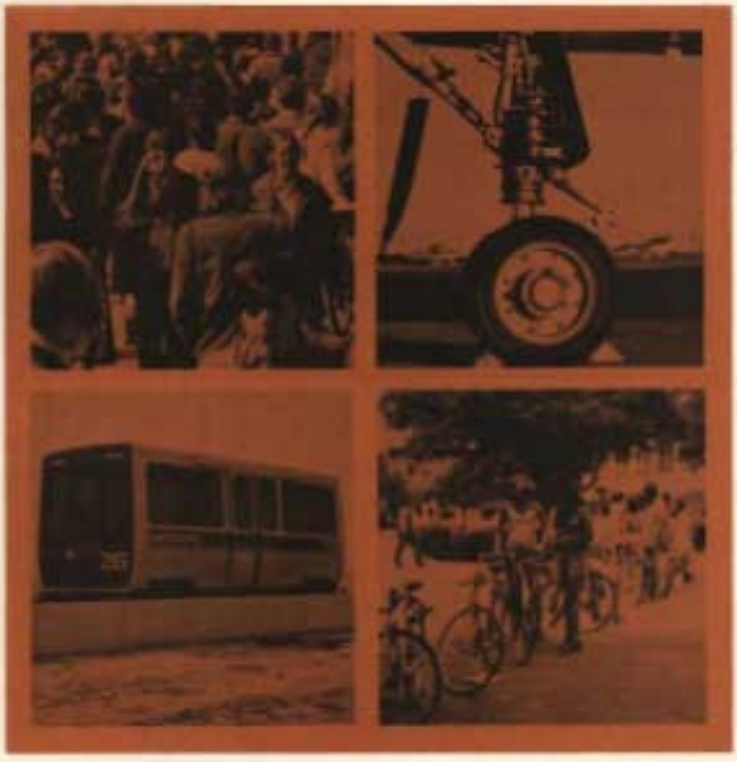
DOT OS 30093 RM 6

SEGMENTING A TRANSPORTATION MARKET BY DETERMINANT ATTRIBUTES OF MODAL CHOICE



Shane Davies

Mark Alpert

Research Memo 6

October 1973

COUNCIL FOR ADVANCED TRANSPORTATION STUDIES

THE UNIVERSITY OF TEXAS AT AUSTIN

Segmenting a Transportation Market by Determinant Attributes of Modal Choice

by

Shane Davies Associate Professor of Geography
Mark Alpert Associate Professor of Marketing

Research Memo 6

Prepared for

U.S. Department of Transportation

by the

Division of Research

Council for Advanced Transportation Studies

The University of Texas at Austin

October 1973

TABLE OF CONTENTS

Preface

This is the sixth in a series of research memos describing activities and findings conducted under the research project entitled, "Transportation to Fulfill Human Needs in the Rural/Urban Environment". The project is divided into five topics, and this is the third research memo under the topic "Human Response in the Evaluation of Modal Choice Decisions".

Shane Davies
Mark Alpert

Acknowledgements

The contents of this research memo 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 Department of Transportation. This memo does not constitute a standard, specification, or regulation.

The advice and constructive comments of members of the following agencies is gratefully acknowledged.

Texas Association for Public Transportation
(Lyndon Henry and Philip Sterzing)

Austin Traffic and Transportation Department
(Joe Ternus, John German, and Bill Bullock)

Austin Transit System
(Clyde Malone)

Austin City Planning Department
(Milton Rube, Joshua Farley, and Oliver Wilson)

Austin Amtrak Agency
(John Imburgin)

San Antonio Amtrak Agency
(Richard Johnson)

Duluth-Superior Transit Authority
(Harvey Benson)

Head of the Lakes Council of Governments
(Richard Cihoski and Stephen Jacobs)

TECHNICAL PROGRESS REPORT ON RESEARCH PROJECT ON "SEGMENTING A TRANSPORTATION MARKET BY DETERMINANT ATTRIBUTES OF MODAL CHOICE"

This report will summarize progress on the transportation study, with principal investigators, Drs. Shane Davies and Mark Alpert, of Topic V, "Human Response in the Evaluation of Modal Choice Decisions." The work period covered in this report is mainly June 6, 1973 through September 6, 1973. The report will detail actions undertaken in the following areas: problem definition and research goal delineation; conferences with interested agencies and personnel, literature survey; questionnaire design and pre-testing; sample design; analytical procedures, and on-going work and follow-up for future reports. The focus will be on the methodology and research design developed for the Austin area transportation survey.

PROBLEM DEFINITION AND RESEARCH GOALS

While transportation research is receiving a good deal of emphasis, particularly regarding systems hardware design and selling mass transit in urban areas, little has been done which explores designing systems to meet transportation needs in less urbanized areas.[1] Moreover, we feel that considerable gain is possible through identifying transportation need

---

[1]Additional background rationale is contained in **Research Memo** 1, "Human Response in the Evaluation of Modal Choice Decisions," and the same—named section of the University of Texas Research Proposal and contract.

for a growing area, such as Austin, Texas, at a time when transportation planning may still influence orderly growth, rather than trying later to make "the best of a bad situation." Further, there are many key groups whose attitudes and needs are critical to the implementation of a balanced transportation system for moving people. These include users and potential users of high-density modes of transportation (anything that moves more people per day than the average attained by private autos is tentatively defined as "high-density" and would include anything from subways, buses, and even "dial-a-cabs"). However, designing a system to appeal to these persons is not sufficient. It is also important to identify their transportation needs and the features that they seek in a transportation mode, relate them to demographic characteristics, and determine how best to communicate information about transportation to them through media exposure data. Further, many non-riders who cannot be readily converted to riders can determine the success of high-density operations by being motivated to form car pools, and/or support tax subsidies for improved mass transit service. This implies a need for ascertaining community attitudes towards transportation, mass transit, and tax strategies for their support, as well as media exposure for identifying suitable advertising outsets for promoting bonds, mass transit, and the like. A "leaders" subset of the community should be similarly polled, so that ultimately support for transportation changes may be elicited from them, knowing their priorities for growth, transportation, and acceptable means of financing programs. By identifying relevant transportation attitudes and usage rates of various modes for different purposes, we intend to provide a systematic treatment of

the required linkages between modal attributes, rider characteristics, promotion of mass transit and public support, and communication with key community leaders, so that all interested parties may be involved in the planning and implementation of balanced transportation systems for Austin and similar communities.

Accordingly, a study has been undertaken with the following objectives:

1. develop a method for identifying the transportation mode features or attributes (e.g. ride comfort, flexibility, economy...) that determine modal choices for specified trip purposes, such as "to work" or "to shopping or personal business."

2. estimate the percentage of people now using private cars who would be quite likely to switch to a public transportation system if it were improved to suit their needs.

3. evaluate existing low-density (cars) and high-density transportation modes (buses) to spot critical gaps between perceived features of buses vs. cars, along determinant attributes of modal choice. Recommend ways in which high-density mode features should be changed and/or communicated to potential riders identified in Step 2.

4. determine local media (newspaper sections, radio and T.V. spots, community organizations) most utilized by potential high-density rider "converts" and recommend advertising appeals and appropriate media for maximally effective promotion of the re-designed high-density transportation modes to suit their travel needs.

5. survey the general community and a "leaders" subset for attitudes towards high-density transportation and appropriate means of financing improvements. Provide local officials with a ranking of acceptable financing alternatives for each group, and indicate advertising strategies for appealing to public attitudes.

CONFERENCES WITH TRANSPORTATION AND RELATED AGENCIES

While the above goals represent general research objectives, it was recognized that additional insight, as well as greater probability of successful implementation of the research findings, would result if we instituted close coordination of our efforts with those of local agencies concerned with planning and transportation. Accordingly, a series of interviews and conferences were held with officials from various agencies.

