

1. Report No. <b>TX-92/984-3</b>		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle <b>U.S. 75 North Central Expressway Reconstruction: Northwest Highway Screen Line Automobile and Transit User Panels, November 1990 Survey Results</b>				5. Report Date <b>May 1991</b>	
				6. Performing Organization Code	
7. Author(s) <b>G.L. Ullman and R.A. Krammes</b>				8. Performing Organization Report No. <b>Research Report 984-3</b>	
9. Performing Organization Name and Address <b>Texas Transportation Institute The Texas A&amp;M University System College Station, TX</b>				10. Work Unit No. (TRAILS)	
				11. Contract or Grant No. <b>Study 2-18D-90/91-984</b>	
12. Sponsoring Agency and Address <b>Texas Department of Transportation: Transportation Planning Division P.O. Box 5051, Austin, TX 78763</b>				13. Type of Report and Period Covered <b>Interim Report (September 1990-May 1991)</b>	
				14. Sponsoring Agency Code	
15. Supplementary Notes <b>Research performed in cooperation with the state of Texas Study Title: Highway Planning and Operations for District 18</b>					
16. Abstract <p>The results of the first during-construction survey indicate that ,to date, construction has had ver minor impacts upon travel in the corridor. Total trips made in the corridor and on the North Central Expresswy were not found to be significantly different from those reported in the pre-construction survey in May 1990. Likewise, departure times and travel times for the panelists work trips were not significantly different than before construction. Perhaps more important, panelists do not perceive that conditions are much worse than before construction began. A small increase in the number of panelists using the Dallas North Tollway to the west of the Expressway was detected, along with a very small (but not statistically significant) increased use of Greenville Avenue to the east.</p> <p>The survey also indicated that transit users have experienced little change in conditions as a result of construction. Transit panelists rated transit service quality and reported trip times almost identical to those reported before construction conditions had not seriously affected transit service in the corridor.</p> <p>Automobile panelists were surveyed as to their feelings regarding available traffic information sources. Most panelists had not used the telephone hotline service and did not feel that it was very useful to them. On the other hand, panelists felt that the changeable message signs provided on the North Central Expressway were very useful. Radio traffic reports were the most common information source desired by panelists, followed by newspaper and television. However, many panelists indicated a desire for traffic information from two or even all three of these sources.</p>					
17. Key Words <b>Freeway Reconstruction, Motorist Travel Patterns, Freeway Corridor Management</b>			18. Distribution Statement <b>No Restrictions. This document is available to the public through the National Technical Information Service Springfield, VA 22161</b>		
19. Security Classif. (of this report) <b>Unclassified</b>		20. Security Classif. (of this page) <b>Unclassified</b>		21. No. of Pages <b>32</b>	22. Price



**U.S. 75 NORTH CENTRAL EXPRESSWAY RECONSTRUCTION:  
NORTHWEST HIGHWAY SCREEN LINE AUTOMOBILE AND  
TRANSIT USER PANELS  
NOVEMBER 1990 SURVEY RESULTS**

Report 984-3

Prepared for

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May 1991



# METRIC (SI\*) CONVERSION FACTORS

## APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
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### LENGTH

in	inches	2.54	centimetres	cm
ft	feet	0.3048	metres	m
yd	yards	0.914	metres	m
mi	miles	1.61	kilometres	km

### AREA

in <sup>2</sup>	square inches	645.2	centimetres squared	cm <sup>2</sup>
ft <sup>2</sup>	square feet	0.0929	metres squared	m <sup>2</sup>
yd <sup>2</sup>	square yards	0.836	metres squared	m <sup>2</sup>
mi <sup>2</sup>	square miles	2.59	kilometres squared	km <sup>2</sup>
ac	acres	0.395	hectares	ha

### MASS (weight)

oz	ounces	28.35	grams	g
lb	pounds	0.454	kilograms	kg
T	short tons (2000 lb)	0.907	megagrams	Mg

### VOLUME

fl oz	fluid ounces	29.57	millilitres	mL
gal	gallons	3.785	litres	L
ft <sup>3</sup>	cubic feet	0.0328	metres cubed	m <sup>3</sup>
yd <sup>3</sup>	cubic yards	0.0765	metres cubed	m <sup>3</sup>

NOTE: Volumes greater than 1000 L shall be shown in m<sup>3</sup>.

### TEMPERATURE (exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C
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## APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
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### LENGTH

mm	millimetres	0.039	inches	in
m	metres	3.28	feet	ft
m	metres	1.09	yards	yd
km	kilometres	0.621	miles	mi

### AREA

mm <sup>2</sup>	millimetres squared	0.0016	square inches	in <sup>2</sup>
m <sup>2</sup>	metres squared	10.764	square feet	ft <sup>2</sup>
km <sup>2</sup>	kilometres squared	0.39	square miles	mi <sup>2</sup>
ha	hectares (10 000 m <sup>2</sup> )	2.53	acres	ac

### MASS (weight)

g	grams	0.0353	ounces	oz
kg	kilograms	2.205	pounds	lb
Mg	megagrams (1 000 kg)	1.103	short tons	T

### VOLUME

mL	millilitres	0.034	fluid ounces	fl oz
L	litres	0.264	gallons	gal
m <sup>3</sup>	metres cubed	35.315	cubic feet	ft <sup>3</sup>
m <sup>3</sup>	metres cubed	1.308	cubic yards	yd <sup>3</sup>

### TEMPERATURE (exact)

°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F
<p>The scale shows Celsius on the bottom axis and Fahrenheit on the top axis. Key conversion points are marked: 0°C = 32°F, 100°C = 212°F. Intermediate points include 37°C = 98.6°F and 20°C = 68°F.</p>				

These factors conform to the requirement of FHWA Order 5190.1A.

