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Practical Considerations in the Development of a Transit Users Panel

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Practical Considerations in the Development of a Transit Users Panel

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Working Paper No. 17

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The University of California Transportation Center
University of California at Berkeley

INTRODUCTION

The purpose of this paper is to offer comment and reflections based upon experience gained in the development and application of two very different panel studies in the field of travel demand analysis. These experiences are now being applied in the design of a third (as yet unreported) panel research project which is currently under development. All three panels are within the field of transportation but reflect widely differing policy and research objectives. The comments offered are based on personal experience and are hopefully useful but anecdotal in nature. They do not pretend to be in-depth considerations of the subjects treated. However, wherever possible reference has been made to literature which offers greater depth and guidance.

The three panel projects in question are:

* The Dutch Mobility Panel is a large-scale multi-objective study begun in March 1984 and tentatively completed in 1989 after 10 waves of measurement. This panel is funded and the project is administered by a Dutch Government agency representing multiple departments and agencies. It has multiple objectives. The field work and data analysis are conducted by separate private consulting firms.

* The evaluation of the 1988 Honolulu Staggered Work Hours Demonstration Project included a four-wave panel study. It is an example of the successful use of a panel to evaluate the effectiveness of a Transportation System Management (TSM) strategy to reduce traffic congestion. This study was commissioned by the State of Hawaii and the Oahu Metropolitan Planning Organization and was undertaken by the Institute of Transportation Studies, University of California, Irvine.

* The Los Angeles Transit Users Panel is a multi-wave panel research project funded out of the University Centers Grant from the United States Department of Transportation, with matching funds from the California Department of Transportation. The study objective is the development of methods for the explanation of stability and instability in the composition of the markets for the minority modes: public transport (transit) and carpooling.

This short paper in no way pretends to offer a comprehensive or in depth treatment of the subjects discussed. It merely tries to reflect the authors' gathering awareness of what they have learned from their experiences with panels.

This paper is divided into three parts: The first part addresses the overriding issue of organization of panel projects in the field of travel demand analysis. The second part makes comments on a limited number of topics on which the authors have arrived at some general conclusions. In the third part the three panels are discussed and the sampling strategies and survey instruments used are reviewed. An attempt has been made to provide copious references for readers interested in exploring a topic in more depth.

1. PANEL FUNDING AND STUDY OBJECTIVES

Generating funding for panel studies is always more problematic than financing one-off cross-sectional studies. Panel survey methods require the advance commitment of resources over a period of time during which no results will be readily available to convince sponsors of the value of continuous funding. In many cases the fact that such studies are long term in nature makes it difficult to secure adequate guaranteed funding. In order to procure funds for such studies it is tempting to develop multi-objective studies with multiple funding sources.

The Dutch Mobility Panel was an example of a multi-objective study with multiple funding sources (Baanders and Slootman, 1983; J. Golob, et al., 1985; van Wissen and Meurs, 1989). The initial research objective for this panel was the study of changes in mobility of the Dutch population over time and the development of causal analysis to explain such changes. A second, more political, study objective was added at a late stage in the development of a study plan. This second objective involved a rapid policy evaluation of the effects of raising transit fares. The importance of this policy topic helped to persuade those responsible to fund the full-scale panel project. In retrospect it was probably a mistake to link these two studies in order to secure funding for the longer-term project. The project in total was extremely ambitious and required that compromises be made in order to marry the multiple objectives. This had implications for both the sampling strategy and the survey instruments. Problems were resolved and compromises were sought under great pressure to produce results. With the benefit of hindsight, one can conclude that it probably would have been better to have kept the two projects entirely separate and to have used different sampling strategies and survey instruments.

An example of the use of a panel for a clearly defined policy evaluation, within a limited time frame and constrained budget, is the study referred to as the Honolulu Staggered Work Hours Demonstration Project (Giuliano and Golob, 1989). The panel

survey undertaken in Hawaii collected data to evaluate the impact of staggered work hours on commuting. The project was designed and administered by researchers at the University of California, Irvine, with support from staff from the Office of the Lieutenant Governor, State of Hawaii. This collaboration yielded benefits to both sides: the University gained access to a valuable data set, while the Office of the Lieutenant Governor had a properly conducted study whose results were defensible within the political process.

