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16. Abstract <p>This report summarizes the results of the survey of the North Central Expressway automobile and transit panelists conducted in October 1991. The results of the survey indicate that travel patterns in the corridor have not deteriorated significantly since the start of Expressway construction south of I-635. Details regarding the survey analysis and results are presented herein.</p>					
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**U.S. 75 NORTH CENTRAL EXPRESSWAY RECONSTRUCTION:
NORTHWEST HIGHWAY SCREEN LINE AUTOMOBILE AND
TRANSIT USER PANELS,
OCTOBER 1991 SURVEY RESULTS**

Report 1940-2

Prepared for

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May 1992

METRIC (SI*) CONVERSION FACTORS

APPROXIMATE CONVERSIONS TO SI UNITS

When You Know	Multiply By	To Find	Symbol
LENGTH			
inches	2.54	centimetres	cm
feet	0.3048	metres	m
yards	0.914	metres	m
miles	1.61	kilometres	km

AREA			
square inches	645.2	centimetres squared	cm ²
square feet	0.0929	metres squared	m ²
square yards	0.836	metres squared	m ²
square miles	2.59	kilometres squared	km ²
acres	0.395	hectares	ha

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

VOLUME			
fluid ounces	29.57	millilitres	mL
gallons	3.785	litres	L
cubic feet	0.0328	metres cubed	m ³
cubic yards	0.0765	metres cubed	m ³

E: Volumes greater than 1000 L shall be shown in m³.

TEMPERATURE (exact)			
Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

APPROXIMATE CONVERSIONS TO SI UNITS

Symbol	When You Know	Multiply By	To Find	Symbol
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 ²	millimetres squared	0.0016	square inches	in ²
m ²	metres squared	10.764	square feet	ft ²
km ²	kilometres squared	0.39	square miles	mi ²
ha	hectares (10 000 m ²)	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 ³	metres cubed	35.315	cubic feet	ft ³
m ³	metres cubed	1.308	cubic yards	yd ³

TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F

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

ABSTRACT

This report summarizes the results of the survey of the North Central Expressway automobile and transit panelists conducted in October 1991. The results of the survey indicate that travel patterns in the corridor have not deteriorated significantly since the start of Expressway construction south of I-635. Details regarding the survey analysis and results are presented herein.

DISCLAIMER

The contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Texas Department of Transportation. This report does not constitute a standard, specification, or regulation. It is not intended for construction, bidding, or permit purposes.

SUMMARY

The results of the third during-construction survey of automobile and transit users conducted in October 1991 indicate that traffic conditions and travel patterns in the North Central Expressway corridor have not deteriorated significantly since the start of Expressway reconstruction south of I-635. The following is a summary of the results of the survey:

1. The total number of trips being made per day by automobile users in the corridor dropped 9 percent in the October 1991 survey (relative to the data collected prior to construction). In comparison, no changes in total trips rates had been observed in the previous during-construction surveys. When asked directly whether they believed construction had affected how many trips they were making, approximately one-fifth stated they were making fewer trips per day in October 1991 than in May 1990 (prior to the start of construction).
2. Daily trip rates on the North Central Expressway continue to decrease slightly throughout construction. Relative to pre-construction rates, trip rates on the Expressway in October 1991 were 10 percent lower. About one-third of the panel members believed they were making fewer trips per day on the Expressway in October 1991 than before construction began.
3. Departure times for the trips to and from work have not been significantly affected by construction. Median departure times overall in October 1991 were identical to those in May 1990. More than 80 percent of the panel members believed they were departing for work at the same time as prior to construction, whereas only 16 percent perceived themselves as leaving earlier. However, when compared separately, Expressway users are leaving 10 minutes earlier and non-users are leaving 5 minutes earlier than before construction began.
4. Actual travel times to and from work have actually decreased slightly overall throughout construction. In comparison to travel times in May 1990, morning trips were 1.8 minutes shorter and evening trips 3 minutes shorter in October 1991. Examining Expressway user and non-user travel times separately, non-users reported a greater decrease in travel times to and from work than Expressway users. For example, the evening trip home for non-Expressway users in October 1991 was 4.5 minutes shorter than in May 1990.

5. Although reported work trip travel times have decreased, there is a growing perception among panel members that travel times are increasing. In October 1991, 28 percent of the panel members believed travel times to work were longer than in May 1990, and 27 percent perceived travel times home to be longer. For both trips, a greater proportion of Expressway users than non-users believe travel times have increased to and from work.
6. Construction has apparently not had a significant effect upon the number of stops being made on the way to and from work. Data from October 1991 showed a small increase in stops to work and a slight decrease in stops on the way home relative to the data collected in May 1990, but neither of these differences were statistically significant.
7. The single occupant automobile continues to be the preferred mode of travel within the corridor, both with Expressway users as well as with those using other routes to and from work. No significant changes in travel mode have occurred relative to May 1990.
8. Likewise, the number of panelists utilizing the Expressway for trips to and from work has remained fairly constant. Approximately 53 percent of the panel members used the Expressway to go to work in October 1991, whereas 51 percent utilized it for their trip home. This value is not statistically different from the percentages reported in May 1990, prior to construction. Slight shifts in utilization of other roadways in the corridor are evident in the October 1991 data, although none of the shifts were statistically significant.
9. The sources of construction information being provided by TxDOT are perceived quite positively by panelists. More than 88 percent of the panel believe the messages presented on the changeable message signs around the construction project are clear and understandable. On the average, those using the Expressway changed routes in response to the signs more often than those not using the Expressway (1.35 times per month versus 0.83 times per month respectively). The TxDOT newsletter EXPRESSIONS is not as widely utilized by panelists (only 4 percent receive a copy). However, the vast majority (88 percent) of those who do receive the newsletter believe the information is useful to them. In addition, more than one-half of the panel members asked to be put on the mailing list for the newsletter.

10. Transit users continue to rate overall service in the corridor fairly high, with 75 percent rating service as "excellent" or "good."
11. The panel members did not report any significant changes in estimated trip times via transit. However, there does appear to be a growing perception that travel times are getting longer. In October 1991, one-third of the panel believed trip times were longer than prior to construction.

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INTRODUCTION

As reconstruction proceeds on the North Central Expressway south of Interstate 635 (I-635) in Dallas, the Texas Transportation Institute (TTI) continues to monitor the impacts of this project upon motorists throughout the north Dallas area and surrounding suburbs. An important component of this monitoring activity is the periodic survey of a "panel" of automobile and transit users. The panel includes individuals who utilize the North Central Expressway extensively as well as those who rely on the other roadways in the corridor. The purpose of the periodic surveys is to closely monitor public perception of the travel impacts caused by reconstruction and to assess the type and severity of motorist reactions to these perceived impacts.

An initial corridor-wide license plate survey was performed in May 1990 to establish the automobile and transit user panels and baseline travel data prior to the start of reconstruction. This effort was documented in an initial survey report (1). Subsequent surveys have been performed at six-month intervals (i.e., each May and October-November). The results of the follow-up surveys in November 1990 and May 1991 have also been previously documented (2, 3). The results of the third during-construction survey, performed in October 1991, are the subject of this report.

STUDY METHODOLOGY

Automobile User Survey

Since the inception of this monitoring project, the same survey instrument has been used (with only minor modifications) to test automobile panelist perceptions and behaviors each time a survey is performed. A two-part instrument is used; the first part requests information regarding the panelists' overall tripmaking activity (i.e., the number of trips being made per day for various reasons), the number of trips per day being made on the North Central Expressway, and perceptions as to whether they have changed the frequency of their trips in total or on the Expressway in particular.

The second part of the automobile panel survey is devoted to home-to-work and work-to-home commuting perceptions and behaviors. As such, it is more focused towards peak period travel conditions in the corridor. In this part of the survey, panelists are questioned regarding:

- Departure times,
- Travel times,
- Number and types of intermediate stops,
- Mode of travel (drive-alone, carpool, vanpool, transit, etc.),
- Vehicle occupancy,
- Entrance and exit ramps utilized if travelling on North Central Expressway, and
- Other roadways used in the corridor.

Equally important as this direct evaluation of conditions and behaviors, however, is the evaluation of changes perceived by panelists in traffic conditions and in their behaviors. In each of the follow-up surveys that have been performed, panelists have been asked whether they feel travel conditions have changed and whether they have adjusted their behaviors since construction on the Expressway began in June 1990. A copy of the two-part survey of automobile panelists used in October 1991 is provided in the appendix.

Transit User Survey

A one-page survey instrument continues to be used to monitor perceptions and behaviors of transit user panelists as well. In each survey, transit user panelists are polled to evaluate the quality of transit service in the North Central Expressway corridor and to estimate their approximate travel times via transit. As with the automobile panelists, transit panelists are also asked if they believe transit quality in the corridor and travel times have changed since the start of North Central Expressway construction in June 1990. A copy of the transit survey is also included in the appendix.

Panel Attrition

A decision was made at the start of the monitoring project to accept the gradual attrition of panelists from the panel over time (due to changes in panelist work and home addresses, requests to be removed from the panel, etc.) rather than attempt to maintain a constant sample by replacing those leaving the panel with "representative" subjects. As a result, the size of the panel has continued to diminish (see Figure 1). Of the 1825 motorists who initially agreed to be a member of the automobile panel, a total of 416 panelists returned usable responses to the October 1991 survey. A similar reduction in membership has occurred in the transit panel. Overall, sample sizes of the panel have decreased from 597 transit users in May 1990 to 137 users responding to the October 1991 survey.

The October 1991 survey represents the third sample taken during the two years that the construction project has been monitored by TTI. In previous reports, the emphasis of analysis has been to compare and contrast the data from each survey with the data collected prior to the start of construction (i.e., May 1990). In this report, efforts have been made to assess in more detail the trends in changes (as measured by each of the follow-up surveys) that have occurred since construction began. Data for each panelist responding to the October 1991 survey were extracted from the previous surveys and analyzed. This provides the strongest evaluation of changes in perceptions over time. However, this process may alter slightly the values of some of the average responses reported previously because the sample of the panel used to compute these values is slightly different.

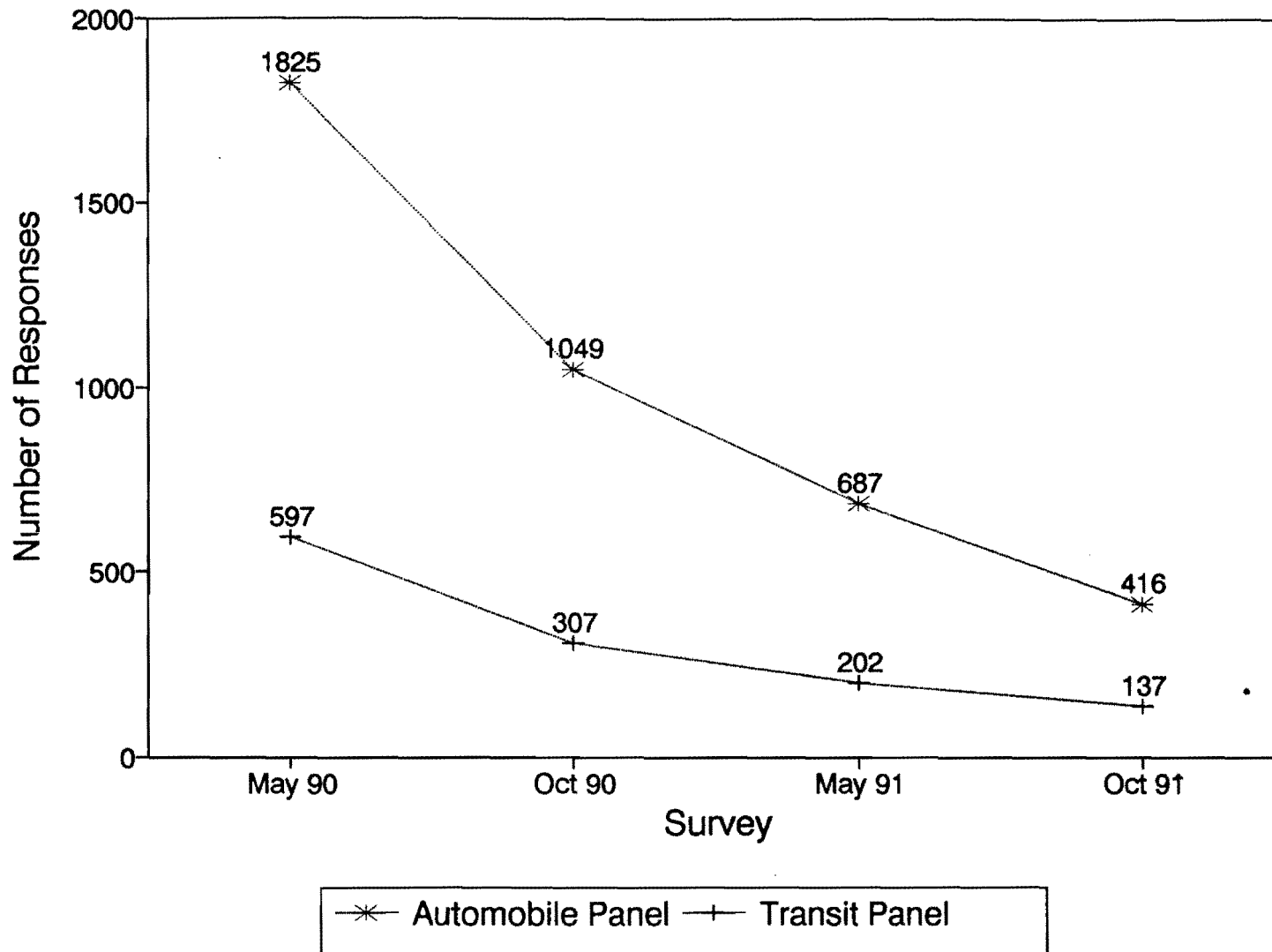


Figure 1. Automobile and Transit User Panel Sample Sizes

RESULTS

Automobile User Survey

Overall Tripmaking Characteristics

Figure 2 presents a summary of the total number of trips made per day by the panelists in May 1990 (prior to construction) as well as in November 1990, May 1991, and October 1991 (the most recent survey). These values represent all trips, whether or not they were made on the North Central Expressway. The figure indicates that the number of trips being made by panelists has remained fairly constant throughout construction until the October 1991 survey. Data from this most recent survey show a small (9 percent) reduction in the total number of trips being made per day, an amount that is statistically significant at $\alpha = 0.05$.