\* SI is the symbol for the International System of Measurements



## **SUMMARY**

The first follow-up survey of the North Central automobile and transit user panels was performed in November 1990, six months after the start of construction on North Central Expressway south of Interstate I-635. General information collected from the automobile panelists included their total tripmaking activity and use of North Central Expressway, whereas more detailed information was requested about their work trips (travel times, departure times, travel modes, and route). Panelists' perceptions as to how construction has affected their travel were also surveyed. Transit panelists were surveyed to obtain an indication of how construction was affecting transit service and whether the panelists perceived that a change in transit service had occurred because of construction.

The results of the survey indicate that, to date, construction has had very minor impacts upon travel in the corridor. Total trips made in the corridor and on the North Central Expressway were not found to be significantly different from those reported in the pre-construction survey in May 1990. Likewise, departure times and travel times for the panelists work trips were not significantly different than before construction. Perhaps more important, panelists do not perceive that conditions are much worse than before construction began. A small increase in the number of panelists using the Dallas North Tollway to the west of the Expressway was detected, along with a very small (but not statistically significant) increased use of Greenville Avenue to the east.

The survey also indicated that transit users have experienced little change in conditions as a result of construction. Transit panelists rated transit service quality and reported trip times almost identical to those reported before construction. Based on the results of the survey, it also appears that most transit panelists felt that construction conditions had not seriously affected transit service in the corridor.

Automobile panelists were surveyed as to their feelings regarding available traffic information sources. Most panelists had not used the telephone hotline service and did not feel that it was very useful to them. On the other hand, panelists felt that the changeable message signs provided on the North Central Expressway were very useful. Radio traffic reports were the most common information source desired by panelists, followed by newspaper and television. However, many panelists indicated a desire for traffic information from two or even all three of these sources.





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## **DISCLAIMER**

This report is not intended to constitute a standard, specification, or regulation, and does not necessarily represent the official views and policies of the Texas Department of Transportation. This report is not intended for construction bidding or permit purposes.



## **INTRODUCTION**

The reconstruction of North Central Expressway south of Interstate 635 (I-635) in Dallas is nearing the end of its first year. The Texas Transportation Institute (TTI) continues to monitor travel patterns and traffic conditions throughout the North Central Expressway corridor to evaluate the impacts of ongoing construction. A separate interim report documents travel times, roadway volumes, and vehicle occupancies in the corridor measured in November 1990, six months after the beginning of construction. In general, conditions have been affected little in the corridor, as the majority of construction work to date has involved work along the frontage road, with only occasional temporary freeway lane closures.

A second component of the monitoring plan being followed by TTI is an ongoing survey of a "panel" of automobile and transit users in the north Dallas area and surrounding suburbs. Members of this panel are surveyed periodically to determine their attitudes, behaviors, and changes in these measures over time as a result of the continuing North Central Expressway reconstruction effort. As such, it is a longitudinal study of motorists using the corridor. Establishment of the automobile and transit panel in May 1990 was documented in a previous interim report (1). The first follow-up survey of this panel was performed in November 1990. The objective of this report is to summarize the results of that follow-up survey and to contrast these results with the data obtained from these panelists immediately prior to the beginning of construction.

## **DATA COLLECTION AND REDUCTION**

The methodology utilized to establish the panel was documented in the previous interim report. From that initial effort, 1825 automobile users and 597 transit users volunteered to participate on the panel. Pre-construction responses (May 1990) from these panelists were entered into a computerized database, along with their current addresses. That address file was used to prepare mailing labels for the follow-up surveys to each panelist for the November 1990 effort.

The follow-up surveys for both automobile and transit users were almost identical to the original surveys used in the pre-construction data collection phase. For the

automobile users, a two-part survey was prepared. The first part requested information on total tripmaking activity in the corridor. Panelists were asked how many trips they made on a given day for a number of different purposes, along with the number of those trips on the North Central Expressway. In addition, panelists were asked whether they felt their tripmaking activity and use of North Central Expressway had increased, decreased, or remained about the same as prior to the start of construction. This question was asked so that actual changes in values reported by the panelists could be compared to their perceptions of how their behavior changed. In this way, insight into how motorists perceive the effects of construction in relation its true impact upon their actual behavior could be obtained. The final questions in the first part of the survey were added at the request of the Public Information Officers of the North Central Project. These question were directed at the use and effectiveness of various driver information mediums (telephone hotline; changeable message signs; and newspaper, radio, and television traffic reports) available in the corridor. A copy of part 1 of the survey form is included in the appendix.

The second phase of the automobile survey requested specific information about work-related trips. As with the initial survey, the follow-up survey requested information about:

- Departure times to and from work,
- Perceived travel times to and from work,
- Number and types of intermediate stops on the way to and from work,
- Travel mode,
- Vehicle occupancy,
- Entrance and exit ramps utilized if the motorists traveled on North Central Expressway, and
- Use of other routes (the Dallas North Tollway, various arterial streets) in the North Central Expressway corridor.

In addition to these questions replicated from the initial survey, panelists were asked whether they felt their departure times and travel times had changed since the start of construction. As before, this question allowed the actual changes in motorists' responses over time to be directly compared to motorists' perceptions as to how their behavior had changed. Part 2 of the survey is also included in the appendix.



A one-page survey was sent to transit user panelists which requested information about perceived transit service quality in the corridor and trip times. As with the automobile panelists, transit panelists were also asked whether they felt the transit service quality and their trip times had changed since the start of North Central Expressway construction. A copy of the transit survey is provided in the appendix.