The Los Angeles Transit Users Panel is funded out of a research grant which assures that the design, data collection, and analysis are wholly within the control of university researchers. The topic being investigated has considerable policy significance but the investigators have the freedom to experiment within the context of the research and without the immediate pressure to produce policy sensitive results. Given the complexity of panel design, data collection and analysis this is obviously a valuable opportunity to both further test the methodology and formulate and test theories of travel behavior. Long-term funding for such a project is uncertain but university research is undoubtedly required to further explore the full potential of panels in the field of travel demand analysis.

Three conclusions have been drawn:

(1) Finding funding for long-term panel research is extremely difficult. However, using multiple sponsors for a project with multiple objectives can lead to conflict and compromises which may dilute the value of the final product. The money saved in merging several projects is not likely to be worth the loss in data quality and focus. Where long-term panels are being considered, working with pilot demonstration projects which allow for testing recruitment strategies, as well as the survey instruments, would allow more accurate and realistic budgeting for a future panel project. Similarly, using a development period to adequately consult the wealth of available literature would help in the

avoidance of obvious pitfalls. Familiarity with the literature on panels would be useful in convincing potential sponsors of the practicality and value of their application.

(2) Well-constructed panel projects which tackle limited "policy relevant" topics and are the result of cooperation between researchers and government bodies can yield satisfactory benefits for both parties.

(3) In order to experiment further in this field, university research funds should be used wherever possible. The longer-term benefits from such work will be fed back into the field of transportation policy evaluation. The panel data so collected should be made available to researchers at other institutions, and some of the original resources should be used to document the data in both raw and processed form and to establish mechanisms for data transfer.

2. PANEL SELF-SELECTION, ATTRITION, AND CONDITIONING

2.1 Self-Selection and Attrition Biases

The question as to whether a panel sample is representative has two parts: First, how representative is the original first-wave sample? Second, how representative is the panel after several waves involving sample attrition and refreshment? The first part of the question is identical to the question of whether or not a cross-sectional survey is representative. The second part of the question of representation is unique to panel surveys and has evoked a fear of the unknown in both users and non-users of panel data. Prior to establishing the Dutch panel the question of representativity was repeatedly discussed. The following is an attempt to set this problem in context.

The authors have concluded that these fears are unfounded. Methods exist for identifying both types of panel selectivity: that associated with sample selection and non-response to the first survey, and selectivity associated with non-random panel attrition and sample refreshment. Importantly, a number of studies have demonstrated the ability to compensate for selective panel samples by correcting for biases in parameter estimates and other results. A non-exhaustive list of references for such work is Bailor (1975), Griliches, et al. (1977), Hausman and Wise (1979), Heckman (1979), Hensher (1987), Hsiao (1986, pp. 198-206), Juster (1985), Kitamura and Bovy (1987), Maddala (1978), Meurs, et al. (1989), Ridder (1988), Rubin (1974, 1977), and Sobol (1959).

The key to the identification of selectivity biases problems is in a two-pronged analysis approach. First, it is important to conduct descriptive analyses comparing samples by wave among themselves and to the designated sample universe. Such descriptive analysis is often referred to as a pre-analysis (Hensher, 1985; Uncles, 1988). Second, an error term analysis is required for all regression or choice models, including structural equation models. Selectivity can be benign unless it effects the error or disturbance terms of an equation, in which case the estimated coefficients are generally biased. Fortunately, there are several econometric procedures for correcting for abnormal error term distributions, as documented in the cited references and in sources such as Hannan and Young (1977), Hsiao (1986), Kessler and Greenberg (1981), and Maddala (1987).

2.2 Panel Conditioning Biases

Panel conditioning problems refer to the instrument effects introduced by repeated contacts with the same respondent and the influences these contacts then have on survey response. It is one aspect of measurement error in panel data, a subject that has received considerable attention (e.g., Blalock, 1970; Fuller, 1987; Hargens et al., 1976; Wheaton et al., 1977; and Wiley and Wiley, 1970).

