social functions had been moved, the Zone 1 respondents replied that some churches and taverns and a community center were removed by the right-of-way taking.

### Overall Effects on Neighborhood

Finally, respondents were asked for their qualitative opinions of the effects for both those who had to move and the remainder of the neighborhood. There was general agreement among respondents of all zones that the displacees had been made better off by their relocation. When evaluating the effects

on the remaining neighborhood, 58 percent of the Zone 1 respondents believed that the neighborhood was now better off than before the freeway was built. This compares with only a 30 percent similar response from respondents of all design subareas, but 62 percent of all respondents gave no opinion in this regard.

#### Summary

Most of the prior resident respondents were 60 or more years old, homeowners, and living alone or with one other person. Only about half of them were fully employed, and most of the others were retired.

Concerning the freeway effects on the prior residents themselves, these were broken down into anticipated, construction period, and after period effects. In regard to the anticipated effects, the majority of them thought that the freeway would be of value to them, primarily from the standpoint of its convenience to use. A higher percentage of those under 60 years of age came to the above conclusion than did those 60 years and older.

About 20 percent of the prior residents experienced construction period problems, the most mentioned being noise and dust from trucks and bulldozers. Older residents and especially residents of Zone 1 had the most problems of this kind.

In regard to after period effects, only Zone 1 had a majority of its respondents (most of them 60 years and older) who experienced negative effects. The most often mentioned negative effect was noise. The most often mentioned positive effect was time saved by using the freeway. A smaller percentage of the respondents from the depressed freeway design subarea mentioned negative effects than of those from the other

design subareas. When asked about noise, again only Zone 1 had a majority of its respondents (most of them 60 years and older) who said that the freeway noticeably raised the noise level. A much smaller percentage of respondents of this zone were actually annoyed by freeway noise, especially in the depressed freeway design subarea. The interviewers were annoyed more by noises than the respondents themselves, but about the same pattern of responses existed from zone to zone and design subarea to design subarea. The measured freeway noise levels, reflected by mean sound pressure levels (dBA), and the percentages of respondents and interviewers annoyed by freeway noise declined rapidly for the first 400 feet from the freeway in both the depressed and on grade freeway design subareas. Higher levels of measurements and percentages occurred in the on grade design subarea.

Very few respondents said that the new freeway increased their travel time to certain places; most of those who reported this experience lived in Zone 1. Those of Zone 1 were made more aware of circuity of travel to get on or across the freeway than those of the other zones, especially in the elevated design subarea.

The questions about the neighborhood's effects were, as might be expected, more difficult for the respondents to answer than questions relating to effects upon their personal lives and activities. Consequently, in many instances respondents were not able or inclined to respond.

Nonetheless, the following conclusions seem plausible:

- the positive effects of the freeway dominated the negative effects;
- (2) the freeway effect upon housing values was neutral to positive but definitely not negative;
- (3) travel habits tended to be unaffected except in zones nearest the freeway and in the elevated design subarea;
- (4) the freeway did not cause or eliminate many hazards. The most mentioned exceptions were the creation of heavier traffic (a hazard) in all but the elevated design subarea and the elimination of some "dangerous" intersections;
- (5) regarding displacement of people and places, the Zone 1 respondents were the most informed. They stated that displacees did not relocate in the neighborhood, and that after relocating were, in general, better off. On balance, more respondents in the study area thought that the neighborhood had been made better off than those who thought the neighborhood was worse off.

# APPENDIX A - SUPPLEMENTAL DATA

## Table 1

Critical Dates Involved in the Planning and Construction of Katy Freeway Through the Study Area

Type of Action	Date
Public Hearing	
Route Design	March 20, 1957 November 1, 1963
Authorized to Purchase Right of Way	December 12, 1962
Acquisition of Right of Way <sup>1</sup>	•
Began Completed	June 15, 1963 January 5, 1970
Right of Way Clearance Completed	October 10, 1966
Construction	
Began Completed	December 31, 1963 February 13, 1969
Opened to Traffic	December 1, 1968

<sup>1</sup>For purchases made by the State. The City of Houston purchased some right of way prior to June 15, 1963

Source: Texas Highway Department

#### Table 2

Katy Freeway Right of Way Takings in Different Uses Prior to Purchase Date by Freeway Design Subareas<sup>1</sup>