For both surveys, initial screening questions asked the panelists whether their place of residence or work had changed since the first survey in May 1990. If the answer to one or both of these questions was yes, the data were not used in this analysis. The data will be retained in the database for possible use in the future and the individual retained as a member of the panel.

The follow-up surveys were mailed to the panelists the second week of November 1990. Overall, a fairly good response rate was obtained. Among the automobile panelists, 1049 of 1825 surveys (57.4%) were completed and returned. A similar response rate was realized from the transit panelists, with 307 of the 581 surveys (52.8%) completed and returned.

## **RESULTS**

### **Automobile User Survey**

#### Overall Tripmaking Characteristics of Panelists

Table 1 presents a comparison of the total tripmaking activity reported in May and November 1990 for those panelists responding to the November 1990 survey. The values for May 1990 are slightly different than those reported in the first interim report (1), since the first report contained data for all motorists responding to the first survey, including those who did not wish to participate on the panel. The total number of trips reportedly made by panelists between the May 1990 and November 1990 surveys was slightly lower (by 0.113 trips per day, or 4.3 %). Likewise, the number of trips made per day on the North Central Expressway also decreased slightly (by 0.105 trips per day, or 7.7 %). Expressed as a percentage of total daily trips, utilization of the North Expressway appears to have decreased only slightly (by 1.9 %). It should be noted, however, that none of

these differences were statistically significant, using a standard comparison-of-means test. In other words, one should not conclude based on the survey results that any real changes in tripmaking activity occurred between May and November 1990.

**TABLE 1. COMPARISON OF TOTAL TRIPMAKING ACTIVITY**

Type of Trip	May 1990	November 1990	Difference
Work	1.097	1.033	-0.064
Eat a meal	0.460	0.440	-0.020
Shopping	0.384	0.400	0.016
Personal bus.	0.406	0.379	-0.027
School	0.130	0.144	0.014
Other	0.132	0.100	-0.032
<b>TOTAL</b>	<b>2.609</b>	<b>2.496</b>	<b>-0.113</b>
Number of trips on NCE	1.369	1.264	-0.105
Percentage of total trips on NCE	52.5%	50.6%	-1.9%

Note: NCE = North Central Expressway

It appears that some of the panelists do perceive that their tripmaking activity and utilization of the Expressway has changed somewhat as a result of construction. Table 2 indicates the percentage of panelists who felt they were making more, about the same, or fewer trips per day than before Expressway construction began. As the table illustrates, most panelists felt they were making about the same number of trips overall

and using the Expressway about the same amount as before. However, a sizeable percentage felt that they were making fewer trips overall (16.5 percent), and using the Expressway less (26.8 %).

**TABLE 2. PERCEIVED CHANGES IN TOTAL TRIPMAKING ACTIVITY:  
May 1990 to November 1990**

Perceived Change	Response Rate (%)
Total tripmaking activity:	
Increased?	2.3
Stayed the same?	81.2
Decreased?	16.5
Trips on North Central Expressway:	
Increased?	1.6
Stayed the same?	71.6
Decreased?	26.8

Panelists Work Trip Characteristics

As part of the pre-construction panel development and initial survey, a coarse origin-destination zone map was developed, based on zipcode boundaries in the Dallas area. Figure 1 illustrates the zones that were established. The major home and work zones for the panelists responding to the November 1990 survey are summarized in Table 3. Most panelists' homes were located in north Dallas, University Park, Richardson, Plano, Garland, and southwest Dallas (zones D, H, E, O, J, I, and K). Major work destinations included the Dallas CBD and areas surrounding, southwest Dallas, the cities