As in the case of panel sample selectivity, the problem of panel conditioning is surmountable. Weighting schemes based on dynamic comparisons of population sub-samples can be used to alleviate part of the problem (e.g., Hensher and Bodkin, 1986; Meurs et al., 1989), but such schemes involve an inevitable loss of some information on absolute levels of variables. In addition, or alternatively, it is possible to account for certain conditioning effects in models estimated on panel samples that include not only "stayers," or respondents that are in all panel waves, but drop-out and refreshment sub-samples as well (e.g., Golob, 1989; van Wissen, 1989).

Independent of analysis methodology, panel conditioning problems can be minimized by designing better survey instruments. This requires extensive pilot testing of proposed survey instruments, a painful practice for many researchers who perceive the most personal benefit in the development of new models. Panel survey instruments should *not* simply be the repeated applications of tried and trusted cross-sectional survey instruments.

2.3 The Use of Panel Data

The ultimate way to minimize both panel selection and conditioning problems is to treat panel data dynamically, rather than as repeated static measurements. One dynamic treatment involves testing the stability and stationarity of causal relationships and the degree to which such relationships are non-instantaneous. Other dynamic treatments involve estimating rates and characteristics of change and adaptation. There is considerably *less* benefit associated with the use of panel data as repeated cross-sections, where the problems of selectivity and conditioning can be devastating. Appeals for such advantageous use of panel data can be found in Clark, et al. (1982), Coleman (1981), Davies and Pickles (1985), Duncan, et al. (1987), Goodwin (1987), Goodwin, et al. (1987), Heise (1970), Heckman (1981), Hensher (1985), Kitamura (1986), Kuh (1959), Schoenberg (1977), Tuma and Hannan (1984), and Wrigley (1986). These are important references for anyone interested in panel analyses.

3. THE THREE PANELS

Of the numerous panels in transportation and related studies of housing, shopping behavior, income and time use, the authors have first-hand experience with two panels: the Dutch Mobility Panel and the Honolulu Staggered Work Hours Demonstration Project Panel. This knowledge is being applied in the on-going development of a third panel, the Los Angeles Area transit Users Panel. Both the Dutch Panel and the Honolulu Panel data collections are complete as of 1989 (unless the decision to conclude the Dutch Panel is reversed before spring of 1990). Much has been learned from the analysis of these two data sets. However, the learning process is expected to continue for some time, particularly in the case of the Dutch Panel, because data collection has been far ahead of analysis and modeling.

On many panel survey attributes the Dutch and Honolulu Panels are far apart, and the Transit Users Panel is between these two extremes. Some attributes of the three panels are outlined in Table 1. The Dutch Mobility Panel is documented in Golob, et al. (1985) and van Wissen and Meurs (1989). The Honolulu Staggered Work Hours Demonstration Project Panel is documented in Giuliano and Golob (1989).

The focus on the Dutch Panel and the Honolulu Panel is not meant to imply that important information cannot be gained from other panels. On the contrary, published results from several other panels in transportation and related fields contain a wealth of information that any researcher should consult when considering panel design. These additional panels include, but are not limited to: the Michigan Panel Study of Income Dynamics (University of Michigan Survey Research Center, 1972), the Cardiff Consumer Panel (Guy, et al., 1973; Wrigley, et al., 1985), the U.S. Energy Panel (Mannering and Winston, 1985), and the Australian Automobile Panel (Hensher, 1986).

TABLE 1

A BRIEF DESCRIPTION OF THREE TRAVEL BEHAVIOR PANELS

SURVEY ATTRIBUTE	DUTCH NATIONAL MOBILITY PANEL	HONOLULU STAGGERED WORK HOURS DEMO. PROJECT PANEL	LOS ANGELES AREA TRANSIT USERS PANEL
Purpose:	Multiple (see text)	Project evaluation	Multiple (see text)
Dates:	1984-1989	1988	1989 - ?
Waves	10	4	?
Wave interval:	6 months or 1 year	2 weeks	3 months
Respondents:	All household members, 12 years and older	Commuter	Commuter
Initial sample size:	1,800 households	2,100 individuals	1,500 individuals (target)
Survey instrument for gathering data on travel behavior:	One-week travel diaries	Report of commute trips, plus attitudes (last wave)	Report of commute trips, plus (2-week) retrospective of all travel, plus attitudes