	Freeway Design Subarea						
Type of Taking	Depressed			All Areas			
		(Number	of Takings)				
Whole Takings							
With residence only	114	46	51	211 ·			
With residence and business	8	0	0	8			
With business only	3	1	2 1 42	6 3			
With church building	2	0	1	3			
With no building	21	5	42	30			
Total Whole Takings	148	52	58	258			
Partial Takings							
With residence only	6	3	9	18			
With residence and business	0	0	0	0			
With business only	2	0	2	4			
With no building	43	3	1	8			
Total Partial Takings	12	6	12	30			
All Takings							
With residence only	120	49	. 60	229			
With residence and business	8	0	0	-8			
With business only	5	1	4	10			
With church building	2	0	1 5	3			
With no building	25	8	5	38			
Total All Takings	160	58	70	288			

<sup>1</sup>Represents only takings by the State. In addition, the City of Houston purchased some 30 whole takings and 13 partial takings. <sup>2</sup>One of these was used by the Boy Scouts of America.

 $^3\mathrm{Two}$  of these were portions of two city parks.

Source: Texas Highway Department

## Table 3

## Modes of Transportation Used By Respondent Households To Travel To and From Selected Destinations For All Design Subareas Combined

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Modes of Transportation	<u>All Subare</u>	as Combined
and Destinations	Absolute <sup>1</sup>	Expanded <sup>2</sup>
	(data expres	sed in percentages
Place of Employment		
Automobile or truck	91	88
Bus	14	21
Taxi	1	2
Walk	· 7	6
Number of Responses	(190)	(190)
Number of Respondents	(168)	(168)
Schools		
Automobile or truck	55	49
Bus	12	14
Taxi	4	4
Walk	53	45
Number of Responses	(91)	(91)
Number of Respondents	(73)	(73)
Grocery Stores		
Automobile or truck	90	88
Bus	5	6
Taxi	2	2
Walk	39	42
Number of Responses	(307)	(307)
Number of Respondents	(227)	(227)
Other Shopping Facilities		<b>A</b> 4
Automobile or truck	92	96
Bus	21	16
Taxi	2	1
Walk	5	4
Number of Responses	(261)	(261)
Number of Respondents	(218)	(218)
Church		7.0
Automobile or truck	83	79
Bus	1	1
Taxi	+	+
Walk	20	22
Number of Responses	(202)	(202)
Number of Respondents	(194)	(194)

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### Table 3 (continued)

Modes of Transportation Used By Respondent Households To Travel To and From Selected Destinations For All Design Subareas Combined

Modes of Transportation	All Subare	as Combined
and Destinations	Absolute <sup>1</sup>	Expanded <sup>2</sup>
	(data expres	sed in percentages)
Doctors and Dentists		
Automobile or truck	87	87
Bus	12	16
Taxi	2	2
Walk	3	4
Number of Responses	(227)	(227)
Number of Respondents	(217)	(217)
Parks	-	
Automobile or truck	96	87
Bus	2	6
Walk	3	3
Other	2	2
Number of Responses	(156)	(156)
Number of Respondents	(150)	(150)
Other Recreational Facilities	0.4	<u>^</u>
Automobile or trucks	97	99
Bus	5	3
Taxi	1	1
Walk	3	5
Number of Responses	(158)	(158)
Number of Respondents	(150)	(150)
Homes of Relatives and Friends Automobile or truck	91	94
Bus	10	12
Taxi	2	2
Walk	21	19
Number of Responses	(271)	(271)
Number of Respondents	(219)	(219)
Number of Respondents		(219)
Downtown	0.5	0.0
Automobile or truck	85	82
Bus	23	24
Taxi	1	1
Walk	+	1
Number of Responses Number of Respondents	(239) (218)	(239)
Νυπρές οτ κέςροραζερίς	(210)	(218)

<sup>2</sup>See Footnote 1 of Table 2 in text. <sup>3</sup>See Footnote 2 of Table 2 in text.

#### Table 4

Responses to	Prior	Residents <sup>1</sup>	New	Residents	All Re	sidents
Question	Absolute <sup>2</sup>	Expanded <sup>3</sup>	Absolute <sup>2</sup>	2	Absolute <sup>2</sup>	Expanded
		(data	expressed	in percentag	es) <sup>4</sup>	· · · · · · · · · · · · · · · · · · ·
Does the Freeway Annoy You?						
Yes <sup>5</sup>	41	18	24	14	34	16
Noise	34	14	16	5	28	10
Fumes	4	2	0	0	2	· 1
Dust	2	+	0	0	1	+
Litter	1	+	0	0	+	+
Sight of traffic	2	+ '	3	5	3	2
Other ways	6	3	7	5	6	4
No	58	82	75	85	65	83
No answer	1	+	1	1	1	1
Number of Respondents	(138)	(138)	(91)	(91)	(229)	(229)
+ - Less than one-half of or	ne percent					· · · · · · · · · · · · · · · · · · ·
<sup>1</sup> See Footnote 4 of Table 8 i						e ad
<sup>2</sup> See Footnote 1 of Table 8 i				<i>u</i> .		т. С. н.
<sup>3</sup> See Footnote 1 of Table 2 d	in text.					a a san s

Responses of New and Prior Residents to Question Concerning the Degree and Ways of Annoyance from Katy Freeway for All Design Subareas Combined

<sup>4</sup>See Footnote 2 of Table 2 in text.