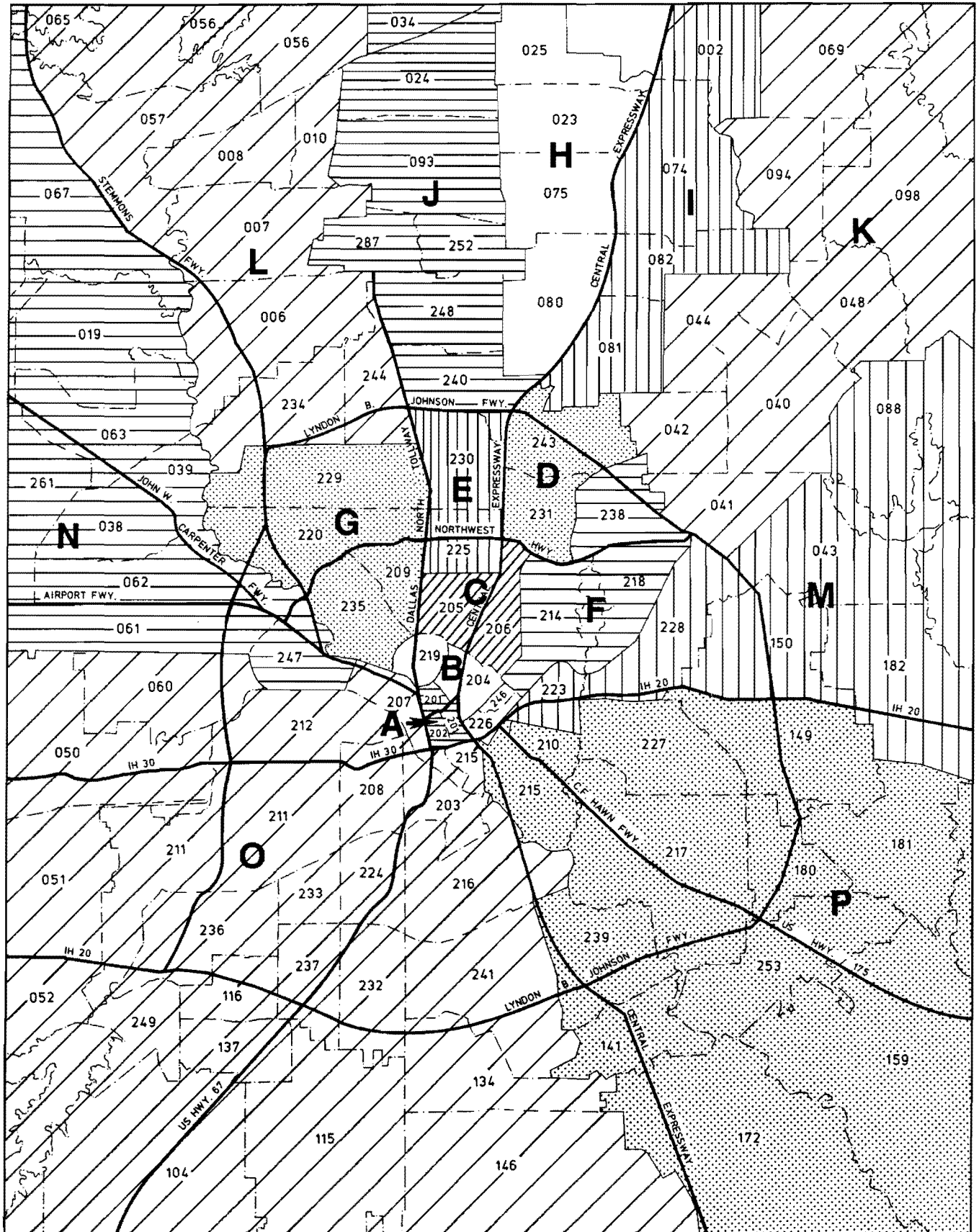


Figure 1. Major Zip Code Zones

of Highland Park and University Park, northeast Dallas, and northwest Dallas (zones A, O, C, B, D, E, and G).

**TABLE 3. MAJOR HOME AND WORK LOCATIONS BY ZONE**

Zone	Response Rate (%)
<b>Home zones:</b>	
D (northeast Dallas)	16.6
H (Richardson/Plano)	11.8
E (University Park/north Dallas)	11.2
O (southwest Dallas)	10.6
J (north Dallas/Plano)	10.2
I (Richardson/Plano)	9.5
K (Garland)	7.8
All others	22.3
<b>Work zones:</b>	
A (Dallas CBD)	16.6
O (southwest Dallas)	16.3
C (Highland Park/University Park)	9.8
B (just north and east of Dallas CBD)	9.0
D (northeast Dallas)	8.7
E (University Park/north Dallas)	6.6
G (northwest Dallas)	5.8
All others	27.2

Table 4 compares the basic work trip responses of the May and November 1990 surveys. A slight shift was detected in the median departure time of the panel for the home-to-work trip, from 7:15 am to 7:05 am. The work-to-home median departure time did not change. The average travel time of the home-to-work trip was slightly longer in

**TABLE 4. COMPARISON OF WORK TRIP CHARACTERISTICS**  
**May 1990 versus November 1990**

Characteristic	Home-to-work trip			Work-to-home trip		
	May 1990	November 1990	Diff.	May 1990	November 1990	Diff.
Median Departure Time	7:15 am	7:05 am	10 min earlier	5:00 pm	5:00 pm	---
Average Travel Time	29.3 min	30.0 min	0.7 min longer	33.1 min	32.4 min	0.7 min shorter
Mode Choice: Single-Occupant						
Auto	91.7%	91.4%	+0.3%	91.1%	91.3%	+0.2%
Carpool	2.6%	4.9%	+2.3%	2.6%	4.7%	+2.1%
Transit	1.0%	1.8%	+0.8%	1.0%	1.8%	+0.8%
Other	4.9%	1.9%	-3.0%	5.5%	2.1%	-3.4%

the November survey (0.7 minutes), whereas the work-to-home trip showed evidence of a slight decrease in average travel time (also 0.7 minutes). Very little change was detected in mode choice for either trip, with the single-occupant automobile continuing to be the predominant method of travel in the corridor. Reported carpooling and transit usage among the panelists increased slightly in November as compared to the May 1990 survey. However, none of these changes were statistically significant.

Table 5 summarizes panelists' perceived changes in travel times and departure times as a result of construction on North Central Expressway. On the average, the panelists' reported that their travel times to and from work had increased 2.8 minutes and 3.2 minutes, respectively (both reflecting a 9.6 % increase in respective travel times). These reported changes are somewhat larger than the actual travel time changes found in Table 5. Apparently, the panelists perceived that conditions had deteriorated more significantly than they actually had. Also in Table 5 are the changes in departure times that panelists reported. Interestingly, the average perceived departure time change for the morning home-to-work trip was reported to be 2.3 minutes, compared to the 10 minute change in median departure times that was shown in Table 4. The average perceived change in work-to-home departure time reported in Table 5 was only 0.3 minutes, which parallels the median work-to-home departure times documented in Table 4 (no change in median departure time was reported).

One of the advantages of a longitudinal study design is that previous responses for individual panelists are available for subsequent analysis. Tables 6 and 7 present an interesting comparison of actual changes in panelists' home-to-work and work-to-home travel time responses versus the panelists' perceptions of how their travel times have changed since May 1990. The perceived changes in travel times were categorized as being shorter than, the same as, or longer than travel times in May 1990. The difference in reported travel times from the May and November 1990 surveys was then computed directly, the results also categorized as being shorter, the same, or longer than the May 1990 travel times.