3.1 Sampling Strategies

The cited panels exhibit a wide variety of procedures for both initial and refreshment sampling, and many of these differences are dictated by resource constraints. The Dutch Panel is broad based, with the sample of approximately 1,800 households being clustered initially in twenty communities spread throughout the Netherlands. The sample is stratified by income group, life cycle category and community type (related primarily to public transport service). The stratification differs marginally from the Dutch population in order to over represent certain policy relevant minority groups and thus increase their sample sizes. This is a characteristic which it shares with the Michigan Panel Study on Income Dynamics in the U.S., which over-represents low income households. However, while the initial sampling for the Dutch Panel was carefully considered, the refreshment strategy was more haphazard and varied by wave. This introduced complications in the sample weighting scheme and places restrictions on modeling and testing for biases.

The Honolulu sample was targeted on a well-defined group of employees of governmental agencies and a few firms. A high level of interest in the results of this study by both employers and employees resulted in a high quality sample with a very low incidence of attrition despite the fact that the survey was self-administered. Incentives play an important role in response to all types of surveys, but are particularly important in panel surveys.

A targeted group is again being used in the Los Angeles Transit Users Panel. The difference is that a broader base of employers is being used in the Los Angles Panel and the sample is choice based. The extension of choice-based sampling from cross-sectional to panel populations is documented in sources such as Lancaster and Imbens (1988), and Wurzel (1988). A decision has been made in this research project to concentrate on the travel behavior of the individual in the context of the household. This limits the scope of the available research topics but makes tractable a wide variety of methodologies for dealing with selectivity and conditioning effects. The Dutch Panel is

the appropriate data set for dealing with household interactions, household travel budgets, and mobility issues associated with car ownership and residential location. The Los Angeles Panel represents a complement to the Dutch Panel.

3.2 The Los Angeles Survey Instrument

This instrument design for the Los Angeles Transit Users Panel was chosen after review of the referenced panel studies, with specific attention to the results cited in Bishop, et al. (1975), Juster (1985), Kalton (1985), Moser and Kalton (1971), Robinson (1985), and Sudman and Ferber (1979). Experience with the Dutch Mobility Panel has indicated that a multi-day travel diary is susceptible to a high degree of panel conditioning bias and exhibits a relatively high amount of missing data even in the initial wave. Experience with the Honolulu Panel indicated no conditioning effects on the reporting of individual trip chains, but it provided insufficient information on general mobility levels and day to day variations in travel choices to support many modeling objectives.

The fact that an instrument such as a travel diary works in a cross-sectional survey does not guarantee that the same instrument will work in a panel survey. The approach taken in the Los Angeles Transit Users Panel is to test a new hybrid instrument involving the detailed reporting of the home-work-home trip chain, and summaries of general mobility and alternative choices for a recall period of generally two weeks. This instrument is presently in the final stages of an exhaustive pilot test. The results so far are good regarding reporting errors, missing data and item variances. The pilot survey instrument is reproduced in Appendix A.

3.3 The Issue of Attitudes in Panel Surveys

There is compelling evidence that questions concerning attitudes -- including preferences, perceptions, feelings and behavioral intentions -- can be asked on repeated waves of a panel without undue panel conditioning effects (Barnard, et al., 1986; Barnard

and Ehrenberg, 1987; Duncan and Hill, 1975; Waterton and Lievesley, 1988; Lyon, 1981, 1984; and Morgan, 1982). However, it is important to keep attitudinal questions general or directed to items about which there is likely to be well formed perceptions and opinions. There is a danger in being too specific, or in drawing new items to a panelist's attention. Asking about a choice alternative or an issue which a panelist has not considered can result in an immediate instrument effect and attitude formation that contaminates future waves.