<sup>5</sup>Of all respondents giving affirmative answers, a few mentioned more than one annoyance coming from the freeway which prevented the percentages of named annoynaces from adding up to equal the total percentage of affirmative answers.

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#### Table 5

Responses of Prior Residents by Age Groups to Questions Concerning Anticipated Effects of the New Katy Freeway for Zone 1 and All Zones of Design Subareas Combined

	Zo	ne 1.	All Zones				
	Abso	lute	Abs	olute	Exp	anded <sup>2</sup>	
Responses to	Under	60 and	Under	60 and	Under	60 and	
Questions	60 years	over	60 years	over	60 years	over	
		(data	expressed i	n percenta	ges) <sup>3</sup>		
Would Freeway be of Value to You?			-		0		
Yės	66	34	65	45	63	47	
No	23	33	15	21	7	9	
No answer	11	33	20	34	30	44	
Number of Respondents	(36)	(36)	(65)	(73)	(65)	(73)	
Reasons Why Yes?							
Would provide better access	16	17	19	33	18	45	
Would increase property values	29	25	21	27	11	38	
Would be convenient to use	29	17	40	27	67	27	
Would reduce traffic on streets	9	8	5	12	2	12	
Would stimulate neighborhood	4	8	7 .	12	18	12	
Would save time getting places	12	0	12	12	7	11	
Other reasons	20	17	14	6	7	5	
No answer	5	8	2	3	1	2	
Number of Responses	(30)	(12)	(51)	(44)	(51)	(43)	
Number of Respondents	(24)	(12)	(42)	(33)	(42)	(33)	
Reasons Why No?	•		1. S.	•		·	
Would increase traffic on streets	33	33	27	29	11	12	
Would increase noise level	56	25	45	20	19	10	
Too many residences to be taken	0	0	9	0	36	0	
Other reasons	33	41	55	50	55	73	
No answer	0	33	0	21	0	. 7	
Number of Responses	(11)	(15)	(13)	(17)	(13)	(17)	
Number of Respondents	(9)	(12)	(11)	(14)	(11)	(14)	

<sup>1</sup>See Footnote 1 of Table 8 in text.

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 $^2$ See Footnote 1 of Table 2 in text.

<sup>3</sup>See Footnote 2 of Table 2 in text.

# Table 6

Responses of Prior Resi	dents by Age	Groups to (	Questions Co	oncerning H	roblems (	Caused During
Construction of Kat	y Freeway for	Zone 1 and	d All Zones	of Design	Subareas	Combined

	Z	Zone 1		All Zones			
	Absolute <sup>1</sup>		Abs	olute <sup>1</sup>	Expanded <sup>2</sup>		
Responses to	Under	60 and	Under	60 and	Under	60 and	
Questions	60 years	over	60 years	over	60 years	over	
		(data	expressed i	ages) <sup>3</sup>			
Did Construction of Freeway Cause	Problems?						
Yes	55	67	40	38	23	17	
No	45	34	60	62	77	83	
Number of respondents	(36)	(36)	(65)	(73)	(65)	(73)	
Problems Caused?							
Dust	35	37	31	38	12	55	
Street was closed	20	29	15	31	4	22	
Minor inconveniences	15	21	19	21	43	14	
Noise of trucks and bulldozers	20	17	27	14	55	4	
Damaged streets	5	. 8	8	7	21	3	
Caused drainage problems	10	8	8	7	2	3	
Others	20	21	19	24	12	27	
Number of Responses	(25)	(34)	(33)	(41)	(33)	(41)	
Number of Respondents	(20)	(24)	(26)	(29)	(26)	(29)	

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<sup>1</sup>See Footnote 1 of Table 8 in text.

<sup>2</sup>See Footnote 1 of Table 2 in text.

<sup>3</sup>See Footnote 2 of Table 2 in text.