A number of useful suggestions for our research, recommended literature, and experiences of other cities were obtained from these conferences. In addition, the two-day workshop, sponsored by the Council for Advanced Transportation Studies at the University of Texas at Austin, held June 28-29, 1973, produced additional useful contacts and problem areas for transportation study. Those we talked with at this stage of the project were asked to indicate specific information needs in connection with transportation and planning. We received oral and written suggestions for our survey questions from everyone we contacted. Many were subsequently integrated into our questionnaire instrument. (Our working draft questionnaire is appended to this report and will be discussed below.) Bus company officials, for example, are interested in determining public awareness of recent improvements in the service, as well as areas in which further improvements are desired. City planners indicated concern for public attitudes towards growth, transportation habits and needs, attitudes towards positive and negative incentives for increasing mass transit utilization, and indicated strong interest in our plans to survey community business leaders' views on transportation,

tax supports, etc. More detailed analysis of our experiences in interviewing local agency personnel (including evidence of modal rivalries and defensive behavior) will be covered in the more complete discussion of our findings and recommendations, which will appear later in the project year, following further data collection and analysis.

LITERATURE SURVEY

While gathering information from persons knowledgeable and interested in transportation and planning, an extensive literature search was conducted concerning three main topics: identification of determinant attributes and attitudes of choice decisions, modal choice research in transportation, and promotion campaigns to increase public support of high-density transportation in other geographical areas.

The first area of literature concerns research into methods of identifying determinant attributes that underlie or determine buying or riding decisions. There are a host of studies and proposed methods for ascertaining the attitudes that motivate particular buying or riding decisions. Many have been suggested in contexts other than transportation decisions, but are relevant for these decisions as well. Some highlights of the literature will be briefly summarized here and greater details are found in Myers and Alpert (1968), Alpert (1971), and Golob and Dobson (1973).

Of the many attitudes which people may have towards a transportation mode, not all will be involved equally im making modal choice decisions. Determinant attitudes are those attitudes towards features of the mode

which determine whether or not the mode is chosen for a particular trip. Other attitudes towards features that are irrelevant to the decision process, no matter how strongly held, are non-determinant. For example, consider freedom from accidents as a feature in transportation modal selection. While most people would probably claim this an important feature in transportation choice, it is not likely to determine which mode is chosen, since most modes are probably perceived as equally safe or unsafe. Thus it is likely to prove more fruitful to concentrate less on advertising buses' freedom from accidents and more on those attributes which differentiate among modes and may thus be used as a basis for selection.

Determinant attributes are thus those product (or transportation mode) features or attributes that are both perceived as "important" and also as possessed in differing degrees by alternatives which compete for buyer choices. Among the many types of approaches that have been proposed for identifying these determinant attributes are observation, experimentation, direct questioning of respondents, dual questioning of respondents and indirect questioning (including "motivation research", covariate analysis, and multidimensional scaling). The varying costs and probabilities of successful identification of key attributes are discussed elsewhere (e.g., Alpert, 1971). This research project will use a combination of direct dual questioning and covariate analysis of respondent data.

Our basic procedure will involve requesting respondents to indicate how important each of a list of transportation features are in choosing a mode for a given trip and also the extent to which various modes have different amounts of the particular feature. Determinance is operationa-

lized as important time differences. The covariate analysis involves obtaining a set of ratings towards a particular transportation mode (e.g., private car, bus) for a specific trip purpose, and then separating users vs. non-users of the mode with a discriminant analysis of their profiles of the attributes of the mode. Those attributes that discriminate users from non-users are said to be determinant attributes of selection. For example, if non-users of buses indicate that buses afford less safety from dangerous people than do frequent users, then it appears that this attribute should be improved and communicated to potential riders in order to improve ridership.

The second literature area includes modal choice studies. While some were encountered in reviewing literature on determinant attributes, modal choice studies are primarily concerned with applying a particular methodology to identifying determinent attributes of transportation choice decisions (rather than the generalized choice decisions in the previous literatures. A selected bibliography is appended for key studies in this area, much of which has been discussed in our previous Research Memo 1, "Human Response in the Evaluation of Modal Choice Decisions".* Typically these studies relate user characteristics to mode selected (e.g., higher income correlated with passenger car (selection), city characteristics (size, income, density), to transportation facilities, and methods of identifying specific modal attributes that determine ridership (through some sort of determinant attribute identification procedure). Nearly all of these studies have been done in large urban areas. Further, the determinant attribute methods typi-

---

*Davies, Shane and Mark I. Alpert and Ronald Hudson, "Human Response in the Evaluation of Modal Choice Decisions," Council for Advanced Transportation Studies, University of Texas at Austin, April, 1973.

cally measure trade-offs between particular attributes (travel time vs. cost...) or between particular modes (buses vs. cars).* Moreover, by considering modal choices as their focus, linkages are not made to attitudes toward growth and transportation subsidies, leader surveys, and media habits for communication of transportation strategies. While the literature therefore does not apply directly to our attempt to apply a "systems" approach to transportation needs in a non-urban area, a number of important variables have been suggested as determinants of modal choice decisions. These might be quite appropriate for inclusion in our study project. In addition, while perceived differentiation is not explicitly considered in that modal choice literature which asks people to indicate the importance (only) of various transportation features, these "importance-only" studies provide a suitable background for the dual-questioning in our approach.

A third literature area concerns projects which have been attempted in promoting various types of high-density transportation utilization, again largely in heavily urban areas. This report's selected bibliography indicates some of these projects. The general impression one gets is that scientific controls have not frequently been employed (cost constraints are a factor) and that findings have been mixed. Since we feel that investigation of the attitudes and needs of potential riders and supporters of high-density transportation are prerequisite to instituting any successful promotion campaign in a particular situation, this literature provides background for suggestions in our study area, rather than specific attributes, media, and appeals to be used. These need to be

---

* Shinn, Allen M., Jr. and Shane Davies, "Measuring the Utility of Housing and Transportation," a Research Report supported by the National Science Foundation, (Summer 1971).

generated by appropriate measures and sampling of key groups in each region. Implementation experiments which are scheduled to follow in Year 2 of the project will build on this literature, as well as our specific findings in Year 1.

QUESTIONNAIRE DESIGN AND PRE-TESTING

Having reviewed relevant literature and approached important local agencies, we obtained tentative lists of key attitudes to probe, as well as possible determinant attributes of modal choices. Some preliminary interviewing of area transportation consumers was now appropriate. Accordingly, an exploratory questionnaire was designed and administered to a quota sample of Austin residents, including bus riders, students, and a mix of ethnic and income groups. Responses to these questions indicated several transportation features were considered important that prior thinking and literature has also stressed. Moreover,the patterns of indicated attributes lent support to assertions by Hille, et. al. (1968) that two major trip purpose categories produce different choice criteria- in this case, transportation to work or school, and for shopping or personal business. Within city, social and pleasure trips may not have sufficient difference from these two to warrant the questionnaire lengthening needed to research three trip categories. Open-ended questions were used to facilitate generating a range of response for content analysis and structuring in later questionnaires. Preliminary response on Amtrak questions indicated low "brand awareness" and people seemed to underestimate the amount of passenger service that is available. (Amtrak surveys will resemble those of intracity transportation patterns and

choices reported here. Details will be developed in reports to be issued later in Year 1.

A second questionnaire was then prepared and pre-tested on a second quota sample of Austin residents, as well as submitted for the review of the local agencies previously contacted. Based on feedback from interviewers and local agency officials, several changes were made and reflected in the working questionnaire (appended as Transportation Survey) that has been submitted for approval to DOT and OMB, prior to gathering data from the general Austin samples. While specific parts of this questionnaire will be discussed in the data analysis section below, it differs from the second questionnaire in a few respects. The format has been changed to enable photo-reduction of the questionnaire by 41%, thus reducing its length from 24 to 4 pages. Although personal interviewing will be employed to increase response rate and answer respondent's question, it is desirable to make the instrument look less formidable than the second version implied. Pre-tests indicated that completion time should range between 30 and 50 minutes. The "cover letter" has been revised to encourage respondents to ask questions if the instructions or questions are unclear to them. This letter will be paraphrased orally by interviewers, but can be read by respondents who may also note its "official stationary", and can increase interviewer credibility. Changes on the questionnaire itself involve a shift from asking for relative <u>desirability</u> of attributes (nearly all had positive desirability) to <u>importance</u> of attributes in modal choices. The instructions have been streamlined and clarified, a few question deleted for brevity, others modified slighty, and a few added (e.g., "ease of traveling with children").