As an example of attitudinal variables in panel surveys, the Michigan Panel Study on Income Dynamics included sixteen attitudinal questions concerning feelings (reproduced in Duncan and Morgan, 1976, pp. 470-471) in the first six waves of the panel (1968-1973). Attitudinal indices measuring efficacy, trust and aspiration-ambition are then developed from these questions (Morgan, 1972) and dynamically related to objective panel variables (Duncan and Hill, 1976; Morgan, 1982).

Three different approaches to attitudes are represented by the Dutch Mobility Panel, the Honolulu Panel, and the Los Angeles Transit Users Panel: The Dutch Panel deliberately avoids any inclusion whatsoever of an attitudinal or "soft" question. The Honolulu Panel includes attitudinal items in the final wave, and these variables are used in a model linking opinions and experiences (Golob and Giuliano, 1989); the survey questions are reproduced in Giuliano and Golob (1989, pp 205-208). The Los Angeles Panel includes attitudes in the form of Likert scales asked at each wave; the scales are reproduced in Appendix A, page 8. The intention in the Transit Users Panel is to link changes in attitudes to changes in behavior in an attempt to confirm or deny hypotheses of attitude-behavior relationships. Such a research objective is perceived to be consistent with an advantageous use of panel data.

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APPENDIX A

The Los Angeles Area
Transit Users Panel Wave-One
Mail-Back Survey Instrument

(Pilot survey, subject to revision;
please do not reproduce or quote.)

PART A:

PLEASE TELL US ABOUT YOUR LAST TRIP TO YOUR USUAL WORK PLACE

1. What was the last day you went to work?

☐ Mon. ☐ Tues. ☐ Weds. ☐ Thurs. ☐ Fri. ☐ Sat. ☐ Sun.

2. How many miles is it from your home to where you worked on this day? _____ Miles

3. What time did you leave home on this last trip to work? _____ a.m./p.m. (circle one)

4. What time did you arrive at work? _____ a.m./p.m. (circle one)

5. How would you describe the traffic conditions for this trip?

☐ Very little traffic ☐ Some traffic ☐ Moderate traffic ☐ Heavy traffic ☐ Very heavy traffic

6. Did you travel to work on at least one freeway?

☐ NO ☐ YES

If YES, is there a carpool lane on any of the freeways you used?

☐ NO ☐ YES

USE QUESTION #7 TO CHOOSE WHICH OF THE NEXT SECTIONS YOU SHOULD COMPLETE

7. On your last trip from home to work, how did you travel? (check one)

- ☐ By bus → **GO TO PAGE 2 – SECTION B.**
- ☐ With others in a car, truck, or van → **GO TO PAGE 4 – SECTION C.**
- ☐ Drove alone (including motorcycle) → **GO TO PAGE 6 – SECTION D.**
- ☐ Other → **GO TO PAGE 8 – SECTION E.**

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PART B:

IF YOU TOOK THE BUS TO WORK ON YOUR LAST TRIP, PLEASE ANSWER QUESTIONS 1-14.

1. **Did you use an express or regular bus service?**

   ☐ Express ☐ Regular

2. **Did you pay for a single trip, or did you use a bus pass?**

   ☐ Single-trip fare → Fare $___.___

   ☐ Bus pass → Pass Cost $___.___ → Estimated Trip Cost: $___.___

3. **Did you transfer buses?**

   ☐ YES, transferred ☐ NO, did not transfer

4. **Was the bus crowded?**

   ☐ YES ☐ NO

5. **Did you get a seat for the entire trip?**

   ☐ YES ☐ NO

6. **Was the bus on time?** (first bus, if you transferred)

   ☐ YES ☐ NO → ____ Minutes late

7. **How long did you wait for the bus?** (including any waiting time at transfer points)

   About _____ minutes total wait

PLEASE GO TO NEXT PAGE

8. How did you get to the bus stop?

☐ Drove and parked my car ☐ Someone drove me ☐ Walked

If so, about how long did you walk? _____ minutes walk

9. About how long did it take you to walk from the bus stop to where you work?

_____ Minutes walk

10. Did you stop to do anything on your last trip from home to work? (For example: to shop, eat a meal, drop off a child.)

☐ NO, went directly to work ☐ YES, I stopped

11. Did you stop to do anything on your last trip from work to home? (For example: to shop, eat a meal, pick up a child.)