Also shown in Figure 2 is the average number of trips being made per day on the North Central Expressway as reported by panelists. A very small but consistent trend is evident towards fewer trips being made on the Expressway in each survey conducted during construction. In comparison to the May 1990 responses, trip rates on the Expressway in October 1991 were down approximately 10 percent relative to May 1990, an amount that is statistically significant at $\alpha = 0.05$.

In comparison to these actual tripmaking frequencies, panelists' perceptions of the changes they have made in their total daily tripmaking activity are presented in Figure 3. Overall, most panelists continue to believe they are making the same number of trips per day as before construction began. However, a steady decrease in the percentage indicating "no change" has occurred throughout construction, as more and more of the panel believed that their total daily tripmaking activity had diminished as construction proceeded. Figure 4 illustrates a similar breakdown of panelist perceptions of their utilization of the North Central Expressway. Again, most panelists continue to believe they are making the same number of trips on the Expressway as before construction. However, the size of this majority has dropped steadily throughout construction. In the October 1991 survey, about two-thirds of the panel members believed they had not changed the frequency of their trips on the Expressway, whereas one-third believed they were making fewer trips than before. Comparing the values in Figures 3 and 4, the

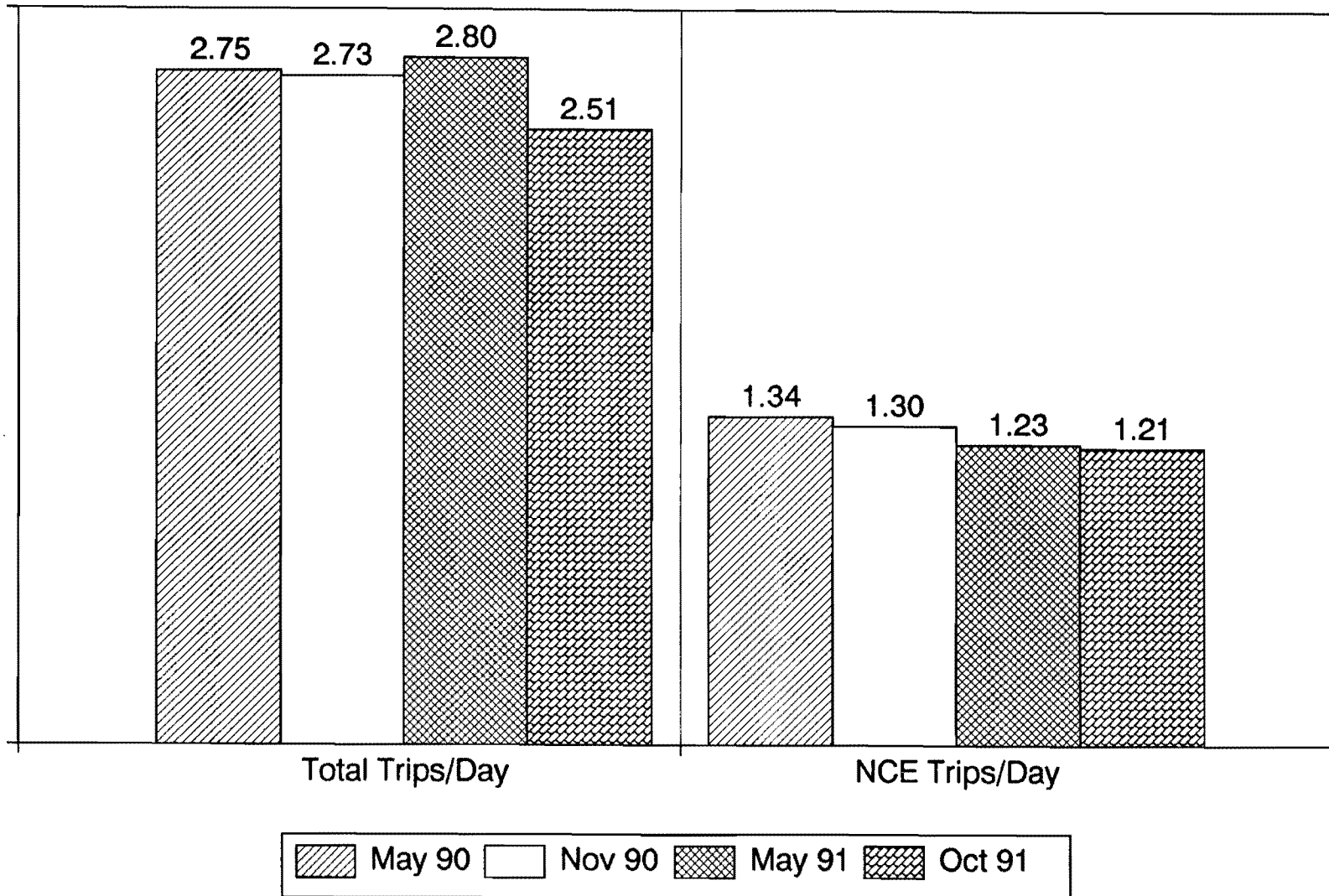


Figure 2. Average Tripmaking Frequency of Automobile Panelists

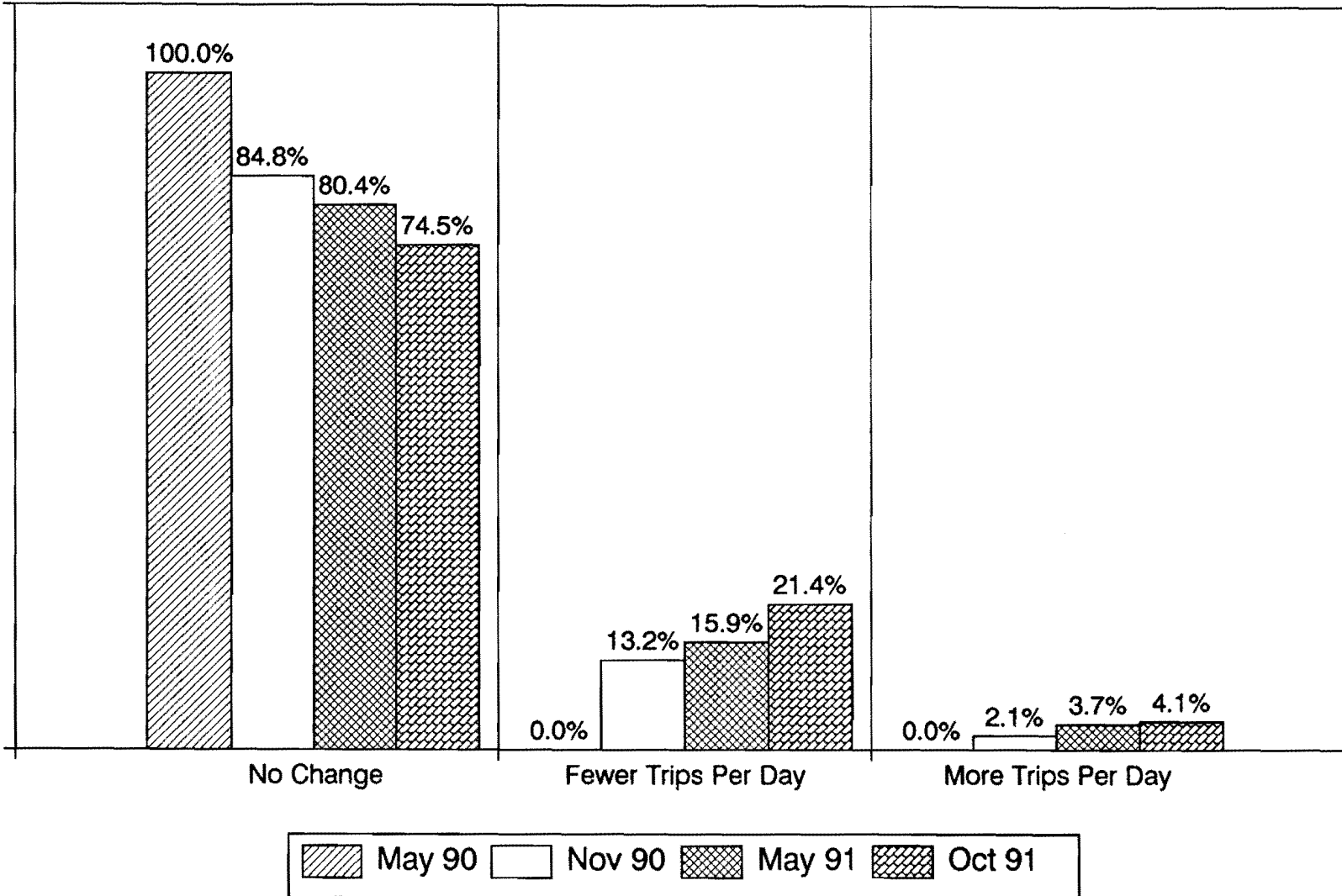


Figure 3. Panelists' Perceptions of Changes in Total Tripmaking Frequency

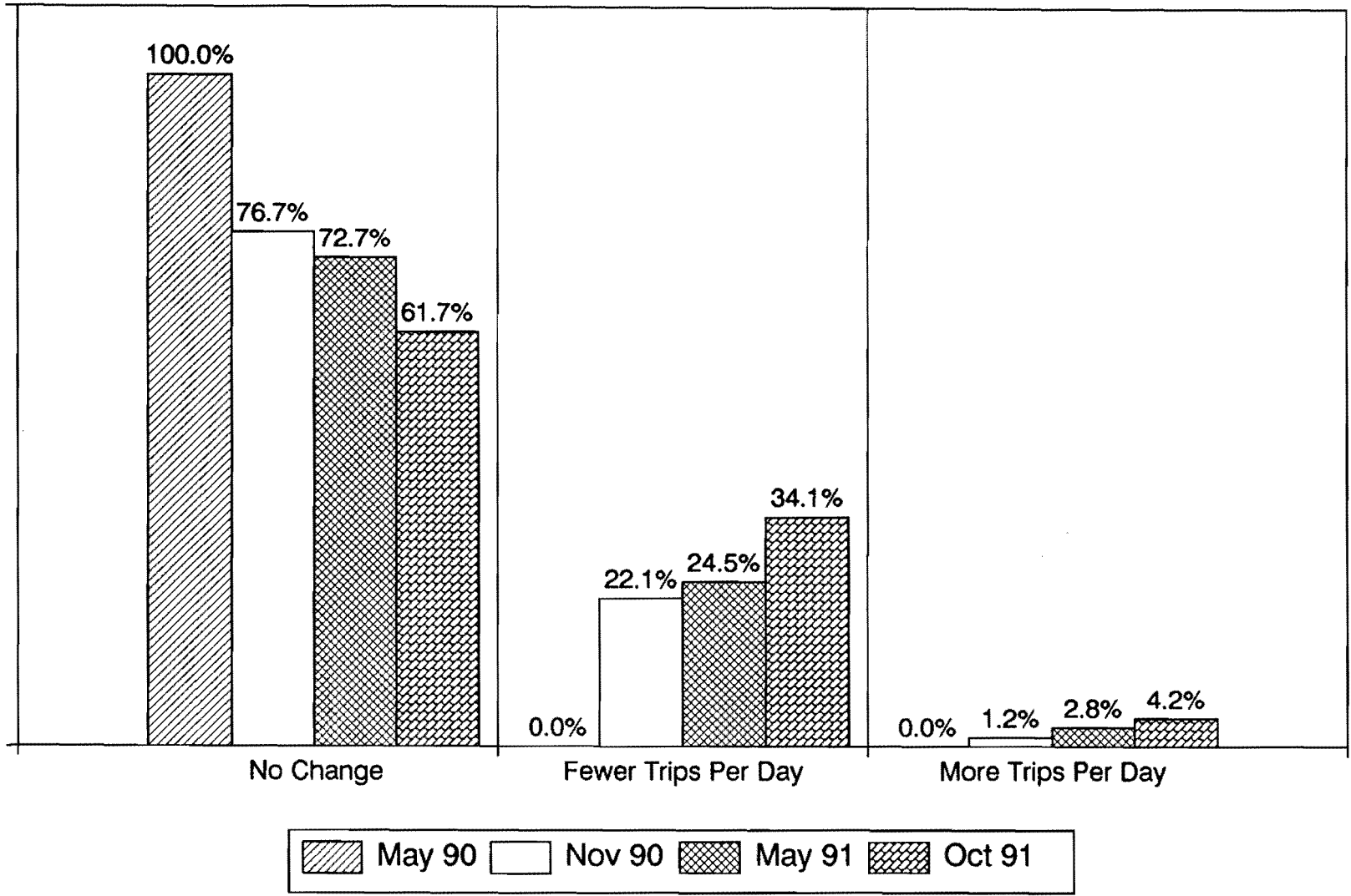


Figure 4. Panelists' Perceptions of Changes in Tripmaking Frequency on North Central Expressway

changes are somewhat more substantial for trips on the North Central Expressway than for the changes in all trips in total, indicating that motorists are perceiving construction to have a slightly greater impact on their Expressway trips than upon those not being made on the Expressway.