Sample Design

We intend to survey a random sample of over 250 adults (18 or over) in the Austin metropolitan area, with personal interviewers contacting each respondent, giving the cover statement,and assisting in questions concerning the survey forms. Respondents will fill them out themselves where possible, to insure a feeling of privacy as well as saving time.

In addition to the general Austin survey, we shall gather the same data from random samples (at least 50 each) of persons identified as "city leaders" (financial people, real estate planners, and Chamber of Commerce members), frequent bus riders, and students. Bus riders will be obtained in a two-stage process, interviewing them after first approaching a random sample of bus riders (on buses) to enlist their cooperation for a survey to be taken later at home. Relevant cross-comparisons can be undertaken for example, having analyzed the determinant attributes for increasing public support of mass transit, and the key customer groups for such improved service, we intend to report to the City Council a relative ranking of methods for financing any needed subsidies of the system, as measured by public attitudes, and especially those of the "leadership" group.

Analytical Procedures for Questionnaire Data

Part One of the appended Transportation Survey questionnaire measures the relative determinance (importance x perceived differentiation = determinance) of each transportation feature considered in the respondents' choices for transportation modes for trips to work (or school, for stu-

dents). Also, respondents will be classed as users or non-users of private cars or buses for these trips, and for these two dominant modes, we can compare the perceived features of the preferred mode vs. the non-preferred mode. Where the attribute is rated as highly determinant, as indexed by a high degree of importance and differences, we can examine differences between the perceived images of chosen modes vs. non-chosen modes. For example, differences between non-bus users ratings of buses vs. cars, along attributes seen by them as determinant (non-determinant attribute differences should not be concentrated upon, as gaps here are not determining patronage decisions) will point to needed changes in the features of buses (or other modes that can embody the features sought by car-users), as well as attributes that needs stress in promotion to potential switchers.

Part Two allows the same kinds of determinant attribute analyses and exploration of perceived car vs. bus features, this time for trips made for shopping or personal business. Previous studies have indicated some differences in key attributes for these trips vs. work-trips. If found here, it is expected that Austin (and similar cities) might choose to attract shopping and personal business ridership on non-car modes by stressing these determinant attributes in any mass transit modifications that are undertaken and promoted to the public.

Part Three covers a series of transit-related attitudes and also city goals and issues identified as desirable areas for our study by the Austin city planners. Data should be useful for evaluating the relative acceptability (both for the general Austin sample, as well as for the "city leaders" sample) of various proposed methods of financing public mass transit, and also various possible planning goals for the city.

Specific questions in this part also measure public awareness of the cost of mass transit and specific complaints about bus service. Question #224 is designed to separate persons who have fairly high probability of becoming riders of "improved" mass transit from low-potential riders. Likely riders can then be separated and analyzed in terms of their determinant attributes of modal choice, transit attitudes, demographics, and media exposure. Integrated marketing strategies would then be designed to appeal to these people, stressing desired modal features, through appropriate media, etc.

Part Four covers information on media habits, including amount of exposure to general program types and specific time periods and specific media. This data will aid in communicating with target customers for "improved" mass transit, as indicated above, and also in communicating with the general public, and/or community leaders concerning tax-related subsidies for mass transit programs.

On-Going Work and Follow-Up

During the next quarter, the questionnaires will be administered to the groups described in the sample design and data will be coded and analyzed as described above. Written reports of the findings and recommendations for changes in promotional appeals will be communicated to DOT and local agencies. It is anticipated that some findings will point to immediate corrective action and shifts in promotional emphases. For example, if survey results show that potential riders are unaware of some features that are perceived by current riders of high-density modes (indexed for example, by giving buses a lower rating on dependability, than frequent riders), then this feature can be stressed in advertisements

placed in media heavily used by potential riders.

Other changes in modal attributes may require more time and money to achieve. Accordingly, having identified a set of attributes believed to determine ridership, the second year of this study calls for experimenting with making these changes (or simulating them in advertisements and product concepts) and measuring their effect on ridership (or intention to ride, in a simulation, if actual change is infeasible in the transportation system at that time).

During the third quarter we shall also refine the Amtrak rider/non-rider survey, by modifying the questionnaire instrument thus far developed for intra-city transportation, explore determinant attributes for modal choices for inter-city trips of about 200 miles, and examine rider perceptions of Amtrak in this context.

In addition, we shall produce an annotated bibliography covering modal choice decisions, determinant attribute identification, and high-density transportation mode promotion campaigns. A partial bibliography selected for this report follows on the next page.

SELECTED BIBLIOGRAPHY

1. Alpert, Mark I., "Identification of Determinant Attributes - A Comparison of Methods," Journal of Marketing Research, No. 8, (May 1971), pp 184-91.

2. Banks, Seymour, "The Relationship Between Preferences and Purchase of Brands," Journal of Marketing, No. 15, (October 1950), pp 145-57.

3. Blattberg, Robert C. and Samuel R. Stivers, " A Statistical Evaluation of Transit Promotion," Journal of Marketing Research, No. 7, (August 1970), pp 293-299.

4. Bolger, J.F., "How to Evaluate Your Company Image," Journal of Marketing, No. 24, (October 1959), pp 7-10.

5. Cosmis Corporation and General Analytics, Inc., "State of Minnesota Outstate Transit Study," Pittsburgh, Pennsylvania, (March 1973).

6. Davies, Shane, Mark I. Alpert, and Ronald Hudson, "Human Response in the Evaluation of Modal Choice Decisions," Council for Advanced Transportation Studies, University of Texas at Austin, (April 1973).

7. Fishbein, Martin, "An Investigation of the Relationship Between Beliefs About an Object and the Attitude Toward that Object," Human Relations, No. 16, pp 233-40.

8. Golob, Thomas F. and Ricardo Dobson, "The Assessment of Preferences and Perceptions Toward Attributes of Transportation Alternatives," General Motors Research Laboratories, (July 1973).

9. Hansen, Flemming, "Consumer Choice Behavior: An Experimental Approach," Journal of Marketing Research, No. 6, (November 1969), pp 436-43.

10. Head of the Lakes Council of Governments, "Transit Report One," Duluth, Minnesota, (March 1973).

11. Hill, D.M. and Norman Dodd, "Travel Mode Split in Assignment Programs," Highway Research Board Bulletin, No. 347, pp 290-301.

12. Hill, Donald M. and Hans G. Von Cube, "Development of a Model for Forecasting Travel Mode Choice in Urban Areas," Highway Research Record, No. 38, (1963), pp 78-96.

13. Hille, Stanley J.; F.T. Paine; A.N. Nash; and G.A. Brunner, "Consumer Transportation Attitude in Baltimore and Philadelphia," Transportation Journal, (Summer 1968), pp 30-47.

14. Hille, Stanley J. and Theodore K. Martin, "Consumer Preference in Transportation," Highway Research Board Record, No. 197, (1967), pp 6-43.

15. Horton, Frank E.; Jordan Louviere; and David R. Reynolds, "Mass Transit Utilization: Individual Response Data Inputs," Economic Geography, Vol 49, No. 2, (April 1973), pp 122-33.

16. Kain, J.F. and M.E. Beesley, "Forecasting Car Ownership and Use," Urban Studies, Vol 2, No. 2, (November 1965), pp 163-185.

17. Mayer, Henry M., "Change of Mode Commuter Transportation in Metropolitan Milwaukee," Highway Research Circular, No. 83, (October 1968), pp 3-12.

18. Myers, James H. and Mark I. Alpert, "Determinant Buying Attitudes: Meaning and Measurement," Journal of Marketing, No. 32, (October 1968), pp 13-20.

19. Osgood, Charles E.; George J. Suci; and Percy H. Tannenbaum, The Measurement of Meaning, Urbana, Illinois, University of Illinois Press, (1957).

20. Perry, Michael, "Discriminant Analysis of Relations Between Consumers' Attitudes, Behavior, and Intensions," Journal of Advertising Research, No. 9, (June 1969), pp 34-40.

21. "Pittsburgh: Multi-Modal Approach to Transit," Railway Age, No. 169, (November 9, 1970), pp 30-32.