☐ NO, went directly home ☐ YES, I stopped

12. In the last two weeks, how many days did you take the bus to work? _____ Days

13. How else did you travel to and from work during the last two weeks: (check all that apply)

☐ None, I always rode the bus.
☐ Drove alone.
☐ Carpooled with household member(s) only.
☐ Carpooled or vanpooled with others (could include household members).
☐ Walked.
☐ Used other ways to travel to work.

14. Do you usually have a car available for the work trip, if you want to use it?

☐ NO ☐ YES

PLEASE SKIP TO PART E – PAGE 8.

PART C:

IF YOU DROVE OR RODE WITH ANYONE ELSE TO WORK ON YOUR LAST TRIP, PLEASE ANSWER QUESTIONS 1-18.

1. How did you carpool or vanpool?

☐ Carpooled with household member(s) only ☐ Carpooled with others ☐ Vanpooled

2. Did you form your carpool/vanpool with help from your employer or an outside agency such as Commuter Computer?

☐ NO ☐ YES

3. Not counting yourself, how many persons were with you in the vehicle on this trip?

____ Persons

4. Were you the driver or a passenger on this trip?

☐ Driver ☐ Passenger

5. When you carpool/vanpool like this, do you:

☐ Always drive ☐ Usually drive ☐ Sometimes drive and sometimes ride ☐ Usually ride ☐ Always ride

6. Did you use a special freeway carpool lane for any part of this trip?

☐ NO ☐ YES

7. Do you personally pay anything for parking?

☐ YES, on a daily basis → Your Cost $___.___

☐ YES, on a monthly basis → Your Cost $___.___

☐ NO, employer pays for parking

☐ NO, other carpool member(s) pay for parking

☐ NO, free parking

8. Other than parking, do you pay anything to other carpool/vanpool members for traveling with them to work?

☐ NO ☐ YES → Cost for this trip: $___.___

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9. Does the carpool/vanpool have reserved parking?

☐ NO, but found space immediately ☐ NO, spent ___ minutes looking for a parking space ☐ YES, have reserved parking

10. About how many minutes did it take you to walk from where you were dropped off (or from your parking place) to your work site on this day? ____ Minutes

11. Did you stop to do anything on your last trip from home to work? (For example: to shop, eat a meal, drop off a child.)

☐ NO, went directly to work to work ☐ YES, I stopped

12. Did you stop to do anything on your last trip from work to home? (For example: to shop, eat a meal, pick up a child.)

☐ NO, went directly home ☐ YES, I stopped

13. In the last two weeks, how many days did you carpool or vanpool to work? ____ Days

14. How else did you travel to and from work during the last two weeks: (check all that apply)

☐ None, I always carpooled or vanpooled.
☐ Drove alone.
☐ Used the bus.
☐ Walked.
☐ Used other ways to travel to work.

15. Do you usually have a car available for the work trip, if you want to use it?

☐ NO ☐ YES

16. IF you took the bus to work, how much time would the trip take?

____ Minutes ☐ Don't know

17. How long a walk is it from your home to the nearest bus stop?

____ Minutes ☐ Don't know

18. Have you ever taken the bus from where you now live to where you now work?

☐ YES ☐ NO → Thinking of all the places you have worked, have you ever used the bus, subway, or any other public transit on a regular basis to go to work?

☐ YES ☐ NO

PLEASE SKIP TO PART E -- PAGE 8.

PART D:

IF YOU DROVE ALONE TO WORK ON YOUR LAST TRIP, PLEASE ANSWER QUESTIONS 1-12.

1. **Did you pay for parking?**

   ☐ YES, on a daily basis → Your Cost $___.___

   ☐ YES, on a monthly basis → Your Cost $___.___

   ☐ Employer pays for parking

   ☐ Free parking

2. **Do you have a reserved parking area?**

   ☐ YES

   ☐ NO →

   ☐ Found space immediately

   ___ Minutes spent looking for a parking space

3. **About how many minutes did it take you to walk from your parking place to your work site on this day?**

   ____ Minutes

4. **Did you stop to do anything on your last trip from home to work?** (For example: to shop, eat a meal, drop off a child.)