Work Trip Characteristics

Departure Times

Trends in reported median departure times to and from work are presented in Table 1. Examining the panel responses as a whole, median departure times to and from work have remained very stable throughout construction. An initial 15 minute shift to earlier departures in the morning was detected in the first during construction survey of November 1990, but latter surveys in May and October 1991 indicate a return to pre-construction departure times. Meanwhile, there has not been a change of any kind in terms of departure times from work to home (median departure time = 5:00 pm).

The panel was then separated into two categories depending on whether the panelist utilized the Expressway for all or part of the trip, or relied entirely on other routes in the corridor. Median departure times for both of the groups are also shown in Table 1. Presented in this manner, there does appear to be a little more volatility in departure times during construction, particularly for those panelists using the Expressway. Latest data from October 1991 indicate motorists using the Expressway are leaving about 10 minutes earlier than they were prior to the start of construction, whereas those not using the Expressway were leaving about 5 minutes earlier than normal in the morning. For trips home in the evening, both groups consistently depart at 5:00 pm.

TABLE 1. SUMMARY OF DEPARTURE TIMES TO AND FROM WORK

	All Panelists	NCE Users*	Non-NCE* Users
Home-to-Work Trips:			
May 1990	7:15 am	7:10 am	7:20 am
Nov 1990	7:00 am	7:00 am	7:00 am
May 1991	7:15 am	7:15 am	7:15 am
Oct 1991	7:15 am	7:00 am	7:15 am
Work-to-Home Trips:			
May 1990	5:00 pm	5:00 pm	5:00 pm
Nov 1990	5:00 pm	5:00 pm	5:00 pm
May 1991	5:00 pm	5:00 pm	5:00 pm
Oct 1991	5:00 pm	5:00 pm	5:00 pm

*NCE = North Central Expressway

Whereas Table 1 illustrates actual changes in reported departure times throughout the duration of construction, Figure 5 summarizes panelist perceptions as to how they have altered their departure time in response to construction. Overall, perceptions throughout construction have remained fairly constant. As of October 1991, 81 percent of the panel believed they had not altered their departure time to work since construction began two years prior. This proportion has remained at 80 to 85 percent in each of the earlier during-construction surveys as well. Likewise, 16 percent of the panel believed they were leaving earlier, and 3 percent later than before construction began. Both of these percentages are also consistent with perceptions in previous surveys. In comparison, panelist perceptions were that their work-to-home departure times have changed even less. In each of the during construction surveys, more than 90 percent of the panel believe they were leaving work at the same time (i.e., 5:00 pm) as they did prior to construction.

Finally, the responses were subdivided into those panel members using the Expressway versus those using other routes. Any differences between these groups are

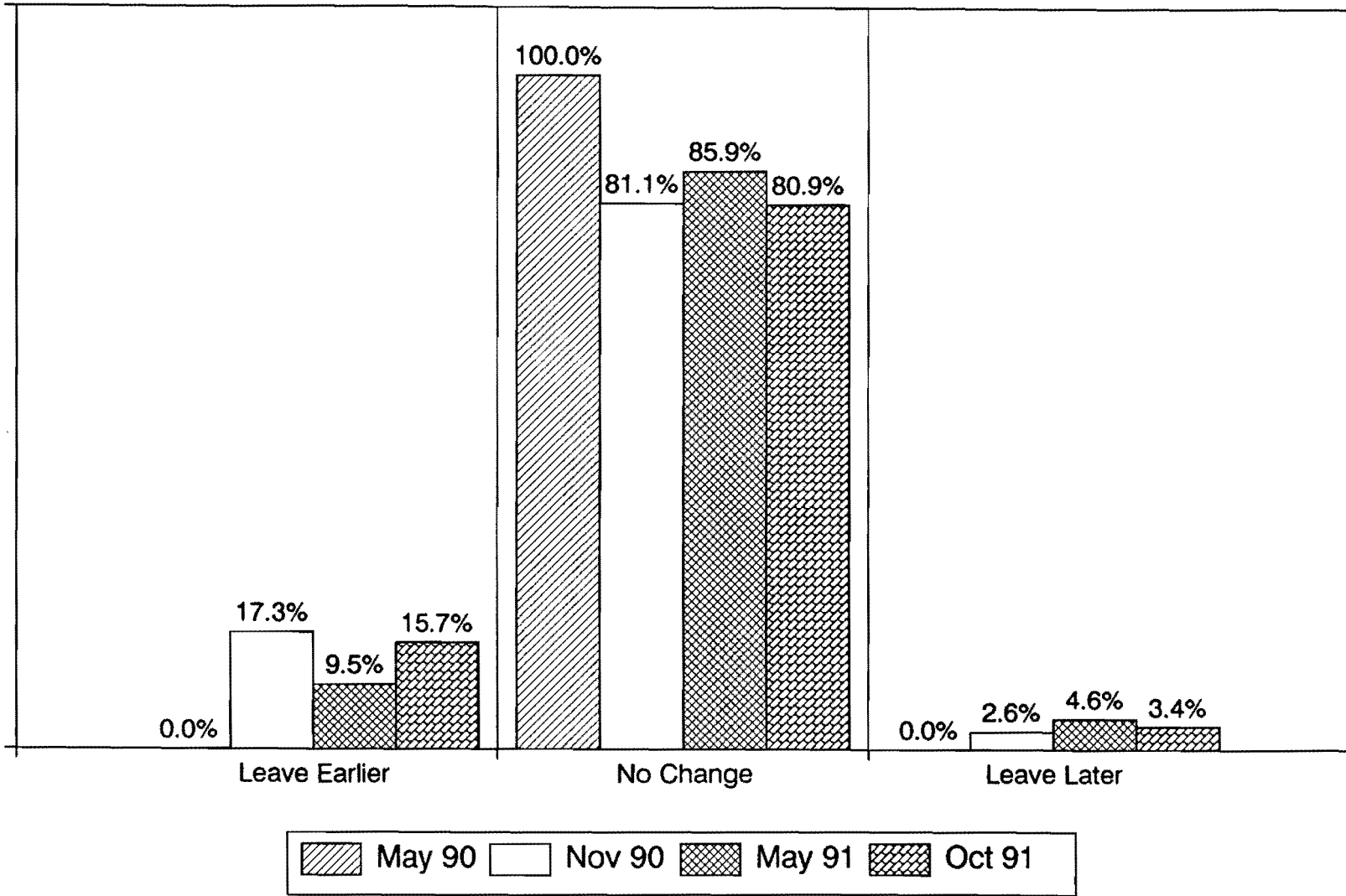


Figure 5. Panelists' Perceptions of Changes in Home-to-Work Departure Times

dissipating as construction proceeds. Figure 6 presents the percentage of each group (North Central Expressway users versus non-users) perceiving that they were leaving earlier than before construction began in June 1990. As the figure indicates, a higher percentage of Expressway users initially believed they were leaving for work earlier, as measured in the November 1990 survey. However, this difference has decreased to the point where the percentage is essentially identical for both groups in the October 1991 survey.

Travel Times

Average travel times to work for the entire panel are shown in Figure 7. Considered together, all panel members reported average travel times that were slightly lower in October 1991 than in May 1990, (5.9 percent), going from 30.4 minutes before construction to 28.6 minutes in the most recent survey. This difference was not found to be statistically significant, however. Also shown in Figure 7 are the average travel times for Expressway users and non-users. Expressway users reported an increase in travel times immediately after the beginning of construction but a slight decrease in the more recent surveys. Meanwhile, non-users have experienced a general trend towards slightly lower travel times throughout Expressway construction. None of the reported changes are statistically significant.

Overall, tendencies are very similar for the work-to-home travel times presented in Figure 8. The average travel time for Expressway users has decreased 1.5 minutes (4.1 percent) since construction began, whereas the travel time for non-users has decreased 4.5 minutes (15.0 percent). Only the decrease for non-Expressway users was statistically significant. The overall average travel times in the corridor dropped a statistically significant 3 minutes (8.9 percent) between May 1990 and October 1991.

Panelists' perceptions as to how travel times have changed since the beginning of construction are presented in Figures 9 and 10. Even though reported travel times have stayed the same or decreased slightly since construction began, a significant and consistent percentage of panelists believe that travel times have increased in the corridor. As Figure 11 and 12 indicate, however, more Expressway users than non-users believe travel times (both to and from work, respectively) have become longer.

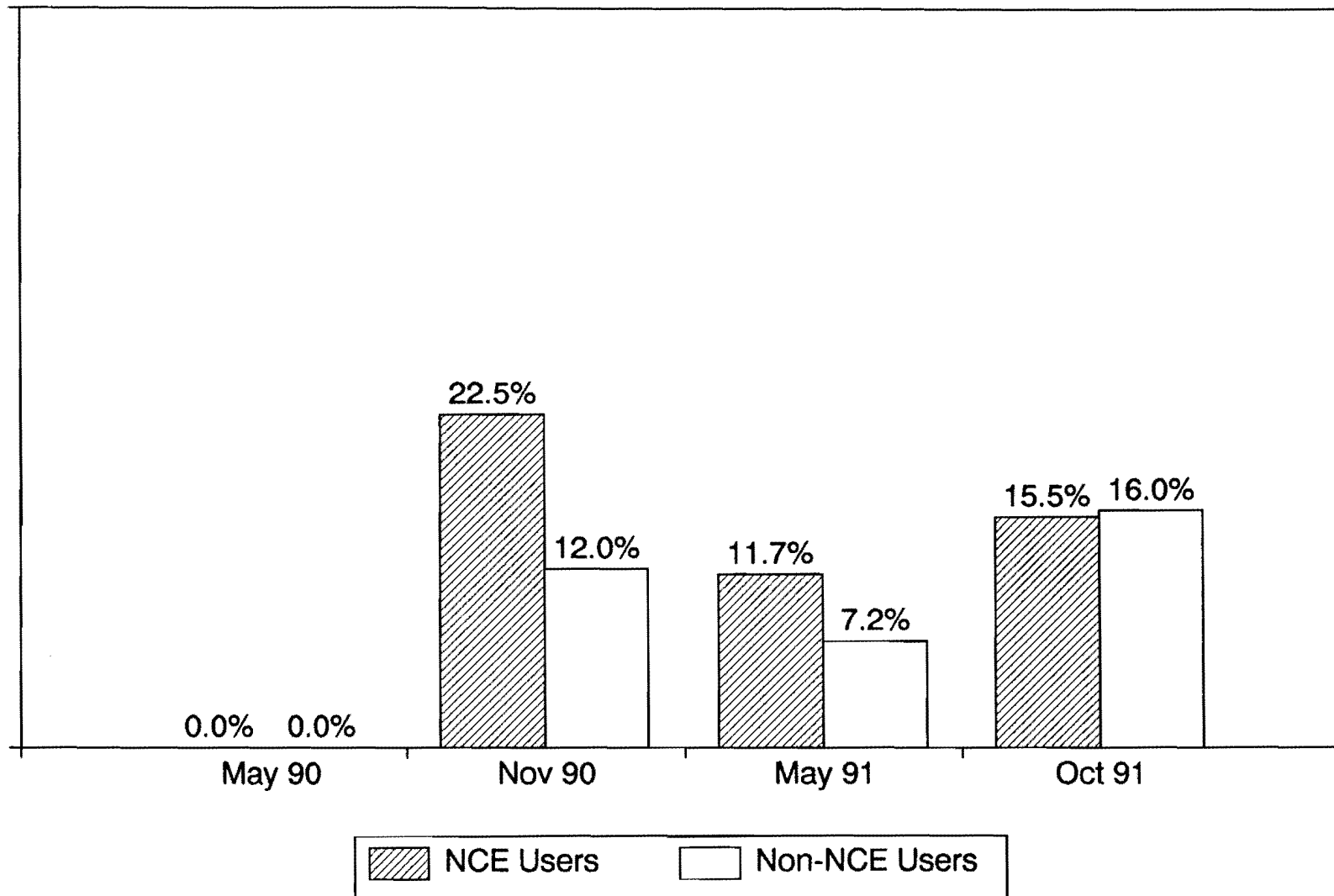


Figure 6. Percentage of Panelists Perceiving Earlier Home-to-Work Departure Times, Expressway Users Versus Non-Users