**TABLE 5. SUMMARY OF PERCEIVED DEPARTURE AND TRAVEL TIME CHANGES:**

**May 1990 to November 1990**

Traffic Measure	Perceived Change
Change in Departure Time: Home-to-work trip Work-to-home trip	2.3 minutes earlier 0.3 minutes later
Change in Travel Time: Home-to-work trip Work-to-home trip	2.8 minutes longer 3.2 minutes longer

**TABLE 6. COMPARISON OF PERCEIVED VERSUS ACTUAL CHANGES IN TRAVEL TIME: Home-to-Work Trip**

Travel Time Difference Category	Response Rate (%)	
	Actual Changes Between Surveys	Changes Perceived by Motorists
Shorter	32.4	1.6
Same	31.5	72.3
Longer	36.0	26.1

As Table 6 indicates, actual changes in home-to-work travel times were fairly evenly distributed among the three categories. In comparison, the majority (72.3 %) of the



panelists perceived that their travel times had remained the same since May 1990. It should be noted that some of the changes in travel time were extremely small (1 or 2 minutes, for example). Consequently, the fact that most panelists did not perceive conditions to have changed is consistent with the little or no change in actual operating conditions in the corridor.

Table 7 presents the same comparison of actual and perceived changes in travel time data for the work-to-home trip. As with the home-to-work trips, those being made from work to home were distributed among the three categories, with some being slightly shorter, some the same, and some slightly longer. Panelists perceived little change in travel time for this trip (71.1 % indicated no change had occurred). The fact that panelists do not perceive significant changes have occurred is encouraging; it suggests that motorists are not unduly sensitized to the ongoing construction to the point of feeling conditions have eroded seriously in the corridor.

**TABLE 7. COMPARISON OF PERCEIVED VERSUS ACTUAL CHANGES  
IN TRAVEL TIME: Work-to-Home Trip**

Travel Time Difference Category	Response Rate (%)	
	Actual Changes Between Surveys	Changes Perceived by Motorists
Shorter	38.9	1.6
Same	26.0	71.1
Longer	35.1	27.4

Panelists were also questioned about the number of intermediate stops on the way to and from work. A comparison of the frequency of these stops for the May and November 1990 surveys is presented in Tables 8 and 9. In general, there was a slight

increase in the number of stops made during both the home-to-work and work-to-home trips. However, these changes were not statistically significant (according to a comparison of means test). It is possible that panelists have begun to consolidate trips, combining more errands into their normal work trips. It is also possible that these differences are simply due to seasonal differences in the data.

**TABLE 8. COMPARISON OF INTERMEDIATE STOPS:  
Home-to-Work Trip**

Purpose of Stop	Average Number of Stops/Trip		
	May 1990	November 1990	Change
School	0.072	0.086	+0.014
Shopping	0.030	0.054	+0.024
Eat a meal	0.054	0.049	-0.005
Personal business	0.106	0.113	+0.007
Social/Recreation	0.013	0.024	+0.011
Other	0.065	0.049	-0.016
<b>TOTAL</b>	<b>0.340</b>	<b>0.375</b>	<b>+0.035</b>

Finally, a comparison of the panelists' usages of the various routes in the corridor on their way to and from work are provided in Tables 10 and 11, respectively. Many panelists reported using more than one route, so the values in the table add to more than 100 percent. Whereas the utilization of the North Central Expressway remained fairly constant between May and November, there was a slight increase in the utilization of the other routes in the corridor. For example, utilization of Greenville Avenue by the panelists for the home-to-work and work-to-home trips increased, as did use of the Dallas North Tollway. Of the changes reported in Tables 10 and 11, only one increase (a 3.5 %

increase on the Dallas North Tollway) was statistically significant. These increases indicate that panelists may be using more routes on their way to and from work in order to bypass potential construction problem locations, or they have chosen more alternative routes to be used if their primary route becomes congested.

**TABLE 9. COMPARISON OF INTERMEDIATE STOPS:  
Work-to-Home Trip**

Purpose of Stop	Average Number of Stops/Trip		
	May 1990	November 1990	Change
School	0.044	0.061	+0.017
Shopping	0.238	0.260	+0.022
Eat a meal	0.102	0.113	+0.011
Personal business	0.223	0.237	+0.014
Social/Recreation	0.105	0.113	+0.008
Other	0.103	0.082	-0.021
<b>TOTAL</b>	<b>0.815</b>	<b>0.866</b>	<b>+0.051</b>

#### Traffic Information Sources

A series of questions designed to explore motorist perceptions of the traffic information sources available in the corridor were included in the total tripmaking part of the survey. A summary of panelists' responses are shown in Table 12. The construction hotline (WIDEN-75) has been used by only a very small percentage of panelists (5.7%). Even though only a small proportion of panelists have actually used the hotline, 36% of them responded to the second question, whether or not they believe the hotline is helpful. Of those responding, 71.8% did not believe it was useful.

**TABLE 10. ROUTE UTILIZATION: Home-to-Work Trip**

Roadway	Response Rate (%)		
	May 1990	November 1990	Change
North Central Expressway	52.5	52.6	+0.1
Greenville	11.3	14.1	+2.8
Preston	10.2	10.3	+0.1
Dallas North Tollway	9.7	11.5	+1.8
Hillcrest	8.7	8.8	+0.1
Skillman	8.4	9.6	+1.2
Abrams	5.5	7.4	+1.9
Inwood	5.6	6.2	+0.6

**TABLE 11. ROUTE UTILIZATION: Work-to-Home Trip**

Roadway	Response Rate (%)		
	May 1990	November 1990	Change
North Central Expressway	49.5	49.8	+0.3
Greenville	9.3	11.4	+2.1
Preston	10.2	9.4	-0.8
Dallas North Tollway	10.9	14.4	+3.5*
Hillcrest	7.7	8.9	+1.2
Skillman	8.7	8.9	+0.2
Abrams	6.8	6.4	-0.4
Inwood	6.1	5.2	-0.9