22. Pratt, Richard, "A Utilitarian Theory of Travel Mode Choice," Highway Research Record, No. 322, (1970), pp 40-53.

23. Riter, Charles B., "What Influences Purchase of Color Television?," Journal of Retailing, No. 42, (Winter 1966-67), pp 25-31, and 63-64.

24. Rosenberg, Milton J., "Cognitive Structure and Attitudinal Affect," Journal of Abnormal Psychology, No. 53, (November 1956), pp 367-72.

25. Shunk, Gordon A. and Richard J. Bouchard, "An Application of Marginal Utility to Travel Mode Choice," Highway Research Record, No. 322, (1970), pp 30-39.

26. Smith, Gail, "How GM Measures Ad Effectiveness," Printer's Ink, No. 290, (May 14, 1965), pp 19-29.

27. Sosslau, Arthur B.; Kevin E. Heanue; and Arthur J. Balek, "Evaluation of a New Modal Split Procedure," Highway Research Record, No. 88, pp 44-68.

28. Tomazinis, Anthony R., "Modal Split Model in the Penn-Jersey Transportation Study Area," Highway Research Record, No. 165, pp 41-75.

29. Urban Land Use Seminar, "Austin Attitudes Toward Growth," Lyndon B. Johnson School of Public Affairs, The University of Texas at Austin, (May 1972).

30. Wynn, F. Houston, "Shortcut Modal Split Formula," Highway Research Record, No. 283, pp 48-56.

31. Wynn, F. Houston and Berbert S. Levinson, "Some Considerations in Appraising Bus Transit Potentials," Highway Research Record, No. 1973, (1967), pp 1-24.

32. Zupan, Jeffrey M., "Mode Choice: Implications for Planning," Highway Research Record, No. 25, pp 6-25.

33. Shinn, Allen M., Jr. and Shane Davies, "Measuring the Utility of Housing and Transportation," a research report supported by the National Science Foundation, (Summer 1971).

SELECTIVE BIBLIOGRAPHY ON MODAL SPLIT RESEARCH

1. Allen, W.B., "Developing and Testing of a Behavioral Modal Split Model," Pennsylvania University Transportation Studies Center, (June 1971).

2. Allen, W.B. and A. Isserman, "Behavioral Modal Split," High Speed Ground Transportation Journal, Vol 6, No. 2, (1972), pp 197-99.

3. Bailey, R.F., "The Travel Patterns of Persons Residing in High-Density Urban Areas," Polytechnic Institute, Brooklyn, New York, (June 1972).

4. Beimborn, E., "The Development of a Modal Choice Procedure Based Upon a Utility Theory Formulation," Wisconsin University, Milwaukee, Wisconsin, (March 1973).

5. Biciunas, A.E., "Modal Split of First Work-Trips - 1956 and 1960," Research News, Vol 6, No. 1, (February 14, 1964), pp 12-13.

6. Billheimer, J.W., "Segmented, Multimodal, Intercity Passenger Demand Model," Highway Research Record, Highway Research Board, No. 392, (1972), pp 47-57.

7. Budd, S., "Trip Generation, Distribution, Modal Split, and Assignment in Urban Traffic Planning," Royal Technical University (Denmark) and Department Road Construction Traffic Engineering Tour Planning (Research Agencies), (1974).

8. Charles River Associates, Inc., "A Disaggregated Behavioral Model of Urban Travel Demand," (March 1972).

9. Constantine, T.; Maltby, D.; Raymond, S., "Influence of Modal Split on Transport Policy," Salford University (United Kingdom).

10. Culley, E., "Forecasting Intercity Travel," Canadian Ministry of Transport, Ottawa, Canada, (May 1970).

11. Daly, P.N., "Trip Distribution and Modal Split Based on the Concept of Entropy Maximization," Research Agency: Freeman Fox, Wilbur Smith & Associates, (August 1972).

12. Deen, T.B.; Merte, W.L.; and N.A. Irbin, " Application of a Modal Split Model to Travel Estimates for the Washington Area," Highway Research Record, No. 38, (1963), pp 97-123.

13. Department of the Environment (United Kingdom), "Papers and Proceedings of a Conference on Research into the Value of Time," Time Research Note, No. 16, (July 1970).

14. Falcocchio, J., "Modal Choices and Travel Attributes of the Inner-City Poor," Polytechnic Institute Brooklyn, Brooklyn, New York, (September 1971).

15. Ferreri, M.G., and W. Cherwong, "Choice and Captive Modal-Split Models," Highway Research Record, Highway Research Board, No. 369, (1971), pp 80-90.

16. Frebault and Noel, "Modal Split," Research Agency: Road Traffic Studies and Research Department (France), (1968).

17. Gannon, C.A. and K. Norris, "Optimal Pricing for Multi-Mode Transportation Systems: An Application to Travel by Private Auto, Bus, and Rail Rapid Transit Between South Jersey and Philadelphia," Pennsylvania University, Philadelphia, Pennsylvania, (June 1973).

18. General Motors Research Lab, "New Systems Implementation Study - Volume II: Planning and Evaluation Methods," (February 1968).

19. Goode, G.W., "A Gravity Distribution Model-2 a Two Mode Model," Traffic Engineering and Control (United Kingdom), Vol 13, No. 9, (January 1972), pp 391-393.

20. Goodwin, P.B., "Effects of Free Public Transport," University College London, Research Group in Traffic Studies.

21. Goodwin, P.B., "Some Data on the Effects of Free Public Transport," Transportation Planning and Technology (United Kingdom), Vol 1, No. 3, (January 1973), pp 159-174.

22. Gutowsky, A.R., "A Model for Predicting Transit Ridership-Interim Technical Report #7," Sacramento State College, Sacramento, California, (April 1971).

23. Haney, D.G., "Problems, Misconceptions, and Errors in Benefit-Cost Analyses of Transit Systems," Highway Research Record, No. 314, (1970), pp 98-113.

24. Haney, D.G., and E. Hauer, "Consistency in Transportation Demand and Evaluation Models," Highway Research Record, Highway Research Board, No. 392, (1972), pp 13-25.

25. Hayhurst, W.C., "Some Aspects of Data Collection," Chicago Area Transportation Study Research News, (March 1968), pp 5-7.

26. Hayhurst, W.C.; E.P. Tangul; and E.E. Lisco, "Full Sample Data Collection-Northwest Chicago Corridor Modal Split Project," Chicago Area Transportation Study, (December 1969).

27. Highway Research Board, "Factors Influencing Modal Trip Assignment," NCHRP Reports, No. 57, (1968).

28. Highway Research Board, "Individual Preferences for Various Means of Transportation," NCHRP Reports, (1967), pp 77-78.

29. Holland, P.B., "Leicester Traffic Prediction Modal," Research Agency: Scott Wilson and Kirkpatrick (United Kingdom), (1973).

30. Hollings, D.: Grayson, G.B.; Stark, S.: and Heraty, M., "Modal Choice-Studies of the Use and Nonuse of Public Transport in the Greater London Area - Vol. 1," Research Projects Limited, London, England, (June 1969).

31. Horton, F.E., "Behavioral Models in Transportation Planning," Social Civil Engineering Journal and Transportation Engineering Journal, Vol 98, (May 1972), pp 411-19.

32. Hutton, B.J., "Some Determinants of Modal Split," Research Agency: Wales University, Cardiff, England.

33. Hyman, G.M. and A.G. Wilson, "The Effects of Changes in Travel Costs on Trip Distribution and Modal Split," High Speed Ground Transport Journal, Vol 3, No. 1, (January 1969), pp 79-85.

34. Joseph Napolitan Associates, "Survey to Determine Factors Which Influence the Public's Choice of Mode of Transportation: Supplement #4 to Mass Transportation in Mass, A Final Report on a Mass Transportation Demonstration Project," (April 1964).

35. Lave, C.A., "A Behavioral Approach to Modal Split Forecasting," Transportation Research, Vol 3, No. 4, (December 1969), pp 463-480.

36. Lavender, J.O. and P.L. Stopher, "Stochastic Disaggregate Mode Choice Models: A Test of Three Hypotheses," Northwestern University Transportation Center, (June 1971).

37. Leigh, C., "Geographical Investigation of Journey-to-Work Travel," Research Agency: Leeds University, Center for Transport Studies, United Kingdom.