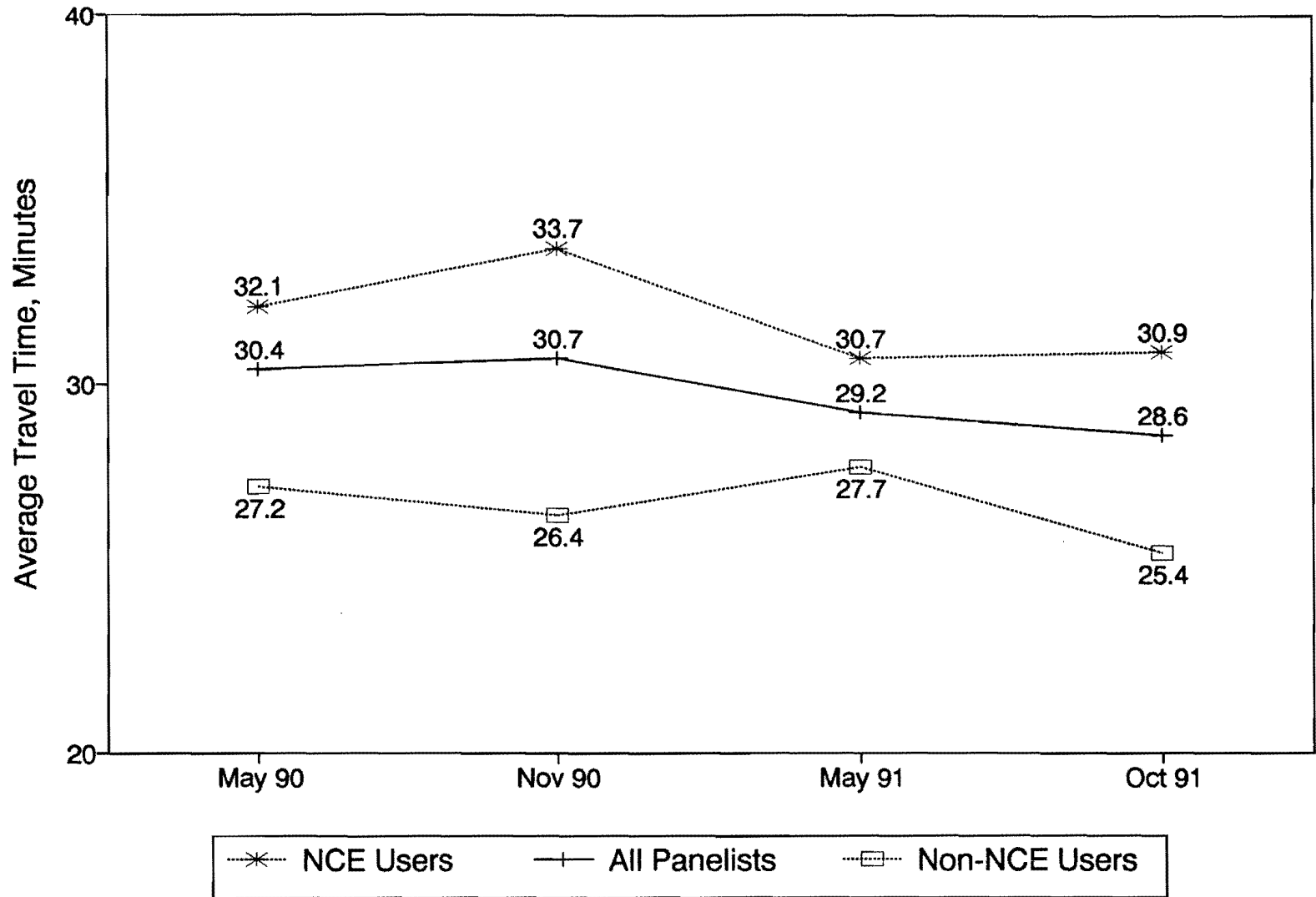


Figure 7. Average Home-to-Work Travel Times

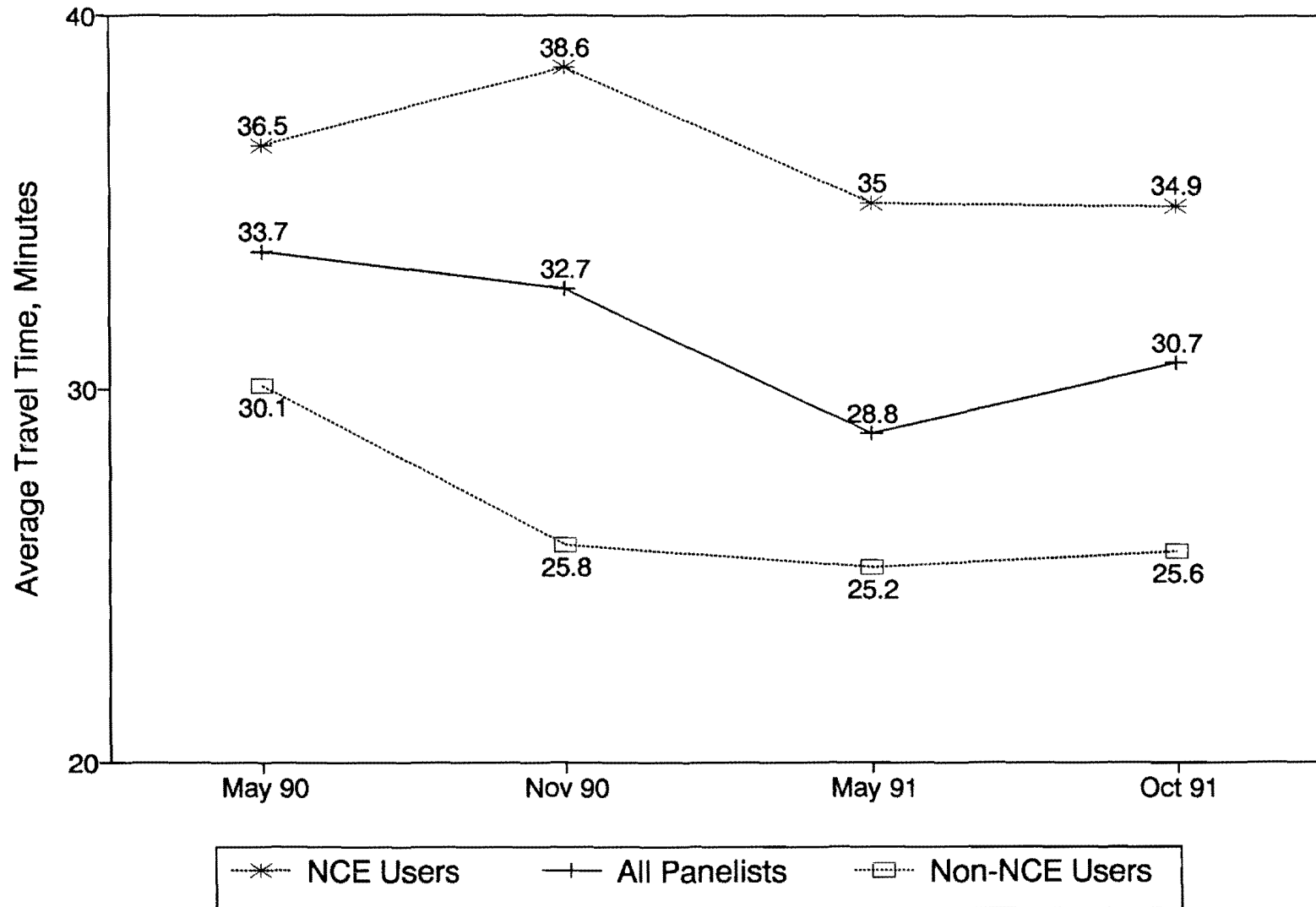


Figure 8. Average Work-to-Home Travel Times

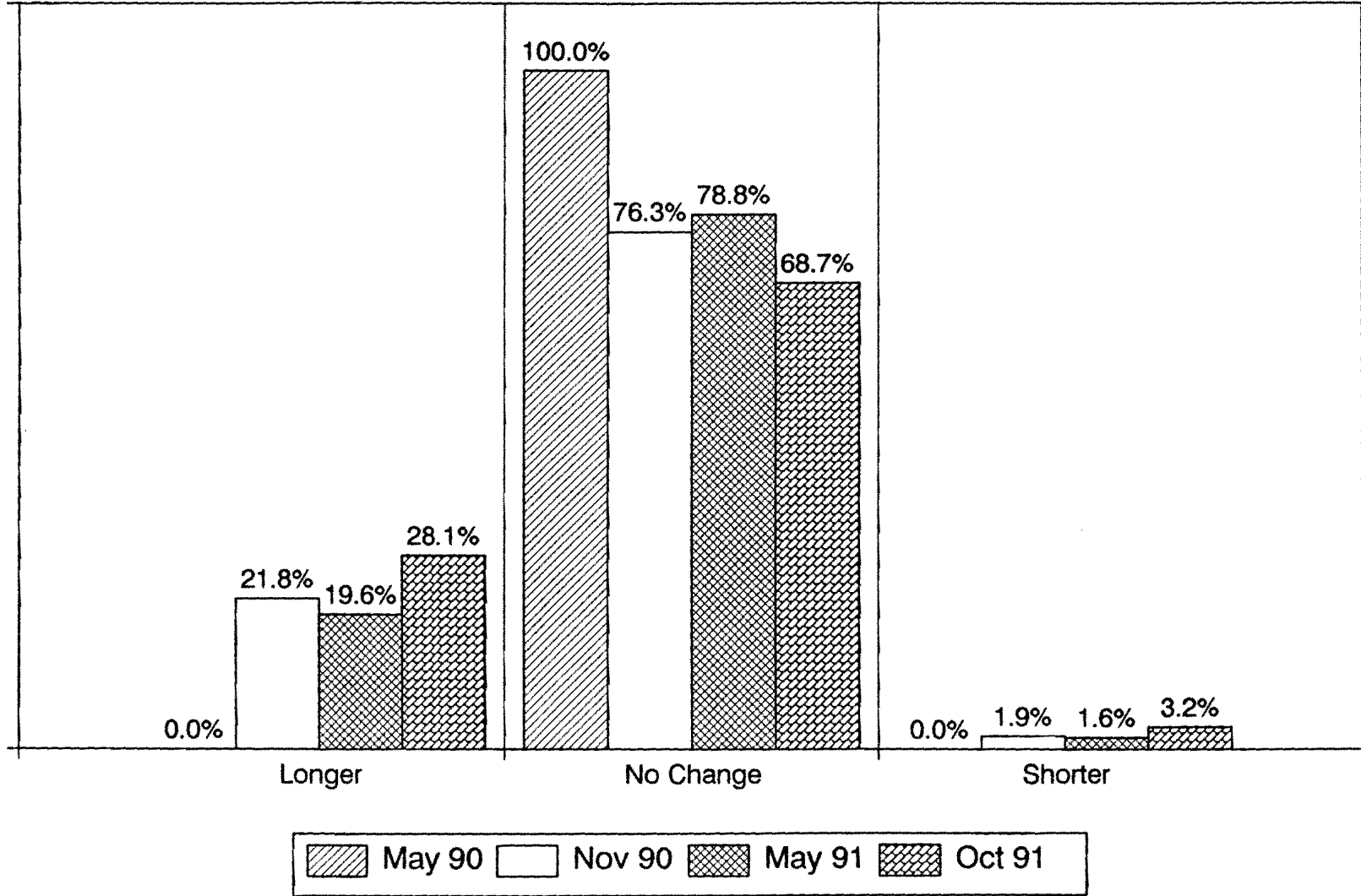


Figure 9. Panelists' Perceptions of Changes in Home-to-Work Travel Times

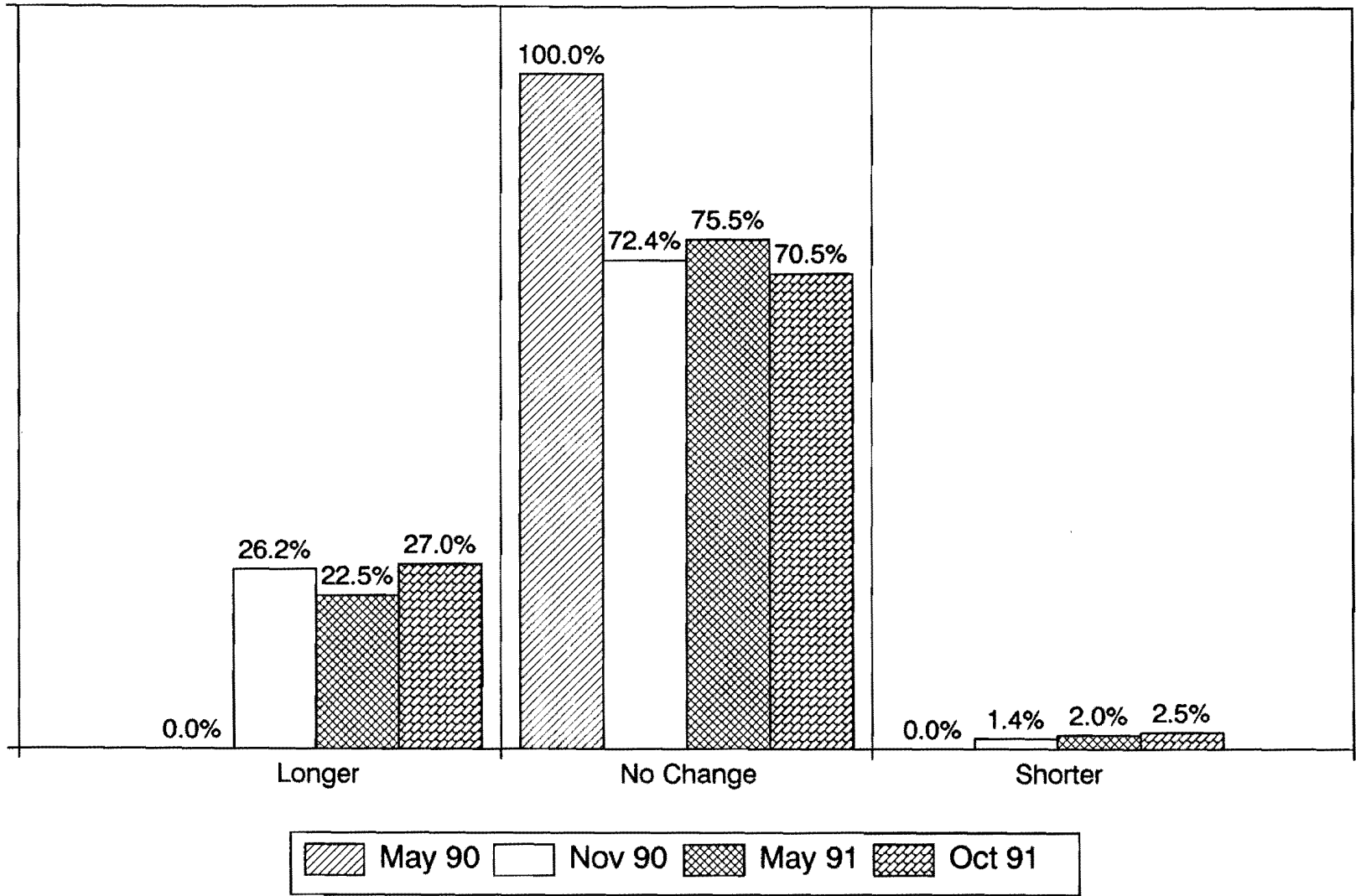


Figure 10. Panelists' Perceptions of Changes in Work-to-Home Travel Times

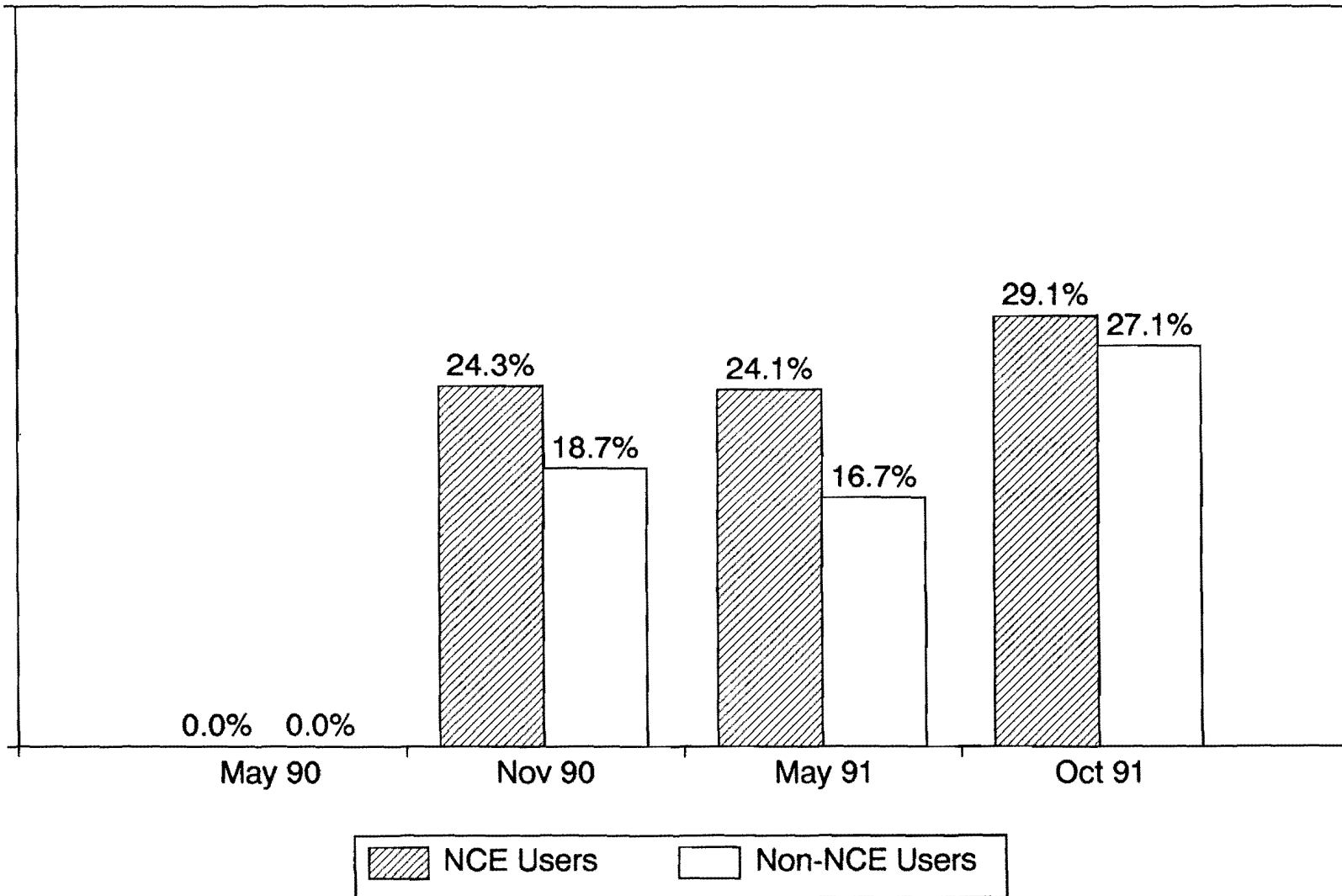


Figure 11. Percentage of Panelists Perceiving Longer Home-to-Work Travel Times, Expressway Users Versus Non-Users

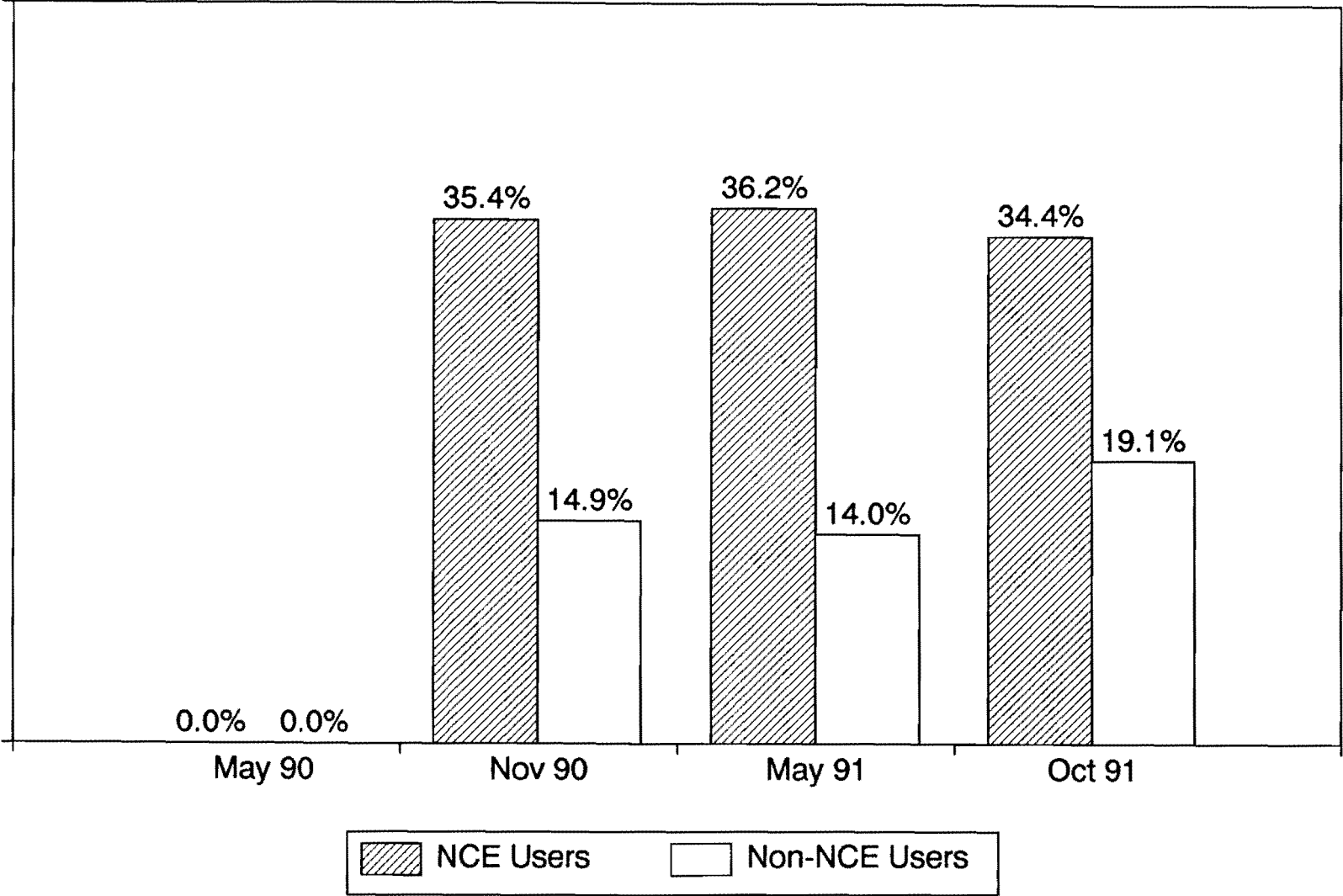


Figure 12. Percentage of Panelists Perceiving Longer Work-to-Home Travel Times, Expressway Users Versus Non-Expressway Users

Intermediate Stops to and from Work

Trends in the total number of intermediate stops made on the way to and from work are illustrated in Figure 13. In general, the average number of stops being made on the way to or from work does not show any significant trends. Relative to the May 1990 data, the results of the October 1991 show a slightly greater number of stops on the way to work but slightly fewer on the way home. Neither of these differences are statistically significant. Meanwhile, a breakdown of the panel by NCE users and non-users does not reveal any consistent differences between groups.

Mode Choice

Summaries of the trends in motorist mode choice are presented in Figures 14 and 15, which show the percentage of panelists reportedly driving alone to and from work, respectively. Separate trends are plotted for Expressway users and non-users. In both figures, the data do not illustrate any consistent trends in either Expressway user or non-user mode choice changes. A slight decreasing trend in drive-alone trips from work to home was evident on the Expressway during the early stages of construction, but an upturn in the October 1991 data has returned mode choices to approximately pre-construction levels. Meanwhile, no consistent pattern was evident in drive-alone percentages for the home-to-work trips.