\* Difference is statistically significant at  $\alpha=0.05$

**TABLE 12. PANELIST USE OF AND DESIRE FOR INFORMATION**

	Percent of those Responding
Do you use the WIDEN-75 telephone hotline? (100% responding)	
Yes	5.7
No	94.3
Is the hotline helpful? (36% responding)	
Yes	28.2
No	71.8
Are the changeable message signs near the construction zone useful? (87.4% responding)	
Yes	60.3
No	39.7
Is adequate warning of conditions provided by the changeable message signs?	
Yes	69.5
No	30.5
How do you want to receive daily construction information? (92.8% responding)	
Radio	76.0
Newspaper	32.9
Television	18.6
Number of information sources marked on previous question:	
1 source	72.5
2 sources	17.5
3 sources	10.0

More than 87% of the panelists responded to the question whether the changeable message signs in the construction zone were useful, with the majority of those responding (60.3%) giving the signs a positive rating. Also, most felt the signs gave them adequate advance warning about traffic and construction conditions. The final question, asking the panelists their preferred sources of traffic information, received a response from almost all panelists (92.8%). According to the panelists, radio is the most preferred information source (by 76.0% of the panelists), followed by newspaper reports (32.9%), and finally television (18.6%). These percentages add to more than 100% because many motorists indicated they wanted information from more than one source. In fact, 27.5% of the panelists desired information from two or all three information sources.

### **Transit User Survey**

This section of the report focuses on the follow-up survey of the transit user panel. The primary purpose of the transit panel is to provide an indication of how transit is being affected in the corridor as a result of construction. The results suggest that transit users have not perceived significant changes in transit service since construction began.

A comparison of the transit user panelists' evaluation of the quality of transit service in the North Central Expressway corridor is presented in Table 13. The express and park-and-ride lot panelists, reported separately in the initial survey, have been combined to in this analysis to provide a larger database. Transit received fewer excellent ratings in November as compared to May 1990 (13.8% in November 1990 versus 23.3% in May 1990). Likewise, a few more panelists gave transit only a "fair" rating in the November 1990. However, most panelists still rated transit as "good" in the corridor, suggesting that the quality has not been seriously affected during the initial phases of construction.

A comparison of actual changes in transit service quality ratings to panelists' perceptions of how transit quality has changed since May 1990 is presented in Table 14. With respect to the actual changes in transit quality ratings between surveys, 16.9% of the panelists rated the quality better in November 1990, 57.3% rated it the same, and 25.8% rated it worse than they did in May 1990. These tended to parallel panelists' perceptions of how transit quality had changed since May 1990, with 10.7% indicating they felt the

quality had improved, 76.1% felt it had remained the same, and 13.2% indicating that they felt it had gotten worse.

**TABLE 13. TRANSIT SERVICE QUALITY RATINGS**

Transit Rating	Response Rate (%)		
	May 1990	November 1990	Change
Excellent	23.3	13.8	-9.5*
Good	48.6	55.9	+7.3*
Fair	24.0	27.2	+3.2
Poor	4.1	3.1	-1.0

\* Change is statistically significant at  $\alpha=0.05$

**TABLE 14. COMPARISON OF PERCEIVED VERSUS ACTUAL CHANGES  
IN TRANSIT QUALITY RATINGS**

Transit Quality Difference Category	Response Rate (%)	
	Actual Changes Between Surveys	Changes Perceived by Motorists
Better	16.9	10.7
Same	57.3	76.1
Worse	25.8	13.2

Table 15 summarizes the reported travel times experienced by transit panelists for the May and November 1990 surveys. In general, only small changes are evident. There has been a slight reduction in the shorter trip time categories (20 minutes or less), and a corresponding increase in the next larger trip time categories (20 to 40 minutes). Nevertheless, changes in any trip time category were less than 6%.

**TABLE 15. TRANSIT TRIP TIMES**

Transit Trip Time	Response Rate (%)		
	May 1990	November 1990	Change
Less than 10 minutes	3.8	0.0	-3.8
10-20 minutes	6.9	2.8	-4.1
20-30 minutes	6.6	7.6	+1.0
30-40 minutes	14.2	19.8	+5.6
40-50 minutes	32.1	29.6	-2.5
50-60 minutes	23.9	25.8	+1.9
More than 60 minutes	12.6	15.1	+2.5

Table 16 compares the actual changes in trip times as reported by panelists to their perceptions as to how trip times have changed. Although 28% of the panelists indicated shorter trip times in November as compared to May 1990, only 3.8% perceived that trip times were shorter. The most common perception was that trip times had remained the same (67.5%), although a sizeable part of the panel (28.7%) perceived that trip times had become longer.



**TABLE 16. COMPARISON OF PERCEIVED VERSUS ACTUAL CHANGES  
IN TRANSIT TRIP TIMES**

Transit Trip Time Difference Category	Response Rate (%)	
	Actual Changes Between Surveys	Changes Perceived by Motorists
Shorter	28.0	3.8
Same	44.4	67.5
Longer	27.6	28.7

**SUMMARY**

The first follow-up survey of the North Central Expressway automobile and transit user panel was conducted in November 1990, six months after the start of construction on the Expressway south of I-635. As a result of the analysis of that data with respect to the baseline data collected immediately prior to the start of construction, the following findings have been reported:

1. From May to November 1990, there were small, but not statistically significant, decreases in total tripmaking activity (4.3%), number of trips made on the North Central Expressway (7.7%), and proportion of total trips per day made on the North Central Expressway (1.9%). The perceptions of panelists regarding their tripmaking activity and use of North Central Expressway are consistent with these findings; most believe that they are making about the same or slightly fewer trips per day in total and on the Expressway.
  