38. Lisco, T.E., "Northwest Corridor Project: General Over-All Survey Design," Chicago Area Transportation Study, Chicago, Illinois, (October 1968).

39. Mayo, Al, "Demand for Residual Commuter Auto Parking," Urban Mass Transportation Administration and Department of Transportation, Washington, D.C., (June 1971).

40. MetroToronto Regional Transportation Study, "Modal Split Analysis for Traffic Prediction Model," Toronto, Canada, (December 1965).

41. Morrall, J.; Hutchinson, B.G., "Work Trip Distribution and Modal Split Model," Waterloo University, Canada, (May 1971).

42. Morrall, J.F., "Work Trip Distribution and Modal Split in the Metropolitan Toronto Region," Waterloo University, Canada, (May 1971).

43. McGillivray, R.G., "Mode Split and the Value of Travel Time," Transportation Research, Vol 6, No. 4, (December 1972), pp 309-16.

44. Neilson, G.K., and W.K. Fowler, "Relation Between Transit Ridership and Walking Distances in a Low-Density Florida Retirement Area," Highway Research Record, Highway Research Board, No. 403, (1972), pp 26-34.

45. Quandt, R.E., "Estimation of Modal Splits," Transportation Research, Vol 2, No. 1, (March 1968), pp 41-50.

46. Quarmby, D.A., "Bus Travel in Central Leeds," Leeds University, Center for Transport Studies, England, (May 1968).

47. Rassam, P.R.; Ellis, R.H.; and Bennett, J.C., "The N-Dimensional Logit Model: Development and Application," Highway Research Record, Highway Research Board, No. 369, (1971), pp 135-147.

48. Research Projects Limited, "Modal Split Research," Greater London Department of Highways and Transportation, London, England.

49. Richardson, W.A., "Modal Split, Transport Network Annual Seminar Proceedings, Melbourne University, Australia, (April 1969).

50. Rogers, K.G.; Townsend, G.; Metcalf, A.E., "Modal Split Review," Royal Institute Public Administration, Local Government Operational Research Unit, England, (January 1971).

51. Salford Royal Advanced Technical College, "Modal Split for Work Journeys Along a Commuter Transport Corridor," Salford Royal Advanced Technical College, England.

52. Saski, T.; Myojin, S.; Shimauchi, S.; Imasaka, I., "Modal Split Procedure," Research Agency: Kyoto University, Japan.

53. Seigner, C., "Summary of Traffic Surveys Carried out by Means of Household Interviews," Research Agency: Technical Studies of Roads and Motorways Department, France, (1972).

54. Shepherd, L., "Econometric Analysis of the Determinants of Modal Split," Research Agency: Bureau of Roads, Australia, (January 1972).

55. Smith, R.W., and D. Margolese, "Relationships Between Socio-Economic Characteristics, Attitudes and Transportation System Attributes," Damas and Smith Limited, Don Mills, Canada.

56. Sommers, A.N., "Expanding a Nondemographic Factor Modal Split Model," Transportation Science, Vol 5, No. 1, (February 1971), pp 22-35.

57. Sosslau, A.B., and A.J. Balek, "Evaluation of a New Modal Split Procedure and Discussion," Highway Research Record, Highway Research Board, No. 88, (1965), pp 44-68.

58. Spielberg, F., "Automobile Occupancy Projections Using a Modal-Split Model," Highway Research Record, Highway Research Board, No. 297, (1969), pp 57-67.

59. Bardon, J.L., "The Interaction of Travel Modes," Institute of Traffic Engineers 39th Annual Meeting, (August 1969).

60. Voorhees, Alan M. and Associates, Inc., "Urban Mass Transit Planning Project - Technical Report No. 4: Modal Split Simulation Model," (August 1967).

61. Walmsley, D.A., and M.R. Wigan, "A Model for the Study of Modal Choice in the Inter-Urban Travel (UK)," Planning Transportation Research and Computation Proceedings, Transport and Road Research Lab, England, pp 65-69.

62. _____, "Modal Split in Inter-Urban Travel," Ministry of Transport, London, England.

63. Weiner, E., "A Modal Split Model for Southeastern Wisconsin," Southeastern Wisconsin Regional Planning Commission, Technical Record, Vol 2, No. 6, (August 1966).

64. Williams, T.E., and G. Murray, "Factors Influencing Choice of Mode of Transport in Urban Areas," Newcastle-Upon-Tyne University, England, (1968).

65. Wilson, F.R. and F.D. Hobbs, "Choice of Mode of Travel to Work Related to the Urban Environment," Birmingham University, England.

Appendix 1: Transportation Survey*

*This preliminary draft of the questionnaire entitled "Transportation Survey" is presently under scrutiny by DOT and OMB. Following their approval, it will be operationalized.

"Cover Letter" for TRANSPORTATION SURVEY

THE UNIVERSITY OF TEXAS AT AUSTIN
COUNCIL FOR ADVANCED TRANSPORTATION STUDIES
AUSTIN, TEXAS 78712

Division of Research
WAG 410
Phone (512) 471-5161

Dear Sir, or Madame:

I am a research associate for a University of Texas research project. We are interested in learning about public attitudes towards various forms of transportation, including buses, cars, and the like. We hope that by determining your views on this subject, better facilities can be provided for highways, buses and so forth.

There are a number of important questions on this survey - none of them call for long answers. Your views or your impressions are all that are needed. Just check a blank that best answers each question on these sheets. Your answers will be kept confidential - only the overall attitudes of the entire sample will be pursued. Therefore, please feel free to express whatever opnion you have. If you have any questions about the meaning of questions or instructions, please feel free to ask me about them.

We have a small budget and can only contact a limited number of people. You have been selected through a sample procedure and thus your answers are very important in order for us to obtain an accurate picture of people's attitudes towards transportation. May I take a few minutes of your time to get your opinions?

Sincerely yours,

TRANSPORTATION SURVEY

PART 1

1. In a typical week, about how many trips do you take from home to work or school? None____ 1 to 4____ 5 or more____ (If none, go to Part 2).
2. For these trips to work or school, how do you usually get there? (Please check one only.)

   As car driver_____ Car pool_____ City bus_____ UT shuttle bus_____ Walking_____ Bicycle_____ Motorcycle_____ Other_____
3. Do you usually travel alone? Yes_____ No_____
4. In general, are you satisfied with the transportation you use for getting to work or school?

   Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

IMPORTANCE RATING FORM
Transportation to Work, (or School, if you are a Student)

The following is a list of attributes or features that might affect a decision of what transportation mode you might choose for getting to work (or your school). Assume you are to choose a mode of transportation from among several alternative types (private car, bus, car-pool, taxi, etc.). After each attribute, please place a check in the appropriate column, to indicate how important each of these features is in your own choice of a transportation mode for getting to work (or your school). Please check only one column for each attribute.

	No Importance	Slightly Important	Moderately Important	Very Important	Extremely Important
5. Economy					
6. Convenience					
7. Brief Travel Time					
8. Smooth Ride					
9. Freedom from Weather (door to door)					
10. Opportunity to Socialize					
11. Avoid Traffic Congestion					
12. Socially Accepted Transportation Mode					
13. Lack of Parking Problems					
14. Flexibility					
15. Uncrowded					
16. Freedom from Accidents					
17. Freedom from Repairs					
18. Safe from Dangerous People					
19. Low Pollution per Passenger					
20. Lack of Tension					
21. Ease of Travel with Packages					
22. Ability to Look at Scenery					
23. Low Energy Use per Passenger					
24. Can Listen to Radio or Tape					
25. Dependability					
26. Pleasant Riding Surroundings					
27. Privacy					
28. Ease at Traveling with Children					

CONTINUE ON OPPOSITE SIDE WITH QUESTION 29

DIFFERENCE RATING FORM
Transportation to Work (or School, if you are a Student)

From your knowledge of various transportation modes, how much difference do you feel there is among modes for getting to work, or your school (private car, bus, car-pool, taxi, etc.), in each of these attributes? Please place a check in the column (one check only) which best indicates your opinion of the extent to which these differences are present.