Route Utilization

Figure 16 illustrates the percentage of panelists who use the North Central Expressway for some or all of their trips to and from work. Utilization of the Expressway has not decreased appreciably during construction, although a small drop was detected in the May 1991 survey. The most recent data from October 1991, however, indicates that the decrease was short-term. The May 1991 decrease could be due to accidents or other adverse travel conditions present on the Expressway when the survey was performed. The figure also shows that panelists continue to use the Expressway to a greater degree for their morning home-to-work trips than for their evening work-to-home trips.

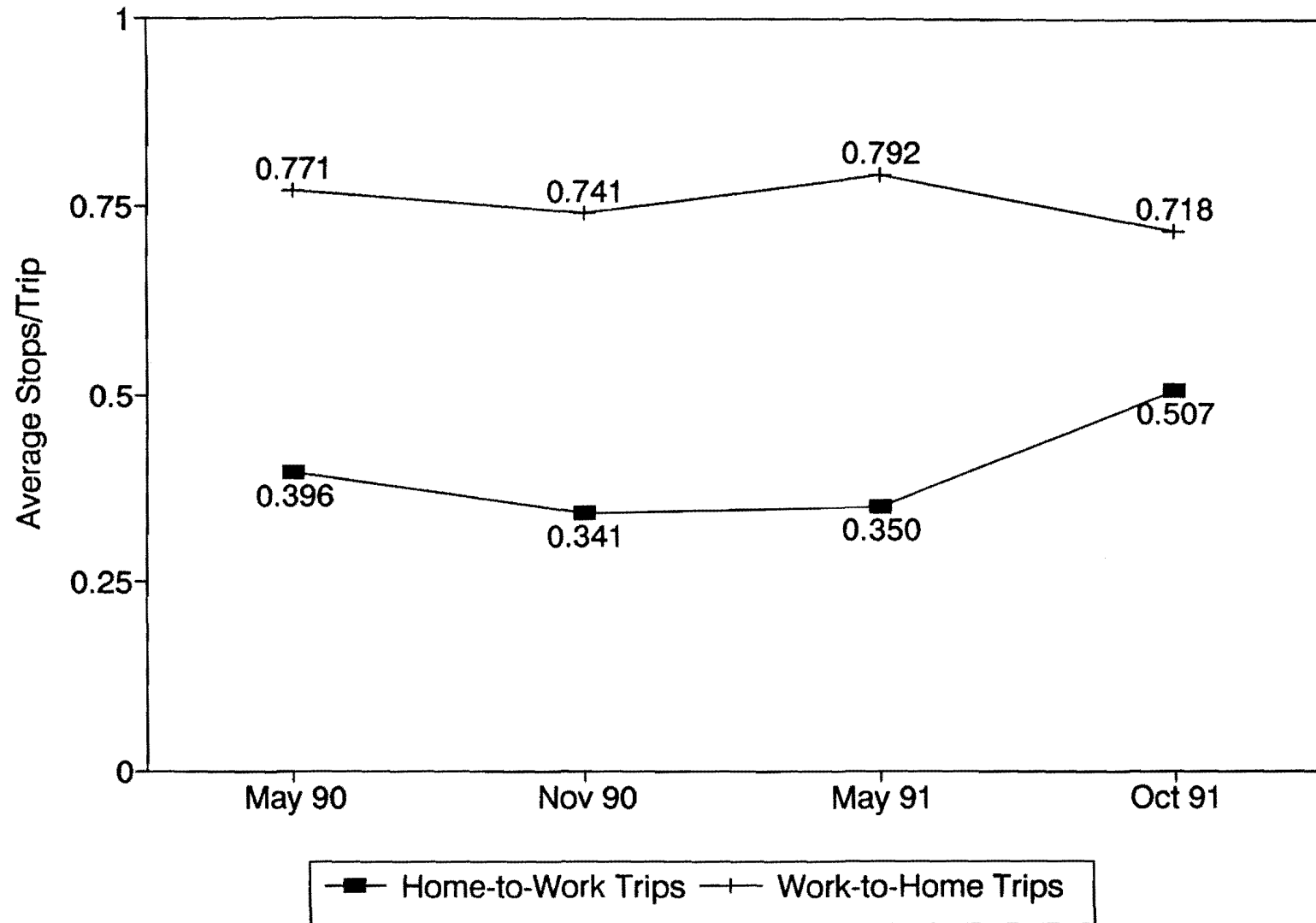


Figure 13. Average Number of Stops Made per Trip, Home to Work and Work to Home

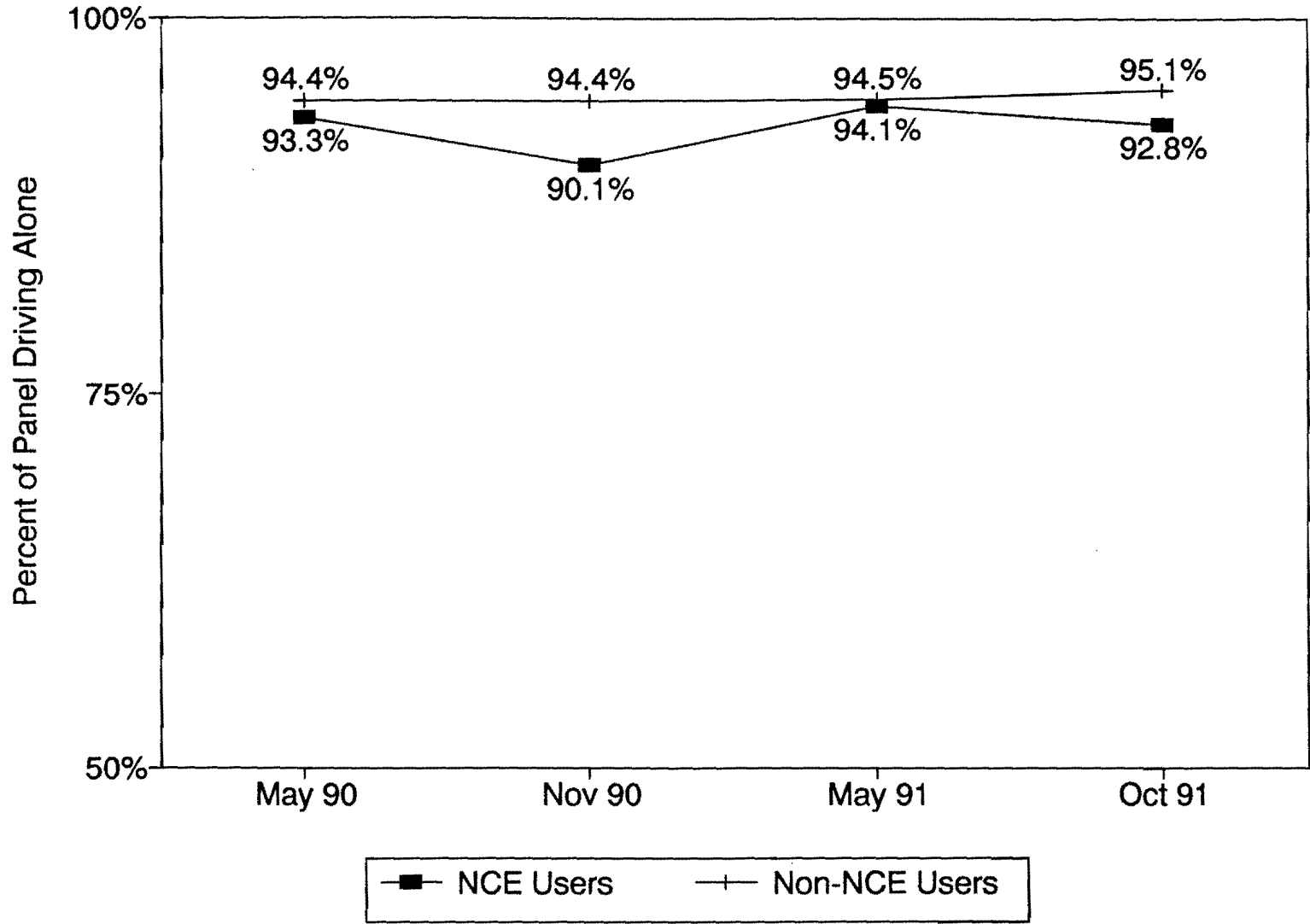


Figure 14. Percentage of Panelists Driving Alone Home to Work, Expressway Users Versus Non-Expressway Users

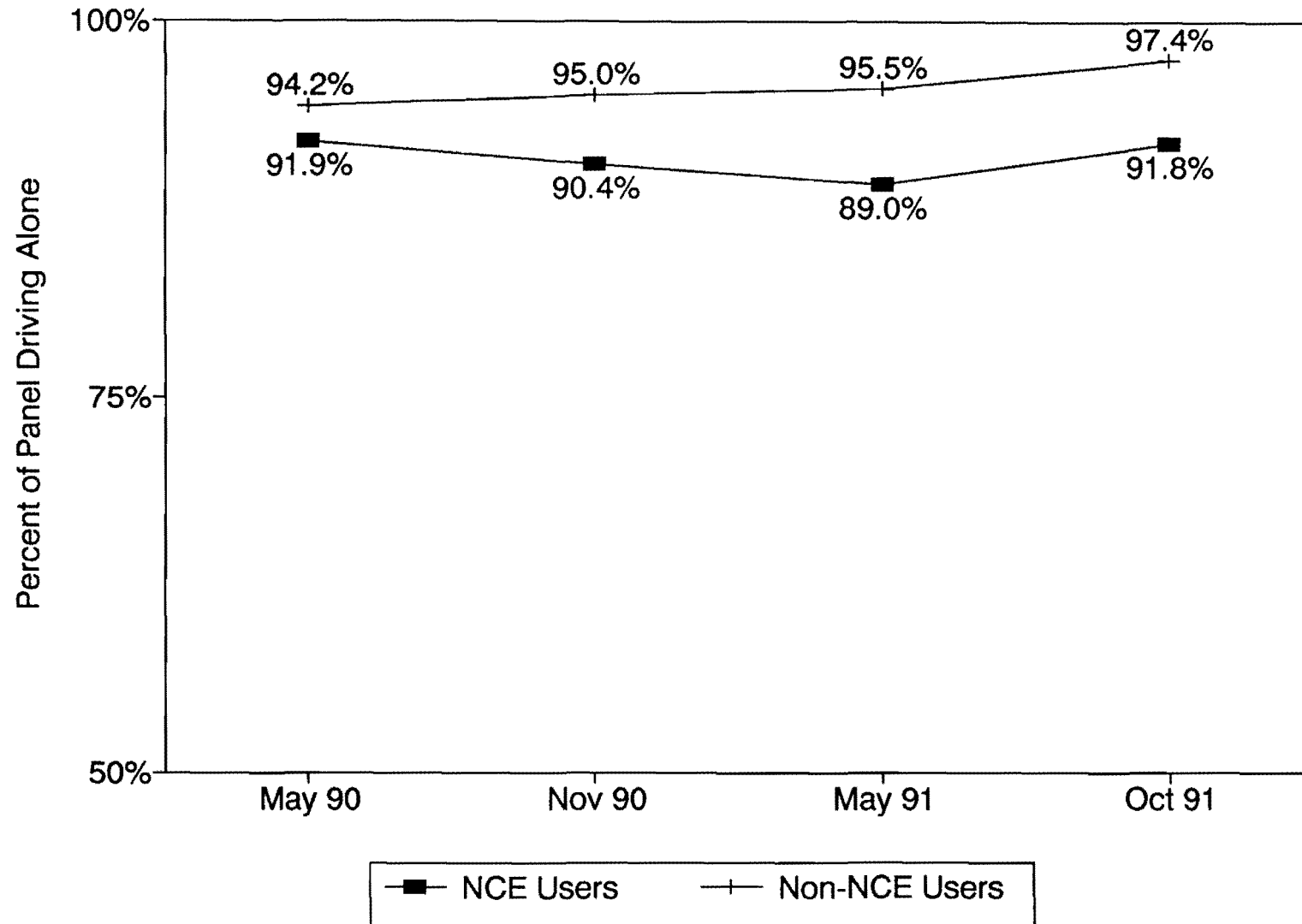


Figure 15. Percentage of Panelists Driving Alone Work-to-Home, Expressway Users Versus Non-Expressway Users