   ☐ NO, went directly to work to work

   ☐ YES, I stopped

5. **Did you stop to do anything on your last trip from work to home?** (For example: to shop, eat a meal, pick up a child.)

   ☐ NO, went directly home

   ☐ YES, I stopped

6. **Did you use your vehicle for any work-related trips during the work day?** (For example, to attend meetings, make a delivery, and so on.)

   ☐ YES

   ☐ NO

7. **In the last two weeks, how many days did you drive alone to work?**

   ____ Days

PLEASE GO TO NEXT PAGE

8. How else did you travel to and from work during the last two weeks: (check all that apply)

- ___ None. I always drove alone.
- ___ Carpooled with household member(s) only.
- ___ Carpooled or vanpooled with others (could include household members).
- ___ Used the bus.
- ☐ Walked.
- ☐ Used other ways to travel to work.

9. IF you took the bus from home to work, how much time would the trip take?

___ Minutes ☐ Don't know

10. How long a walk is it from your home to the nearest bus stop?

___ Minutes walk ☐ Don't know

11. Have you ever taken the bus from where you now live to where you now work?

☐ YES ☐ NO → Thinking of all the places you have worked, have you ever used the bus, subway, or any other public transit on a regular basis to go to work?

☐ YES ☐ NO

12. Have you ever carpooled or vanpooled on a regular basis from where you now live to where you now work?

☐ YES ☐ NO

PLEASE CONTINUE TO PART E -- PAGE 8.

PART E:

PLEASE ANSWER THE FOLLOWING GENERAL QUESTIONS.

1. Not counting travel to and from work, how many times did you take the bus in the last month?

   ____ Times

2. Please indicate to what extent you agree or disagree with the following statements:

	AGREE STRONGLY	AGREE	NEITHER AGREE NOR DISAGREE	DISAGREE	DISAGREE STRONGLY
2a. "I can get to wherever I want to go without any problems."	☐	☐	☐	☐	☐
2b. "I would like to move closer to work."	☐	☐	☐	☐	☐
2c. "I would like to change jobs in order to work closer to home."	☐	☐	☐	☐	☐
2d. "The bus service in my area is good enough."	☐	☐	☐	☐	☐
2e. "People only ride the bus to work if they have to."	☐	☐	☐	☐	☐
2f. "Riding the bus to work is much cheaper than driving alone."	☐	☐	☐	☐	☐
2g. "Driving alone is much faster than taking the bus."	☐	☐	☐	☐	☐
2h. "Carpool lanes reduce freeway congestion."	☐	☐	☐	☐	☐
2i. "Carpooling (driving or riding with others) is much cheaper than driving alone."	☐	☐	☐	☐	☐
2j. "Driving alone is much faster than carpooling."	☐	☐	☐	☐	☐
2k. "Driving alone gives you much more freedom than carpooling."	☐	☐	☐	☐	☐
2l. "I would be willing to pay higher taxes to improve bus service."	☐	☐	☐	☐	☐
2m. "More freeway carpool lanes should be built."	☐	☐	☐	☐	☐

PLEASE GO TO NEXT PAGE

FOR STATISTICAL PURPOSES ONLY, PLEASE PROVIDE THE FOLLOWING

3. What is your age?

☐ 24 years old or younger ☐ 25 - 34 ☐ 35 - 44 ☐ 45 - 54 ☐ 55 - 64 ☐ 65 years or older

4. Are you:

☐ Male ☐ Female

5. Do you have a drivers license?

☐ NO ☐ YES

6. Including yourself, how many people are there in your household by age group?

_____ Persons under 6 years old
_____ Persons 6 to 15 years old
_____ Persons 16 to 24 years old
_____ Persons 25 to 64 years old
_____ Persons 65 years old or older

7. Including yourself, how many people in your household are employed outside the home on a part-time and full-time basis?