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### Table 7

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# Responses of Prior Residents by Age Groups to Questions Concerning After Period Effects of Katy Freeway on Individuals for Zone 1 and All Zones Combined

	Z	one 1		A1	1 Zones		
	Abs	olutel	Abs	olute <sup>1</sup>	Expanded <sup>2</sup>		
Responses to	Under	60 and	Under	60 and	Under	60 and	
Questions	60 years	over	60 years	over	60 years	over	
, ,		(data	ta expressed in percentages) <sup>3</sup>				
Overall Effect? <sup>4</sup>			-		•		
Positive	31	11	40	21	47	25	
Negative	50	58	29	34	5	14	
None	11	11	20	23	29	32	
No answer	8	19	11	22	19	29	
Number of Respondents	(36)	(36)	(65)	(73)	(65)	(73)	
Positive Effects?							
Saves time getting places	64	50	73	72	64	94	
Use it to go places	0	0	13	22	17	26	
Better police protection	0	0	0	4	0	4	
Increased value of property	18	25	9	6	1	1	
Others	18	25	13	22	28	30	
Number of Responses	(11)	(4)	(25)	(23)	(25)	(23)	
Number of Respondents	(11)	(4)	(22)	(19)	(22)	(19)	
Negative Effects?							
Increased noise in home	33	52	32	48	24	50	
Increased traffic on streets	0	5	0	8	0	14	
Increased dust and fumes	28	0	32	4	48	8	
Have no access to property	16	24	16	20	12	8	
Can't park in front of house	11	19	11	16	9	5	
Other reasons	72	24	68	24	55	22	
Number of Responses	(29)	(26)	(30)	(30)	(30)	(30)	
Number of Respondents	(18)	(21)	(19)	(25)	(19)	(25)	

<sup>1</sup>See Footnote 1 of Table 8 in text.

<sup>2</sup>See Footnote 1 of Table 2 in text.

<sup>3</sup>See Footnote 2 of Table 2 in text.

<sup>4</sup>The individual responses were placed arbitrarily into positive and negative categories.

106

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### Table 8

Responses of Prior Residents by Age Groups to Questions Concerning Noises from Katy Freeway and Other Sources for Zone 1 and All Zones

	Zo	ne l	All Zones				
	Absolutel		Absolutel			anded <sup>2</sup>	
Responses to	Under	60 and	Under	60 and	Under	60 and	
Questions	60 years	over	60 years	over	60 years	over	
		(data	expressed in	n percenta	ges) <sup>3</sup>		
Did Freeway Noticeably Raise Noise	Level?						
Yes	72	89	54	60	31	29	
No	28	11	46	40	69	71	
Number of Respondents	(36)	(36)	(65)	(73)	(65)	(73)	
Was it Enough to Annoy You Much?							
Yes	62	66	54	55	40	.40	
No	38	34	46	45	60	60	
Number of Respondents	(26)	(32)	(35)	(44)	(35)	(44)	
Were There Other Noises More Annoy	ing?						
Yes	19	6	34	32	52	64	
No	81	94	66	68	48	36	
Number of Respondents	(36)	(36)	(65)	(73)	(65)	(73)	
What Noises Were More Annoying?				u -			
Trains passing or switching	57	100	68	64	82	67	
Industrial noises	14	0	14	23	7	21	
Loud talking in streets	0	õ	9	9	6	12	
Traffic on neighborhood streets	29	ŏ	14	9	4		
Dogs barking	0	ŏ	5	5	9	5 3	
Number of Responses	(7)	(2)	(24)	(24)	(24)	(24)	
Number of Respondents	(7)	(2)	(22)	(24)	(22)	(24)	
	·····	· -/		·····		(~~)	

<sup>1</sup>See Footnote 1 of Table 8 in text.

<sup>2</sup>See Footnote 1 of Table 2 in text. <sup>3</sup>See Footnote 2 of Table 2 in text.

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## Table 9

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# Responses of Interviewers to Questions Concerning Sight of Freeway and Noise by Zones and All Zones

			Zones		
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Responses to Questions	Absolutel	Absolute	Absolute <sup>1</sup>	Absolutel	Expanded
	<u> </u>	(data expre	essed in perce	intages) <sup>3</sup>	
Can You See the Freeway?					
Yes	99	53	27	69	32
No	1	47	73	31	68
Number of Respondents	(109)	(60)	(60)	(229)	(229)
Noises Detected?					
Freeway traffic	95	60	25	68	34
Street traffic	1	25	35	16	25
Freeway and street traffic	1	5	3	3	3
Train noise	10	10	30	14	21
Industrial noise	1	5	3	3	4
People talking	0	3	2	1	3
None	2	3	22	. 7	21
Number of Responses	(113)	(67)	(72)	(256)	(255)
Number of Respondents	(109)	(60)	(60)	(229)	(229)
Does the Noise Annoy You?					
Yes very much	21	8	10	15	8
Yes some	53	21	20	36	24
Yes very little	2	18	10	8.	10
No	24	53	60	41	58
Number of Respondents	(109)	(60)	(60)	(229)	(229)

<sup>1</sup>See Footnote 1 of Table 8 in text.