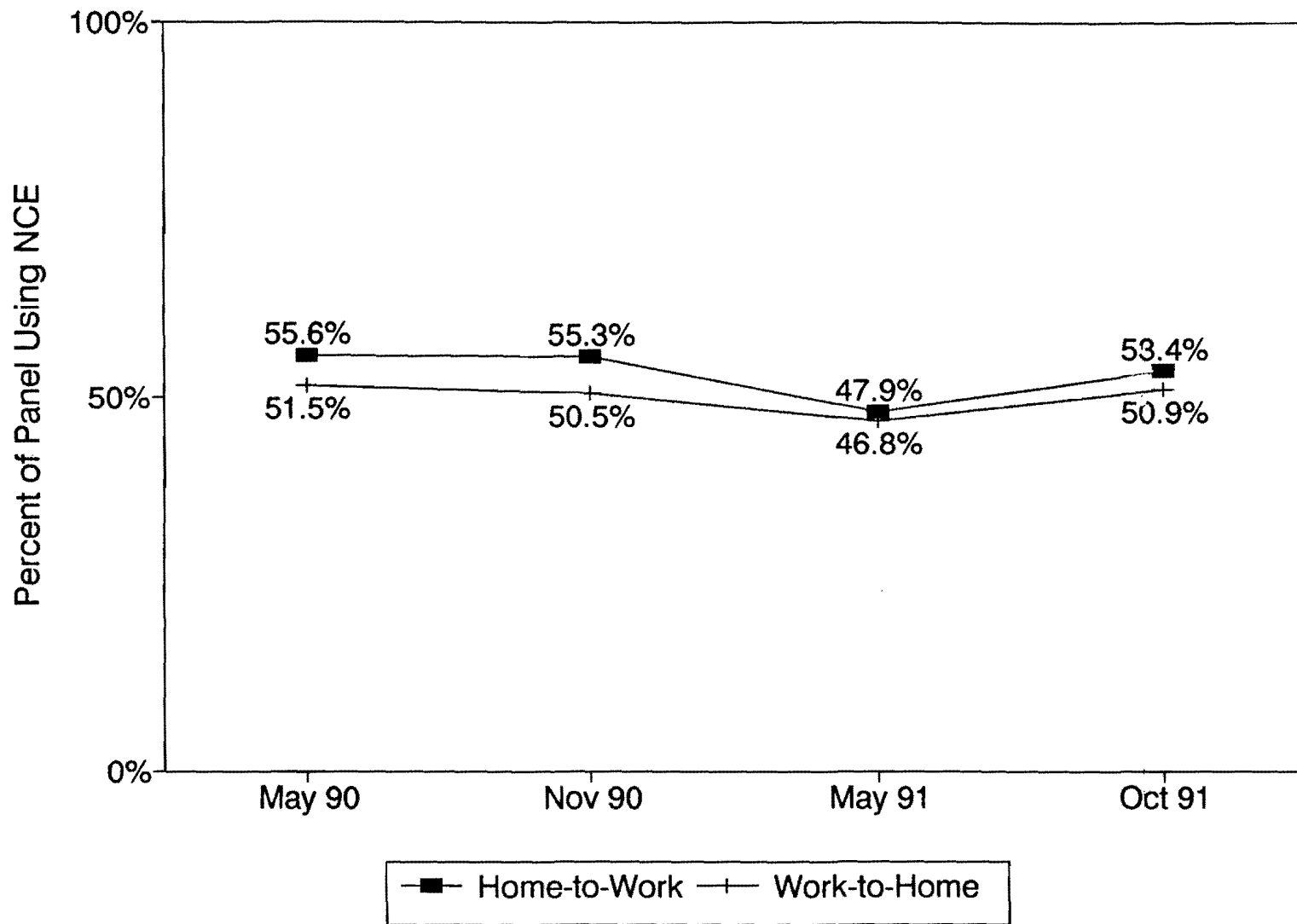


Figure 16. Percentage of Panelists Using North Central Expressway for Home-to-Work and Work-to-Home Trips

The Expressway is certainly not the only roadway utilized by panelists for their work trips. The degree to which Expressway construction has affected use of these other routes for the home-to-work and work-to-home trips is summarized in Tables 2 and 3. The trends indicate a slightly greater use of Greenville Avenue and Abrams Road for both home-to-work and work-to-home trips. Conversely, some of the other routes in the corridor have experienced a slight decrease in utilization.

TABLE 2. ROUTE UTILIZATION: HOME-TO-WORK TRIPS

Roadway	May 1990	Nov 1990	May 1991	Oct 1991
North-South Routes:				
Greenville	9.9	8.4	12.1	12.7
Hillcrest	10.2	8.0	9.8	9.6
Skillman	6.2	6.8	8.7	7.4
Abrams	4.6	6.8	8.4	8.3
Dallas North Tollway	14.1	11.6	11.8	11.4
Inwood	4.0	3.2	5.0	4.6
Preston	8.0	5.8	10.1	9.0
East-West Routes:				
LBJ Freeway (I-635)	.	.	6.4	6.2
Forest	.	.	5.6	5.2
Walnut Hill	.	.	7.3	5.2
Northwest Hwy	.	.	7.9	6.5
Lovers	.	.	3.7	1.5
Mockingbird	.	.	2.8	1.9

TABLE 3. ROUTE UTILIZATION: WORK-TO-HOME TRIPS

Roadway	May 1990	Nov 1990	May 1991	Oct 1991
North-South Routes:				
Greenville	8.6	7.4	9.9	9.9
Hillcrest	9.9	8.4	9.0	9.6
Skillman	7.4	7.7	8.2	7.4
Abrams	6.2	6.1	8.2	7.1
Dallas North Tollway	11.7	15.4	12.7	12.3
Inwood	5.9	2.9	3.7	3.7
Preston	9.3	7.1	8.8	8.0
East-West Routes:				
LBJ Freeway (I-635)	.	.	5.9	4.3
Forest	.	.	5.6	4.9
Walnut Hill	.	.	6.8	4.9
Northwest Hwy	.	.	8.8	6.5
Lovers	.	.	2.5	1.2
Mockingbird	.	.	1.4	3.1

Motorist Information Sources

Panelists' perceptions regarding the amount and usefulness of information provided concerning construction activities on the Expressway are shown in Table 4. Overall, the vast majority (82 percent) of panelists feel that the changeable message signs (CMSs) in the corridor provide clear and understandable information concerning construction activities on the Expressway. Likewise, 53 percent stated that the information on the signs helped them in choosing alternative routes to the Expressway. Expressway users indicated that the signs affected their decision to use an alternative route approximately 1.35 times per month, whereas non-users reported responding to the CMS information and taking an alternative route 0.83 times per month.

In addition to the CMSs, TxDOT continues to provide information through its periodic newsletter "EXPRESSIONS." In general, this form of information is not distributed as widely to the driving public (the survey indicated that only 4.1 percent of the panel currently received the newsletter on a regular basis). However, the vast majority (88 percent) of those that do receive the newsletter believe it provides them with useful information. Further emphasizing the perceived usefulness of the newsletter is the fact that over 50 percent of the panel requested to be put on its mailing list as a result of the October 1991 survey.

TABLE 4. ASSESSMENT OF CONSTRUCTION INFORMATION SOURCES

Question	Response
Are the messages presented on the CMSs clear and understandable?	88.2 % yes 17.8 % no
Do the CMSs aid you in choosing an alternative route?	57.0 % yes 43.0 % no
How many times last month did you use an alternative route because of information presented on the CMSs? NCE users: non-users:	1.35/mo. 0.83/mo.
Do you receive the monthly construction newsletter "EXPRESSIONS" provided by TxDOT?	4.1 % yes 95.9 % no
(Of those receiving the newsletter) Is the information in the newsletter useful to you?	88.2 % yes 11.8 % no
Would you like to be put on the mailing list for this newsletter?	50.5 % yes 49.5 % no

Transit User Survey

As with automobile commuters, a panel of transit users has been monitored regularly throughout the construction project. The transit panel consists of individuals utilizing park-and-ride facilities along the Expressway as well as a number of patrons of express route service provided to certain areas in north Dallas. Panelists' perceptions as to how construction has affected trip times and the overall quality of transit service in the Expressway corridor were the key issues of interest in this monitoring effort. Figure 17 presents the survey-by-survey trends of transit quality reported by panelists. Overall, quality ratings have remained fairly stable with no clear trends towards better or worse transit service. In comparison, Figure 18 summarizes panelists' perceptions as to whether they believe transit quality is better, worse, or the same as before construction. In general, there has been an increasing percentage of the panel members who perceive transit service to have become worse throughout construction. However, these panelists have been offset by a nearly equal percentage who perceive service to actually have improved within the corridor.

Median transit trip times reported by panelists have remained constant at 40 to 50 minutes throughout the duration of construction. With respect to panelists' perceptions of conditions, Figure 19 presents the percentage who believe transit trip times have become longer, shorter, or have not changed since prior to construction. The October 1991 survey shows a dramatic increase in the perceptions of longer trip times (34 percent). Also, less than one-half (47 percent) of the panel members believed that trip times had remained constant. Interestingly, though, the percent of panelists perceiving shorter trip times in the corridor has also increased.

SUMMARY

The following is a list of the principal findings of the most recent survey of automobile and transit users of the North Central Expressway corridor:

1. The total number of trips being made per day by automobile users in the corridor dropped 9 percent in the October 1991 survey (relative to the data collected prior to construction). In comparison, no changes in total trips rates had been observed