_____ Persons employed full time
_____ Persons employed part time

8. Which of the following best describes your occupation?

☐ Secretarial/clerical ☐ Production/manufacturing
☐ Professional/technical ☐ Manager/administration
☐ Sales ☐ Construction/skilled crafts
☐ Service ☐ Self employed
☐ Other: _____

9. How long have you worked at your present job location?

_____ Years _____ Months

PLEASE GO TO NEXT PAGE

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10. Are you employed full time or part time?

☐ Full Time

☐ Part Time

11. Are you able to choose your work schedule, or is it fixed?

☐ I am able to choose my work schedule.

☐ My work schedule is fixed.

12. In the last two weeks, how many days did you work? _____

13. In the last two weeks, how many total hours did you work? _____

14. Does your employer allow you to work at home sometimes instead of going in to the office?

☐ NO ☐ YES

15. Some people's work schedule changes from day to day, or from week to week. Does your work schedule change?

☐ NO, I always work the same hours ——► GO TO QUESTION 16.

☐ YES, my work schedule changes.

↓

There are many types of work schedules. Some of these include shift work, compressed work week (4/40 or 9/80 schedules), and so on. Please describe your work schedule, including your work hours and work days.

_____

_____

_____

16. In total, how many cars, trucks, and motorcycles are there at your household? (Include any company cars)

☐ None ☐ One ☐ Two ☐ Three ☐ Four or more

17. Including yourself, how many drivers are there in your household?

☐ None ☐ One ☐ Two ☐ Three ☐ Four ☐ Five or more

18. Do you own or rent your home?

☐ Own ☐ Rent

PLEASE GO TO NEXT PAGE

19. How long have you lived at your present address?

_____ Years _____ Months

20. Have you always lived in Southern California?

☐ YES ☐ NO ⟶

How long have you lived in Southern California since you most recently moved here?

___ years, ___ months.

Where did you live just before you most recently moved to Southern California?

_____ County in California

OR: _____ state in U.S. outside of California

OR: _____ country outside of U.S.

Where did you live for the longest period of time outside of Southern California?

_____ County in California

OR: _____ state in U.S. outside of California

OR: _____ country outside of U.S.

21. **Have you ever lived where there was a good public transit system?** (For example: bus, subway)

☐ YES ☐ NO

22. **Are you considering moving residences within the next year?**

☐ NO ☐ YES ⟶ If yes, for what reason? (Check all that apply)

- ☐ Change type of house
- ☐ Move to a better neighborhood
- ☐ Job change
- ☐ To reduce commuting distances
- ☐ To change living conditions
- ☐ Another reason

23. **How much school have you completed?** (Check one, for the highest level completed or degree received.)

- ☐ Did not graduate from high school
- ☐ High school graduate – high school diploma or equivalent (For example: GED)
- ☐ Some college, but no degree
- ☐ College degree (including graduate)

PLEASE GO TO NEXT PAGE

24. What race do you consider yourself to be? (Check one)

- ☐ White
- ☐ Black
- ☐ Asian or Pacific Islander: →
- ☐ Indian (American), Eskimo, Aleutian
- ☐ Other race: _____

(check one)

- ☐ Chinese
- ☐ Japanese
- ☐ Filipino
- ☐ Korean
- ☐ Asian Indian
- ☐ Vietnamese
- ☐ Other

25. **Are you of Spanish/Hispanic origin?** (Check one)

- ☐ NO -- not Spanish/Hispanic
- ☐ YES -- Mexican, Mexican-American, Chicano
- ☐ YES -- other Spanish/Hispanic (Puerto Rican, Cuban, Central American, South American, Spaniard, etc.)

26. **For statistical purposes only, what is your households' gross income per year from all sources?**

- ☐ Less than $15,000
- ☐ $15,000 to $25,000
- ☐ $25,000 to $35,000
- ☐ $35,000 to $45,000
- ☐ $45,000 to $55,000
- ☐ $55,000 to $65,000
- ☐ $65,000 to $75,000
- ☐ $75,000 to $85,000
- ☐ $85,000 to $95,000
- ☐ $95,000 or more

Thank you for your help. We greatly appreciate your assistance. If there is anything you would like to add, please make your comments here.

_____

_____

_____

_____

Please return the survey in the envelope provided. No postage is needed.

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