2. Very few substantial changes were found in the trips made by panelists to and from work. The median departure time for the trip to work was 10 minutes earlier, whereas the departure time for the trip home remained unchanged. Panelists reported that travel times for their work trips had changed very little from May to

November 1990 (with average travel times changing by less than 1 minute). Likewise, very little change in panelists' choice of travel mode was detected. However, when asked in November whether their travel times had changed significantly since May, panelists reported a slightly larger increase in travel times (approximately three minutes). In other words, panelists perceive that their trips have been affected a little more than appears to have actually occurred.

3. The number of intermediate stops on the way to and from work was slightly higher in November 1990 as compared to May 1990, but the increase was not statistically significant.
4. With respect to the routes used by the panelists for their trips to and from work, the North Central Expressway continues to be used by a large percentage. However, increased utilization was detected of the Dallas North Tollway. Greenville Avenue also experienced an increase in utilization, although this increase was not statistically significant.
5. The panelists are apparently not making extensive use of the telephone hotline (WIDEN-75), with only 5.7% reportedly using the number. In contrast, the changeable message signs being used in the construction area received fairly high ratings. In terms of receiving traffic and construction information, the source most preferred by panelists was radio, followed by newspaper reports and television. In addition, a sizeable proportion of panelists desired information from more than one source.
6. Transit service quality ratings have been generally unaffected since the start of construction, with most panelists continuing to rate transit quality as "good" or "excellent." Likewise, transit trip times have been relatively unaffected. This finding is consistent with the general perceptions of the transit panelists that transit service quality and trip times have not changed since the start of construction.

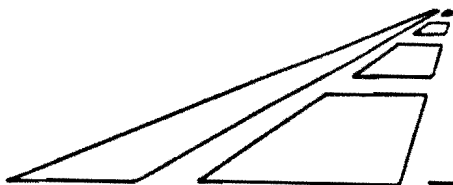
## REFERENCE

1. Ullman, G.L. and R.A. Krammes. "U.S. 75 North Central Expressway Reconstruction: Northwest Highway Screenline Automobile and Transit User Panels, Initial Survey Results." Report 9841E-1. Texas Transportation Institute, College Station, TX. September 1990.



## **APPENDIX**





TEXAS TRANSPORTATION INSTITUTE

TRAFFIC MANAGEMENT AND  
INFORMATION SYSTEMS PROGRAM

Area Code 409  
Telephone 845-1727  
Tex An 857-1727

November 7, 1990

Dear Motorist:

Thank you for responding to our May 1990 travel survey and for expressing your willingness to respond to similar follow-up surveys. With your help, the May survey was extremely successful, and provided us with valuable data on travel patterns in the north Dallas area. The results of this and future surveys will aid the State Department of Highways and Public Transportation (SDHPT), City of Dallas, DART, and other agencies in planning to minimize the travel impacts of North Central Expressway construction.

Many people provided comments which we compiled (to protect your anonymity) and presented to the SDHPT. Below is a sample of the comments received most frequently:

- o "I try to avoid North Central if at all possible"
- o "The entrance and exit ramps need to be longer"
- o "Construction activities on the nearby arterial streets (Greenville Ave., Abrams Rd., Skillman Ave., Hillcrest, etc.) should be completed before construction begins on North Central"
- o "North Central is a dangerous highway"
- o "The entrance ramp monitoring systems are useless"
- o "The traffic signals on these arterial streets need to be better synchronized"
- o "Construction on North Central should be performed at low volume times"

We have prepared a follow-up survey to determine if travel patterns have changed since the start of construction on North Central Expressway south of the LBJ Freeway in June 1990. The survey consists of two parts: the first requests general information about all of your tripmaking, while the second requests more specific information about your trips to and from work.

Please take a few moments, fill out the survey, and return it in the postage-paid envelope provided. Those of you who indicated in the May survey that you do not work outside of your home need only complete part 1 of the survey. The information will remain confidential, only summaries of the data will be released. If you do not wish to participate in additional travel surveys in the future, please let us know on the back of the survey forms. Thank you for your participation in this effort.

**PART 1:  
NORTH CENTRAL EXPRESSWAY CORRIDOR TOTAL TRAVEL SURVEY**

**Please provide us with information about your travel on the most recent weekday (Monday through Friday).**

1. **Has your place of residence changed since the May 1990 survey?**     yes     no
  
2. **For which day of the week are you providing travel information?**  
 Monday     Tuesday     Wednesday     Thursday     Friday
  
2. **How many times did you go to each of the following types of places on that day?**  
 work     school     shopping     eat a meal     social/recreation events  
 personal business (doctors appt., banking, etc.)     other (specify \_\_\_\_\_)
  
3. **How many times did you travel on the North Central Expressway on that day?**    \_\_\_\_\_
  
4. **Has your total number of trips made per day changed since the start of construction on North Central Expressway south of the LBJ Freeway in June 1990?**  
 increased     stayed the same     decreased
  
5. **Has your number of trips made on the North Central Expressway per day changed since the start of construction on the Expressway south of the LBJ Freeway in June 1990?**  
 increased     stayed the same     decreased
  
6. **Do you utilize the WIDEN-75 hotline (943-3675) for your North Central Expressway construction information?**     yes     no
  
7. **Is the hotline helpful?**     yes     no
  
8. **Do the message signs in and around the construction zones on North Central Expressway aid you in choosing an alternative route?**     yes     no
  
9. **Is enough advance notice given on the signs?**     yes     no
  
10. **How would you like to receive daily construction information?**  
 newspaper     radio     television

**On the back of this form, please provide any additional comments about how your travel has been affected by the ongoing North Central Expressway reconstruction project.**



**PART 2:  
NORTH CENTRAL EXPRESSWAY CORRIDOR WORK TRAVEL SURVEY**

Please provide us with information for the most recent weekday (Monday through Friday).