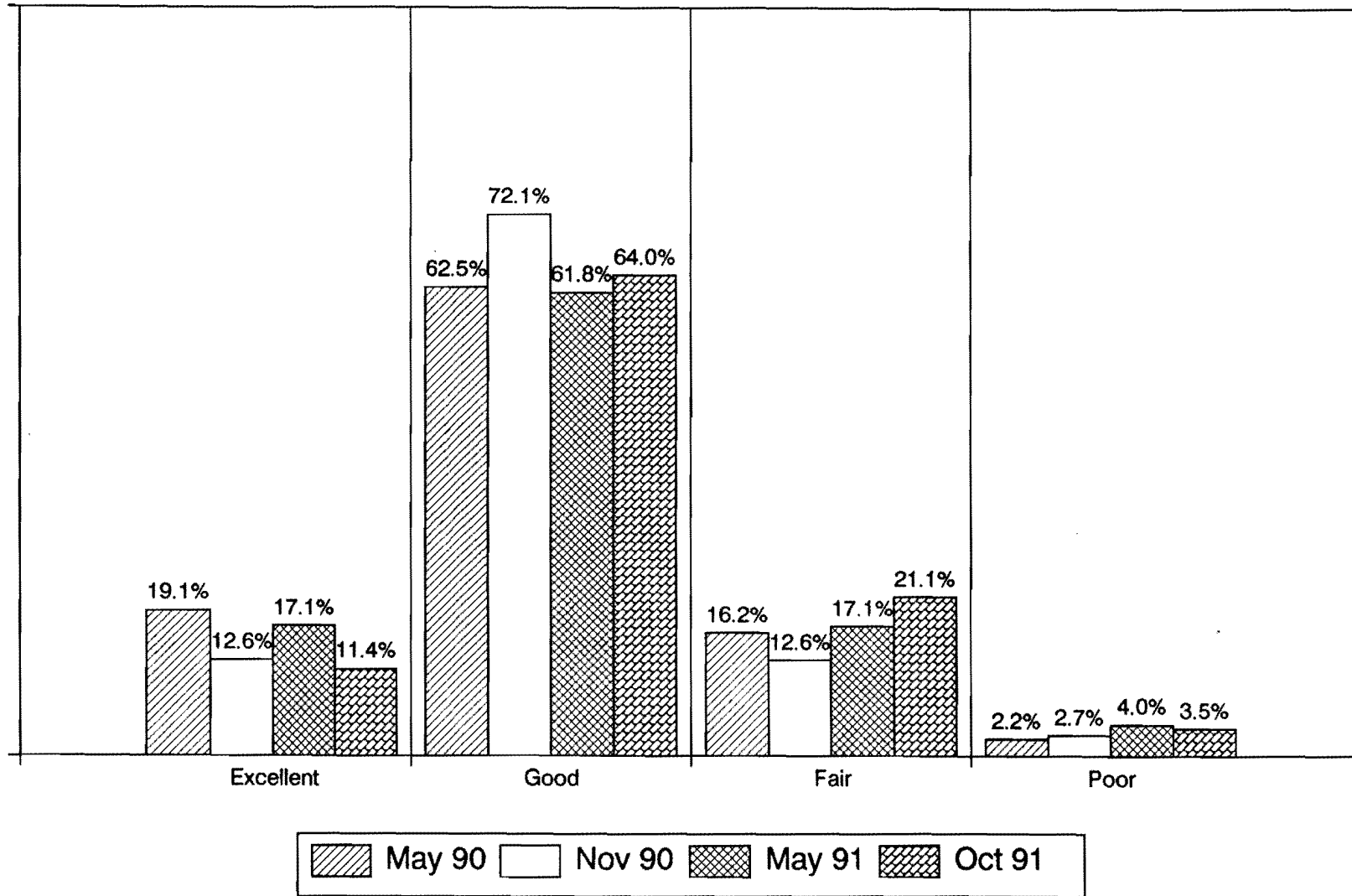


Figure 17. Ratings of Transit Service Quality

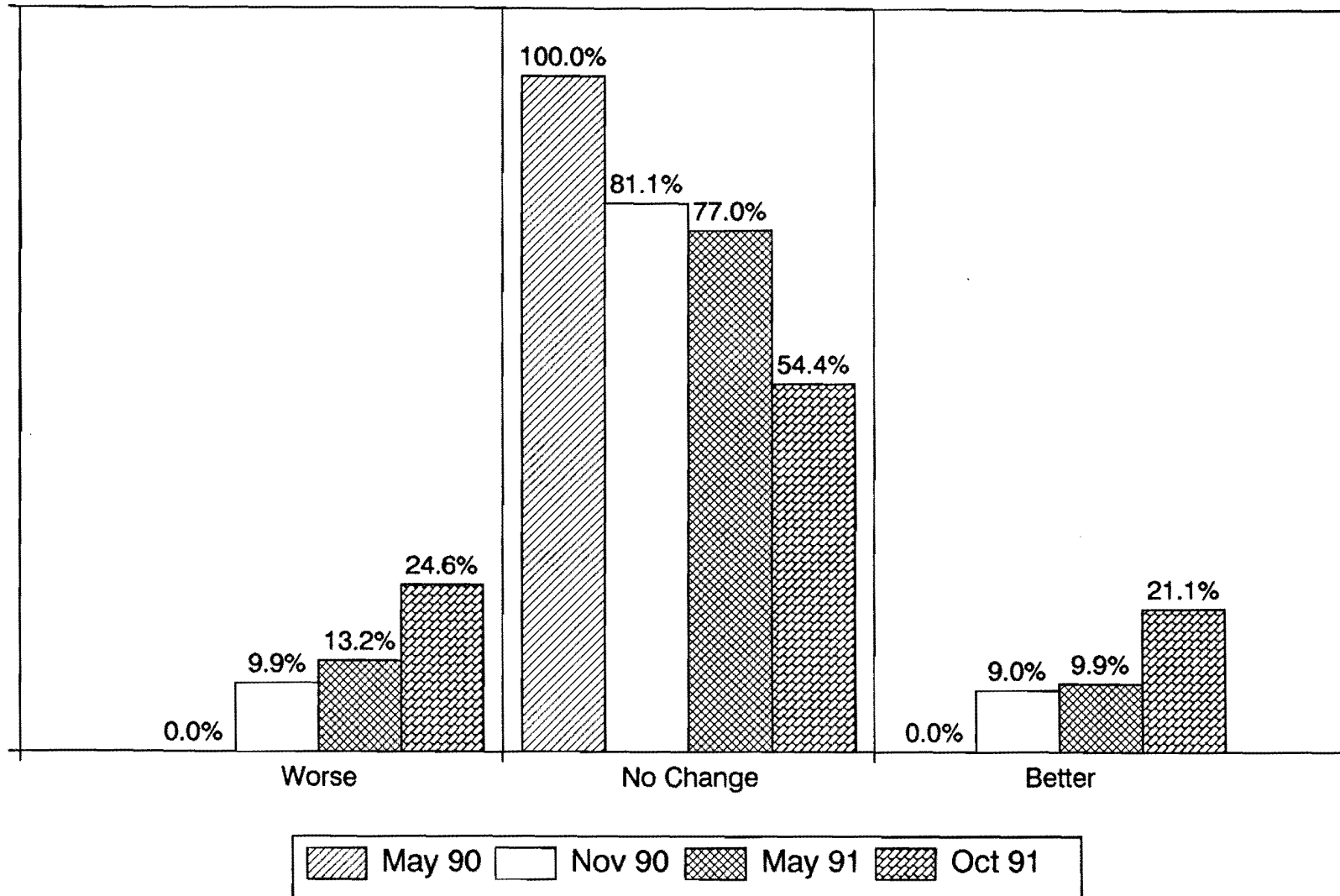


Figure 18. Panelists' Perceptions of Changes in Transit Service Quality

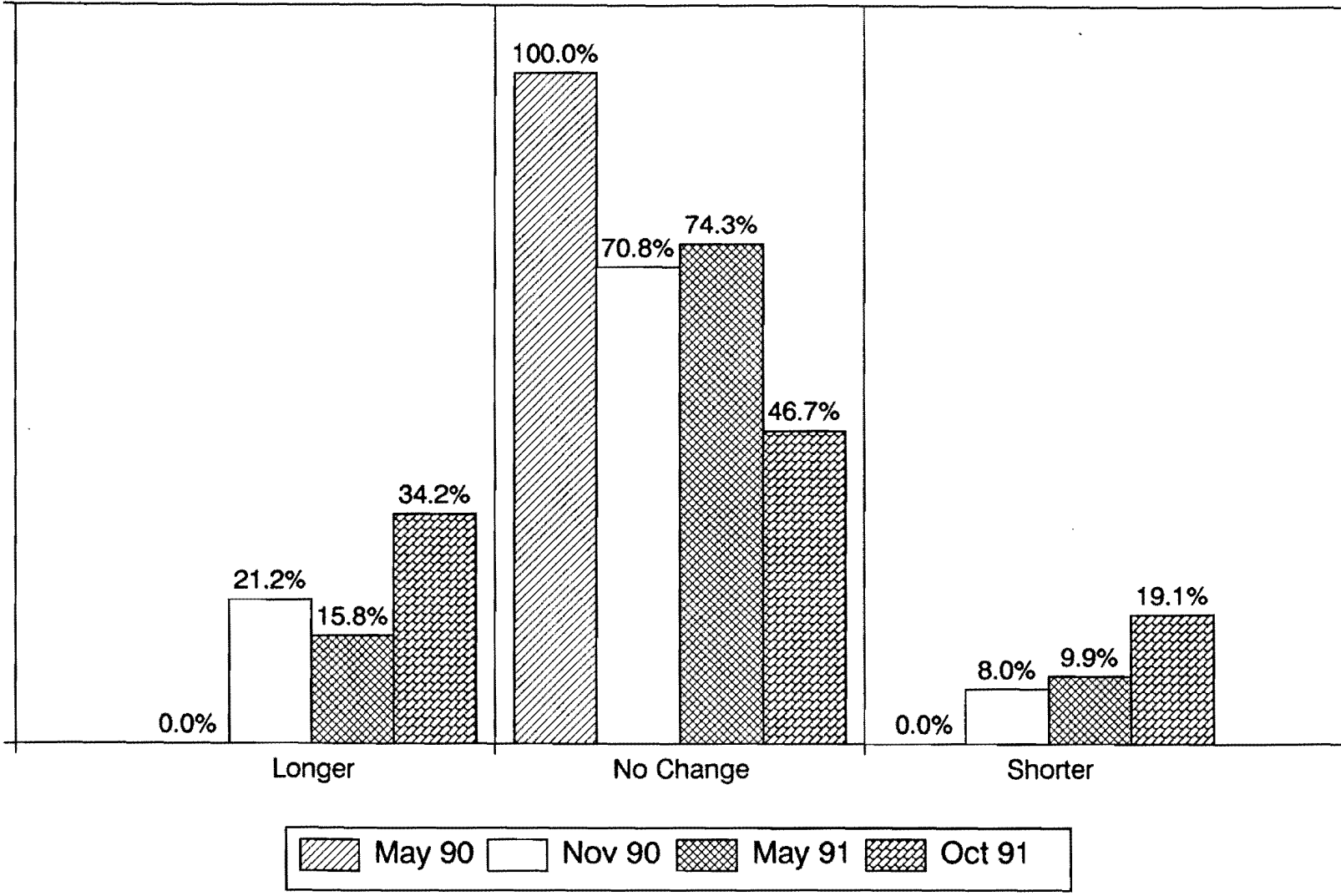


Figure 19. Panelists' Perceptions of Changes in Transit Trip Times

in the previous during-construction surveys. When asked directly whether they believed construction had affected how many trips they were making, approximately one-fifth stated they were making fewer trips per day in October 1991 than in May 1990 (prior to the start of construction).

2. Daily trip rates on the North Central Expressway continue to decrease slightly throughout construction. Relative to pre-construction rates, trip rates on the Expressway in October 1991 were 10 percent lower. About one-third of the panel members believed they were making fewer trips per day on the Expressway in October 1991 than before construction began.
3. Departure times for the trips to and from work have not been significantly affected by construction. Median departure times overall in October 1991 were identical to those in May 1990. More than 80 percent of the panel members believed they were departing for work at the same time as prior to construction, whereas only 16 percent perceived themselves as leaving earlier. However, when compared separately, Expressway users are leaving 10 minutes earlier, and non-users are leaving 5 minutes earlier than before construction began.
4. Actual travel times to and from work have actually decreased slightly overall throughout construction. In comparison to travel times in May 1990, morning trips were 1.8 minutes shorter and evening trips 3 minutes shorter in October 1991. Examining Expressway user and non-user travel times separately, non-users reported a greater decrease in travel times to and from work than Expressway users. For example, the evening trip home for non-Expressway users in October 1991 was 4.5 minutes shorter than in May 1990.
5. Although reported work trip travel times have decreased, there is a growing perception among panel members that travel times are increasing. In October 1991, 28 percent of the panel members believed travel times to work were longer than in May 1990, and 27 percent perceived travel times home to be longer. For both trips, a greater proportion of Expressway users than non-users believe travel times have increased to and from work.

6. Construction has apparently not had a significant effect upon the number of stops being made on the way to and from work. Data from October 1991 showed a small increase in stops to work and a slight decrease in stops on the way home relative to the data collected in May 1990, but neither of these differences were statistically significant.
7. The single occupant automobile continues to be the preferred mode of travel within the corridor, both with Expressway users as well as with those using other routes to and from work. No significant changes in travel mode have occurred relative to May 1990.
8. Likewise, the number of panelists utilizing the Expressway for trips to and from work has remained fairly constant. Approximately 53 percent of the panel members used the Expressway to go to work in October 1991, whereas 51 percent utilized it for their trip home. This value is not statistically different from the percentages reported in May 1990, prior to construction. Slight shifts in utilization of other roadways in the corridor are evident in the October 1991 data, although none of the shifts were statistically significant.
9. The sources of construction information being provided by TxDOT are perceived quite positively by panelists. More than 88 percent of the panel believe the messages presented on the changeable message signs around the construction project are clear and understandable, and aid them in choosing alternative routes when necessary. On the average, panel members indicated using an alternative route 1.11 times per month. As would be expected, those using the Expressway changed routes in response to the signs more often than those not using the Expressway (1.35 times per month versus 0.83 times per month respectively). The TxDOT newsletter EXPRESSIONS is not as widely utilized by panelists (only 4 percent receive a copy). However, the vast majority (88 percent) of those who do receive the newsletter believe the information is useful to them. In addition, more than one-half of the panel asked to be put on the mailing list for the newsletter.
10. Transit users continue to rate overall service in the corridor fairly high, with 75 percent rating service as "excellent" or "good."

11. The panel members did not report any significant changes in estimated trip times via transit. However, there does appear to be a growing perception that travel times are getting longer. In October 1991, one-third of the panel believed trip times were longer than prior to construction.

REFERENCES

1. Ullman, G.L. and R.A. Krammes. "U.S. 75 North Central Expressway Reconstruction: Northwest Highway Screen Line Automobile and Transit User Panels, Initial Survey Results." Research Report TX-92/984-1. Texas Transportation Institute, College Station, TX. September 1990.
2. Ullman, G.L. and R.A. Krammes. "U.S. 75 North Central Expressway Reconstruction: Northwest Highway Screen Line Automobile and Transit User Panels with November 1990 Survey Results." Research Report TX-92/984-3. Texas Transportation Institute, College Station, TX. May 1991.
3. Ullman, G.L. and R.A. Krammes. "U.S. 75 North Central Expressway Reconstruction: Northwest Highway Screen Line Automobile and Transit User Panels with May 1991 Survey Results." Research Report TX-92/984-4. Texas Transportation Institute, College Station, TX. November 1991.

**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
3. 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 _____)
4. How many times did you travel on the North Central Expressway on that day? _____
5. 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
6. 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
7. Are the messages presented on the changeable message signs in and around the construction zones on North Central Expressway clear and understandable? yes no
8. Do the message signs aid you in choosing an alternative route?
 yes no
9. How many times in the last month have you chosen to use an alternative route because of the information provided on the message signs? _____
10. If you are travelling on North Central Expressway and see on a message sign that a lane is closed ahead, which routes do you consider to be the best alternatives to bypass the congestion? (list your first and second choices)
1st choice _____ 2nd choice _____
11. Do you receive the monthly construction newsletter "EXPRESSIONS" provided by the Texas Department of Transportation? yes no
12. Is the information in the newsletter useful to you? yes no
13. Would you like to be put on the mailing list for this newsletter? yes no

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 survey in May 1990? ___ Yes ___ No
 Has your place of residence changed since the May 1990 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.	___	___
I-635 (LBJ Fwy)	___	___
Forest Ln.	___	___
Walnut Hill Ln.	___	___
NW Hwy(Loop 12)	___	___
Lovers Ln.	___	___
Mockingbird Ln.	___	___
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 June 1990?

3. Has your place of residence changed since June 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.