	No Differences	Slight Differences	Moderate Differences	Large Differences	Extreme Differences
29. Economy					
30. Convenience					
31. Brief Travel Time					
32. Smooth Ride					
33. Freedom from Weather (door to door)					
34. Opportunity to Socialize					
35. Avoid Traffic Congestion					
36. Socially Accepted Transportation Mode					
37. Lack of Parking Problems					
38. Flexibility					
39. Uncrowded					
40. Freedom from Accidents					
41. Freedom from Repairs					
42. Safe from Dangerous People					
43. Low Pollution per Passenger					
44. Lack of Tension					
45. Ease of Travel with Packages					
46. Ability to Look at Scenery					
47. Low Energy Use per Passenger					
48. Can Listen to Radio or Tape					
49. Dependability					
50. Pleasant Riding Surroundings					
51. Privacy					
52. Ease at Traveling with Children					

CONTINUE WITH QUESTION 53

Now, please use the scales on this page to indicate your feelings about the degree to which owning your car would be suitable for trips made to work (or your school). Place a check on the position between each pair of terms that best describes your feelings about the suitability of your own car (whether or not you own one) for trips made to work or school. For example, if you feel that your car would be likely to be moderately interesting as a transportation mode for getting to work or school, you would place a check on the "Interesting-Boring" scale as shown below. Please do this for EACH pair of items, without skipping any.

EXAMPLE: Extremely : Moderately : Neutral : Moderately : Extremely

Interesting _____ : __X__ : _____ : _____ : _____ Boring

YOUR OWN CAR FOR TRIPS TO WORK OR SCHOOL

53.	Economical						Expensive
54.	Convenient						Inconvenient
55.	Brief Travel Time						Long Travel Time
56.	Smooth Ride						Rough Ride
57.	Free from Weather (door-to-door)						Exposed to Weather (door-to-door)
58.	Easy to Socialize						Hard to Socialize
59.	Avoids Traffic Congestion						Gets into Traffic Congestion
60.	High Status						Low Status
61.	Few Parking Problems						Many Parking Problems
62.	Flexible						Inflexible
63.	Uncrowded						Crowded
64.	Safe from Accidents						Likely to have Accidents
65.	Free from Repairs						Not Free from Repairs
66.	Safe from Dangerous People						Not Safe from Dangerous People
67.	High Pollution per Rider						Low Pollution per Rider
68.	Relaxing						Full of Tension
69.	Easy with Packages						Difficult with Packages
70.	Can Look at Scenery						Can't Look at Scenery
71.	Low Energy Use per Passenger						High Energy Use per Passenger
72.	Radio or Tape Deck Available						No Radio or Tape Deck Available
73.	Dependable						Undependable
74.	Pleasant Riding Surroundings						Unpleasant Riding Surroundings
75.	High Privacy						Low Privacy
76.	Difficult with Children						Easy with Children

In a typical week, about how many trips do you take from home to work or school, driving your car? None_____ 1 to 4_____ 5 or more _____

CONTINUE ON OPPOSITE SIDE WITH QUESTION 77

Now, please use these scales to indicate your feelings about the degree to which a bus would be suitable for trips made to work or school. Please do as you did before, without skipping any of the scales.

BUS FOR TRIPS TO WORK OR YOUR SCHOOL

77.	Economical						Expensive
78.	Convenient						Inconvenient
79.	Brief Travel Time						Long Travel Time
80.	Smooth Ride						Rough Ride
81.	Free from Weather (door-to-door)						Exposed to Weather (door to door)
82.	Easy to Socialize						Hard to Socialize
83.	Avoids Traffic Congestion						Gets into Traffic Congestion
84.	High Status						Low Status
85.	Few Parking Problems						Many Parking Problems
86.	Flexible						Inflexible
87.	Uncrowded						Crowded
88.	Safe from Accidents						Likely to have Accidents
89.	Free from Repairs						Not Free from Repairs
90.	Safe from Dangerous People						Not Safe from Dangerous People
91.	High Pollution per Rider						Low Pollution per Rider
92.	Relaxing						Full of Tension
93.	Easy with Packages						Difficult with Packages
94.	Can Look at Scenery						Can't Look at Scenery
95.	Low Energy Use per Passenger						High Energy Use per Passenger
96.	Radio or Tape Deck Available						No Radio or Tape Deck Available
97.	Dependable						Undependable
98.	Pleasant Riding Surroundings						Unpleasant Riding Surroundings
99.	High Privacy						Low Privacy
100.	Difficult with Children						Easy with Children

In a typical week, about how many trips do you take from home to work or school, using a bus? None_____ 1 to 4_____ 5 or more_____

TURN PAGE OVER AND CONTINUE WITH QUESTION 101

PART 2

101. Now we would like to know something about the transportation you use for trips for shopping or personal business. In a typical week, how many trips do you take to some place to shop or do personal business? None____ 1 to 4_____ 5 or more_____ (If none, go on to Part 3 on next page.)

102. For these trips to work or school, how do you usually get there? (Please check one only).

As car driver_____ Car pool_____ City bus_____ UT shuttle bus_____ Walking_____ Bicycle_____ Motorcycle_____ Other_____

103. Do you usually travel alone? Yes_____ No_____

104. In general, are you satisfied with the transportation you use for shopping or personal business?

Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

IMPORTANCE RATING FORM
Transportation for Shopping or Personal Business

Please place a check in the appropriate column, to indicate how desirable you feel each of these traits would be in choosing a transportation mode for shopping trips or personal business (medicine, groceries, clubs, etc.)

		No Importance	Slightly Important	Moderately Important	Very Important	Extremely Important
105.	Economy					
106.	Convenience					
107.	Brief Travel Time					
108.	Smooth Ride					
109.	Freedom from Weather (door to door)					
110.	Opportunity to Socialize					
111.	Avoid Traffic Congestion					
112.	Socially Accepted Transportation Mode					
113.	Lack of Parking Problems					
114.	Flexibility					
115.	Uncrowded					
116.	Freedom from Accidents					
117.	Freedom from Repairs					
118.	Safe from Dangerous People					
119.	Low Pollution per Passenger					
120.	Lack of Tension					
121.	Ease of Travel with Packages					
122.	Ability to Look at Scenery					
123.	Low Energy Use per Passenger					
124.	Can Listen to Radio or Tape					
125.	Dependability					
126.	Pleasant Riding Surroundings					
127.	Privacy					
128.	Ease at Traveling with Children					

CONTINUE ON OPPOSITE SIDE WITH QUESTION 129

DIFFERENCE RATING FORM
Transportation for Shopping or Personal Business

Now, please place a check in the appropriate column for each attribute, indicating how much you feel various possible transportation modes (private car bus, car-pool, taxi, etc.) might differ in their suitability for transportation for shopping or personal business.

		No Differences	Slight Differences	Moderate Differences	Large Differences	Extreme Differences
129.	Economy					
130.	Convenience					
131.	Brief Travel Time					
132.	Smooth Ride					
133.	Freedom from Weather (door to door)					
134.	Opportunity to Socialize					
135.	Avoid Traffic Congestion					
136.	Socially Accepted Transportation Mode					
137.	Lack of Parking Problems					
138.	Flexibility					
139.	Uncrowded					
140.	Freedom from Accidents					
141.	Freedom from Repairs					
142.	Safe from Dangerous People					
143.	High Pollution per Passenger					
144.	Lack of Tension					
145.	Ease of Travel with Packages					
146.	Ability to Look at Scenery					
147.	Low Energy Use per Passenger					
148.	Can Listen to Radio or Tape					
149.	Dependability					
150.	Pleasant Riding Surroundings					
151.	Privacy					
152.	Ease at Traveling with Children					

CONTINUE WITH QUESTION 153

Now, please use these scales to indicate your feelings about the degree to which a car driven by you would be suitable for trips made for shopping or personal business.