1. What is the zip code of your place of work? \_\_\_\_\_  
 Has your place of work changed since the last survey in May 1990?    \_\_\_ Yes    \_\_\_ No  
 Has your place of residence changed since the last survey?        \_\_\_ Yes    \_\_\_ No
  
2. When did you leave your home to go to work? \_\_\_\_\_ AM or PM (circle one)  
 Have you changed your departure time since the start of construction on North Central Expressway south of the LBJ Freeway? (check one response and fill in blank if appropriate)  
 \_\_\_ Yes, I leave \_\_\_\_\_ minutes earlier now.  
 \_\_\_ Yes, I leave \_\_\_\_\_ minutes later now.  
 \_\_\_ No, I have not changed my departure time.
  
3. How much time did your trip from home to work take you? \_\_\_\_\_ minutes  
 Has this time changed since the start of North Central Expressway construction south of the LBJ Freeway?  
 \_\_\_ Yes, it is \_\_\_\_\_ minutes longer now.  
 \_\_\_ Yes, it is \_\_\_\_\_ minutes shorter now.  
 \_\_\_ No, it has not changed.
  
4. When did you leave your work to go home? \_\_\_\_\_ AM or PM (circle one)  
 Have you changed your departure time to your home because of construction on North Central Expressway south of the LBJ Freeway?  
 \_\_\_ Yes, I leave \_\_\_\_\_ minutes earlier now.  
 \_\_\_ Yes, I leave \_\_\_\_\_ minutes later now.  
 \_\_\_ No, I have not changed my departure time.
  
5. How much time did your trip from work to home take you? \_\_\_\_\_ minutes  
 Has this time changed since the start of North Central Expressway construction?  
 \_\_\_ Yes, it is \_\_\_\_\_ minutes longer now.  
 \_\_\_ Yes, it is \_\_\_\_\_ minutes shorter now.  
 \_\_\_ No, it has not changed.
  
6. How many stops did you make on the way to and from work for each of the following purposes?  

	<u>From home to work</u>	<u>From work to home</u>
school	___	___
shopping	___	___
eat a meal	___	___
personal business	___	___
social/recreation	___	___
other	___	___
  
7. How did you make your trips between home and work? (check one)  
 From home to work: \_\_\_ drove alone    \_\_\_ carpool/vanpool (with \_\_\_ people)    \_\_\_ bus    \_\_\_ other  
 From work to home: \_\_\_ drove alone    \_\_\_ carpool/vanpool (with \_\_\_ people)    \_\_\_ bus    \_\_\_ other
  
8. If you used the North Central Expressway for your work trips, please indicate at what ramps you entered and exited the Expressway.  
 From home to work: entered \_\_\_\_\_ exited \_\_\_\_\_  
 From work to home: entered \_\_\_\_\_ exited \_\_\_\_\_
  
9. If you did not use the Expressway, check which of the roads listed (if any) you did use:  

	<u>From home to work</u>	<u>From work to home</u>
Skillman St.	___	___
Abrams Rd.	___	___
Greenville Ave.	___	___
Hillcrest Ave.	___	___
Preston Rd.	___	___
Dallas North Tollway	___	___
Inwood Rd.	___	___
Other (please specify _____)	___	___

## NORTH CENTRAL CORRIDOR TRANSIT SURVEY

Dear North Central Commuter:

In May 1990, the Texas Transportation Institute, Texas A&M University System, conducted a travel survey of bus riders in the North Central Expressway corridor. On that survey, you indicated a willingness to respond to follow-up surveys as part of an ongoing effort to monitor travel patterns in the area. Please take a few moments and fill out the survey below for the most recent weekday (Monday through Friday), and return it in the enclosed postage-paid envelope. The information you provide will be kept strictly confidential, and will be used for statistical purposes only. Thank you for your help.

\*\*\*\*\*

1. Do you continue to use the bus for your morning commute? \_\_\_\_
  
2. Has the destination of your morning commute changed since the survey in May 1990? \_\_\_\_
  
3. Has your place of residence changed since the survey in May 1990? \_\_\_\_
  
4. How would you now rate the overall quality of transit service in the North Central Expressway corridor?  
\_\_\_\_ excellent                      \_\_\_\_ good                      \_\_\_\_ fair                      \_\_\_\_ poor
  
5. Has the quality of transit service changed since the beginning of construction on the North Central Expressway in June 1990?  
\_\_\_\_ Yes, it is of lower quality now.  
\_\_\_\_ No, it is about the same as before.  
\_\_\_\_ Yes, it is of better quality now.
  
6. How long does it normally take you from the time you leave your home in the morning until you reach your destination?  
\_\_\_\_ less than 10 min.                      \_\_\_\_ 10-20 min.                      \_\_\_\_ 20-30 min.  
\_\_\_\_ 30-40 min.                      \_\_\_\_ 40-50 min.                      \_\_\_\_ 50-60 min.  
\_\_\_\_ more than 60 min.
  
7. Has the travel time for your morning trip by bus changed since the beginning of construction on the North Central Expressway in June 1990?  
\_\_\_\_ Yes, it is \_\_\_\_ minutes longer now.  
\_\_\_\_ No, it is the same as before.  
\_\_\_\_ Yes, it is \_\_\_\_ minutes shorter now.

On the back of this survey, please provide any additional comments you wish to make about the effects of construction upon travel in the North Central Expressway corridor.