<sup>2</sup>See Footnote 1 of Table 2 in text.

 $^3$ See Footnote 2 of Table 2 in text.

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# APPENDIX B - SAMPLING PROCEDURES AND RELIABILITY

#### APPENDIX B

### SAMPLE PROCEDURES AND RELIABILITY

A stratified systematic sample of study area residences was drawn from the 1969 issue of Houston's City Directory. It is a disproportionate sample because one with a constant sampling rate from zone to zone within each freeway design subarea yielded too large a sample for the awailable inputs. The sample size was limited to between 200 and 250 residences. The goal was to obtain a 100 percent sample of the Zone 1 residences, regardless of freeway design subarea. This was expected to yield at least 100 residences. Then 120 residences were designated for the other two zones, 60 for each. Since there were three freeway design subareas to be sampled, the 60 residences for each zone was divided by three to yield a subsample of 20 residences for each zone segment within a given design subarea.

The subsamples were drawn systematically with the starting points independently determined. In other words, a subsample for a zone segment within a freeway design subarea was drawn in the following manner:

 The number of residences were counted in each zone segment and the sampling rate determined, e.g. say every 10th residence.

- 2. The serpentine path in which each subsample would be drawn was determined as follows:
  - a. Sample the streets parallel to the freeway first, proceeding from south to north, with the starting point being the most southerly street on the east end.
  - b. Next, sample the cross streets, proceeding from east to west, with the starting point being the most easterly street on the south end.
  - c. Sample first the even numbered residences on a street; then sample the odd numbered residences before proceeding to another street.
  - d. The actual starting point on the first parallel street for the first sampling interval, e.g. between the first and 10th residence, was determined by using a table of random numbers.
- 3. Alternates were selected in the following manner:
  - a. First alternate first residence or apartment to the right of the original sample residence or apartment.
  - b. Second alternate first residence or apartment to the left of the original sample residence or apartment.
  - c. For other alternate proceed to the next closest house or apartment until interview can be made.

4. Alternates were chosen to replace the original sample members (of which only 14 percent were replaced) only under the following circumstances:

a. If the sample residence was vacated.

- b. If no adult occupant could be interviewed after repeated attempts (at least four) had been made between 9:00 a.m. and 9:00 p.m.
- 5. Several attempts were made to interview the head of household before another adult, usually the wife, was interviewed.

The reliability of the sample statistics, representing the population parameters, is dependent upon the size of the subsamples. Since the results are presented primarily in percentages, the formula used to indicate the degree of reliability that can be placed in such percentages for a set sample size is as follows:<sup>1</sup>

$$\sigma_{P} = \sqrt{\frac{pq}{N-1} \left(1 - \frac{N}{P}\right)} \quad \text{where,}$$

 $\sigma p$  - the standard error of the percentage;

p - the percentage of the sample having a certain attribute;
q - the percentage of the sample not having the attribute;
N - the sample size;

P - the size of the population.

<sup>1</sup>Ferber, Robert and Verdoorn, P. J., <u>Research Methods in Economics</u> and Business, New York: The Macmillan Co., 1962.

For instance, given a sample size of 20, a population of 861, and an assumed 50-50 percent (pq) population variance, the standard error ( $\sigma p$ ) about a sample percentage is .1140. At a .95 confidence level, a sample percentage is within 22.34 percent of the true population percentage 95 times out of 100. The 22.34 percent is obtained by multiplying the  $\sigma p$  of .1140 by the t-distribution value of 1.96.

The above example represents the actual situation which applies to the subsample taken in Zone 3 of the depressed freeway design subarea. Since it has the highest expansion factor (P-N) of all subsamples, the 22.34 percent error about its sample percentages is higher than that for any of the other subsamples.

Of course, the percentages presented in this report represent those of the nine subsamples (zones within design subareas), those of the three zones, and those of the whole sample. This means that three subsamples were combined to obtain the overall zone percentages, and all nine subsamples were combined to obtain the percentages for the whole sample. Thus, the zone and whole sample percentages should be more reliable than those of one subsample, such as the example discussed above. In fact, since those of Zone 1 represent almost the whole universe of Zone 1 residences within the study area, they should be highly reliable. Those of Zone 2 should be more reliable than those of Zone 3.

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