PRIVATE CAR FOR SHOPPING OR PERSONAL BUSINESS

153.	Economical	____:____:____:____:____	Expensive
154.	Convenient	____:____:____:____:____	Inconvenient
155.	Brief Travel Time	____:____:____:____:____	Long Travel Time
156.	Smooth Ride	____:____:____:____:____	Rough Ride
157.	Free from Weather (door-to-door)	____:____:____:____:____	Exposed to Weather (door-to-door)
158.	Easy to Socialize	____:____:____:____:____	Hard to Socialize
159.	Avoids Traffic Congestion	____:____:____:____:____	Gets into Traffic Congestion
160.	High Status	____:____:____:____:____	Low Status
161.	Few Parking Problems	____:____:____:____:____	Many Parking Problems
162.	Flexible	____:____:____:____:____	Inflexible
163.	Uncrowded	____:____:____:____:____	Crowded
164.	Safe from Accidents	____:____:____:____:____	Likely to have Accidents
165.	Free from Repairs	____:____:____:____:____	Not Free from Repairs
166.	Safe from Dangerous People	____:____:____:____:____	Not Safe from Dangerous People
167.	High Pollution per Rider	____:____:____:____:____	Low Pollution per Rider
168.	Relaxing	____:____:____:____:____	Full of Tension
169.	Easy with Packages	____:____:____:____:____	Difficult with Packages
170.	Can Look at Scenery	____:____:____:____:____	Can't Look at Scenery
171.	Low Energy Use per Passenger	____:____:____:____:____	High Energy Use per Passenger
172.	Radio or Tape Deck Available	____:____:____:____:____	No Radio or Tape Deck Available
173.	Dependable	____:____:____:____:____	Undependable
174.	Pleasant Riding Surroundings	____:____:____:____:____	Unpleasant Riding Surroundings
175.	High Privacy	____:____:____:____:____	Low Privacy
176.	Difficult with Children	____:____:____:____:____	Easy with Children

In a typical week, about how many trips do you make for shopping or personal business, driving your car?

None_____ 1 to 4 _____ 5 or more _____

CONTINUE ON OPPOSITE SIDE WITH QUESTION 177

Now, please use these scales to indicate your feelings about the degree to which a bus would be suitable for trips made for shopping or personal business.

BUS FOR SHOPPING OR PERSONAL BUSINESS

177.	Economical	____:____:____:____:____	Expensive
178.	Convenient	____:____:____:____:____	Inconvenient
179.	Brief Travel Time	____:____:____:____:____	Long Travel Time
180.	Smooth Ride	____:____:____:____:____	Rough Ride
181.	Free from Weather (door-to-door)	____:____:____:____:____	Exposed to Weather (door-to-door)
182.	Easy to Socialize	____:____:____:____:____	Hard to Socialize
183.	Avoids Traffic Congestion	____:____:____:____:____	Gets into Traffic Congestion
184.	High Status	____:____:____:____:____	Low Status
185.	Few Parking Problems	____:____:____:____:____	Many Parking Problems
186.	Flexible	____:____:____:____:____	Inflexible
187.	Uncrowded	____:____:____:____:____	Crowded
188.	Safe from Accidents	____:____:____:____:____	Likely to have Accidents
189.	Free from Repairs	____:____:____:____:____	Not Free from Repairs
190.	Safe from Dangerous People	____:____:____:____:____	Not Safe from Dangerous People
191.	High Pollution per Rider	____:____:____:____:____	Low Pollution per Rider
192.	Relaxing	____:____:____:____:____	Full of Tension
193.	Easy with Packages	____:____:____:____:____	Difficult with Packages
194.	Can Look at Scenery	____:____:____:____:____	Can't Look at Scenery
195.	Low Energy Use per Passenger	____:____:____:____:____	High Energy Use per Passenger
196.	Radio or Tape Deck Available	____:____:____:____:____	No Radio or Tape Deck Available
197.	Dependable	____:____:____:____:____	Undependable
198.	Pleasant Riding Surroundings	____:____:____:____:____	Unpleasant Riding Surroundings
199.	High Privacy	____:____:____:____:____	Low Privacy
200.	Difficult with Children	____:____:____:____:____	Easy with Children

In a typical week about how many trips do you make for shopping or personal business using the bus?

None_____ 1 to 4_____ 5 or more _____

CONTINUE WITH QUESTION 201 ON NEXT PAGE

PART 3 TRANSIT ATTITUDES

201. A public mass transit system could be financed in a number of ways. Please rate the following in terms of your preference for financing a public mass transit system:

a) Riders should pay the full cost of service.
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

b) "No fare" for riders; mass transit financed by gasoline tax revenues.
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

c) "No fare" for riders; mass transit financed by tax added to electric bills.
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

d) "No fare" for riders; mass transit financed by tax added to property taxes.
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

e) Riders pay most costs, with balance from gasoline tax revenues.
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

f) Riders pay most costs, with balance from tax on electric bills.
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

g) Riders pay most costs, with balance from tax added to property taxes.
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

202. Indicate which four of the following areas should receive high importance for city tax dollar priorities. (Please check the four most important).

_____ a) local street paving
_____ b) street crossing safety
_____ c) traffic safety
_____ d) automobile noise control
_____ e) automobile pollution control
_____ f) rail mass transit
_____ g) bus mass transit
_____ h) exclusive bus lanes
_____ i) residential sidewalks
_____ j) hike and bike trails

203. How much is the fare for a typical (about 5 miles) bus trip in the City of Austin? (If you don't know, leave blank).

a) 20¢ _____ b) 25¢ _____ c) 30¢ _____ d) 35¢ _____ e) 40¢ _____

204. If you were to change residence would you consider the distance of the new residence from your place of employment as a major selection criteria?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

205. If shuttle service were provided at the auditorium or other locations outside the downtown area, would you be willing to park there and take the shuttle to downtown?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

206. Which form of mass transit would you prefer?

a) buses as now _____ b) buses with special bus lanes _____ c) rail mass transit _____ d) other _____

207. Should government encourage the use of non-auto transportation as a solution to traffic congestion and air pollution?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

208. Do you believe that Austin will soon have a severe air pollution problem because of excessive automobile traffic?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

209. Does the lack of sidewalks deter you from walking short distances in your neighborhood?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

210. Are the streets in your neighborhood well maintained?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

211. Should employers be responsible for supplying parking for their employees to reduce on-street parking?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

212. Do you often use streets that have bicycle lanes? Yes_____ No_____ If so, do these lanes interfere with traffic?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

213. Would you be in favor of bus passes as a fringe benefit of your employment?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

214. Would a bus pass as a fringe benefit cause you to ride the buses more frequently, especially to and from work?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

215. Would you be in favor of car-pools to travel to and from work if your car were in the pool?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

216. If vehicles (cars, vans, trucks, etc.) were supplied by employers, would you favor car pools?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

217. Would you pay 1 or 2 cents more per gallon of gasoline with that money being used to help pay for the transit system?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

218. Would you be in favor of paying higher annual vehicle license plate fees on your personal vehicles with the money collected earmarked for transit improvement?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

219. Do you think that it is less expensive to ride the bus to and from work (assuming 60¢ or less per round trip) than it is to drive your own car (taking into account gas, oil, parking, depreciation, insurance, etc.)?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

220. Do you need your car for business trips during the day?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

221. Are the bus schedules and maps easy for you to understand? (If you have not seen any, leave this question blank).
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

222. If you had to pay to park your car, what price for parking your vehicle each day would cause you to switch to using transit?

_____50 cents
_____51 cents to $1
_____$1
_____$1.01 to $1.50
_____$1.51 to $2.00
_____$More than $2.00

223. If you do not ride the bus, why not? Or if you ride the bus, which of the following items bother you? (Rank the worst three with No. 1 being the worst.)

_____Long walks to bus stop (How far is too long--on level ground? _____blocks; uphill? _____blocks)
_____Risk of being stranded, especially at night
_____Long waits for buses
_____Cost of fare
_____Dirty
_____Old buses
_____Rude bus drivers
_____Other _____
_____No bus shelters
_____Not good when you have children with you
_____Slower than car
_____Routes do not go where you want to go
_____Too many bus riders are dangerous or undesirable people
_____Loss of personal freedom
_____Inconvenient when you have packages
_____No bus service available

224. If city mass transit were improved, low-cost and provided convenient service, would you use it?
Definitely yes_____ Moderately yes_____ Neutral_____ Moderately no_____ Definitely no_____

225. How long does it take you to get to work (or your school, if student) usually?

_____0 to 5 minutes _____6 to 15 minutes _____20 to 30 minutes _____More than 30 minutes

226. If you drive to work, where do you usually park?

Parking garage _____ Street without meter _____
Parking lot _____ Street with parking meter _____ Other _____

227. How far from your work place do you usually park?

_____blocks

PLEASE TURN PAGE AND CONTINUE WITH PART 4

PART 4

We would like to find out some good ways of informing people about changes and improvements in the transportation system for roads, safety buses, etc. Please answer the following questions concerning your preferences in radio, t.v., newspapers, and the like.

228. How much time on the average, do you spend each day using a newspaper, the radio, etc?

Reading the Newspaper	Reading Magazines	Listening to the Radio	Watching Television
_____Don't read the newspaper	_____Don't read magazines	_____Don't listen at all	_____Don't watch at all
_____1-30 minutes	_____1-30 minutes	_____1-60 minutes	_____1-60 minutes
_____31-60 minutes	_____31-60 minutes	_____1-3 hours	_____1-3 hours
_____Over 1 hour	_____Over 1 hour	_____Over 3 hours	_____Over 3 hours

229. Which newspaper(s) do you normally read at least 3 times per week?

_____None _____Spanish Language Newspaper _____Other (Which one?_____)
_____AUSTIN AMERICAN STATESMAN _____THE DAILY TEXAN

230. What sections of the newspaper do you usually read (Please check your 4 favorites)?

_____General news (first section) _____Woman's Section _____Ann Landers or Dear Abby _____Other (which?_____)
_____Comics _____Business Section _____Entertainment
_____Sports _____Want Ads _____Advertisements

231. What radio stations do you usually listen to? Please check the one(s) you listen to at least 3 times per week, and ALSO check the time(s) you normally listen to each.

	Station		Times					
			7-9 a.m.	9a.m.-Noon	Noon-4p.m.	4-6p.m.	6-10p.m.	10p.m. on
_____	None	AM						
_____	KLBJ	590	_____	_____	_____	_____	_____	_____
_____	KTAP	970	_____	_____	_____	_____	_____	_____
_____	KVET	1300	_____	_____	_____	_____	_____	_____
_____	KOKE	1370	_____	_____	_____	_____	_____	_____
_____	KNOW	1490	_____	_____	_____	_____	_____	_____
		FM						
_____	KMFA	89.5	_____	_____	_____	_____	_____	_____
_____	KUT	90.7	_____	_____	_____	_____	_____	_____
_____	KLBJ	93.7	_____	_____	_____	_____	_____	_____
_____	KOKE	95.5	_____	_____	_____	_____	_____	_____
_____	KHFI	98.3	_____	_____	_____	_____	_____	_____
_____	KASE	101	_____	_____	_____	_____	_____	_____
_____	KRMH	103.7	_____	_____	_____	_____	_____	_____

232. What programs do you usually listen to (please rank your first 4 choices)?

_____None _____Sports _____Country-Western Music _____Other Programs
_____News _____Talk-shows _____Classical Music
_____Variety _____"Top-40" Music _____"Easy-Listening"

233. What T.V. stations do you usually watch? Please check the one(s) you watch at least 3 times per week, and ALSO check the time(s) you normally watch each.

Channel	Station	Cable	Times					
			7-9 a.m.	9a.m.-Noon	Noon-4p.m.	4-6p.m.	6-10p.m.	10p.m. on
_____	24	KVUE (Austin) Cable 3	_____	_____	_____	_____	_____	_____
_____	36	KTVV (Austin) Cable 4	_____	_____	_____	_____	_____	_____
_____	7	KTBC (Austin) Cable 5	_____	_____	_____	_____	_____	_____
_____	9	KLRN (San Antonio and Austin) Cable 8	_____	_____	_____	_____	_____	_____
_____	11	KTVT (Ft. Worth) Cable 9	_____	_____	_____	_____	_____	_____
_____	41	KWEX (San Antonio) Cable 13	_____	_____	_____	_____	_____	_____
_____		Other	_____	_____	_____	_____	_____	_____

234. What programs do you usually watch (please rank your first 4 choices)?

_____None _____News _____Game Shows _____Plays
_____Variety _____Talk Shows _____Westerns _____Other (which?
_____Sports _____Movies _____Comedies _____)
_____Children's _____Soap Operas _____Police/Detective

235. What clubs or organizations do you belong to and attend about once per month or more?

_____None _____Political Groups _____Athletic Team _____Neighborhood
_____Church Organizations _____PTA _____Card Group Organizations
_____Other(s) (which?_____)

PLEASE CONTINUE WITH PART 5 BELOW

PART 5

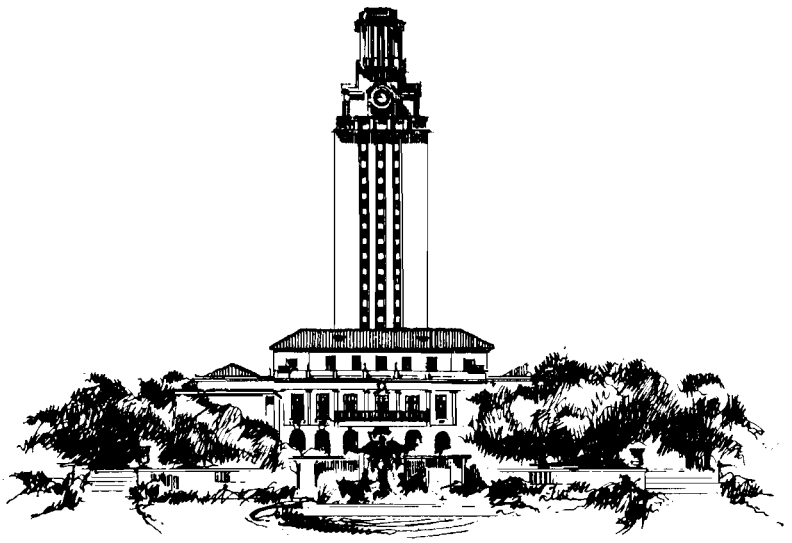
Finally, we would like to have some information about you, for analysis and tabulation purposes. Please answer the following CONFIDENTIAL questions.

236. Sex: ____Male ____ Female
237. Marital Status: ____Single ____Married ____Other
238. Are you a student? ____Full time student ____Part time student ____Not a student
239. What is the approximate address of your place of employment? (If not employed, leave blank) Address or nearest intersection _____
240. Your Age: ____Less than 21 years ____21-29 years ____30-44 years ____45-59 years ____60 years or older
241. How many people are in your household? ____One ____Two ____Three ____Four ____Five or more
242. Please indicate the age of your oldest child living at home. If you have no children living at home, leave question blank.
____3 years or younger ____4-5 years ____6-12 years ____13-19 years ____20 years or older
243. What is the highest level of education attained by you?
____Junior High or less ____Some High School ____High School Graduate ____Some College/Professional Training ____College Grad or Higher
244. Which category best describes your total family income for 1972? If you are a student, indicate only the combined total of your and your spouse's incomes. Your answer to this question and ALL other questions, is COMPLETELY CONFIDENTIAL.
____Less than $5,000 ____$5,000-$9,999 ____$10,000-$14,999 ____$15,000-$19,999 ____$20,000 or more
245. What is your ethnic background? ____Mexican-American ____Black ____White ____Other
246. Do you ? ____Own home ____Live in Mobile Home ____Rent home ____Rent Apartment ____Other
247. How many automobiles are in your household? ____None ____One ____Two ____Three or More
248. How long have you lived in Austin? ____Less than 6 months ____6 months to 1 year ____1 to 3 years ____3 to 5 years ____5 years or more
249. Do you work in the downtown area of Austin? ____Yes ____No
250. Approximately how often do you shop in stores in the downtown area of Austin?
____Twice a week or more often ____2 or 3 times a month ____Once a month ____Every 2 or 3 months ____Almost never
251. Approximately how often do you shop in stores in Highland Mall?
____Twice a week or more often ____2 or 3 times a month ____Once a month ____Every 2 or 3 months ____Almost never
252. Approximately how often do you shop in stores in Hancock Center?
____Twice a week or more often ____2 or 3 times a month ____Once a month ____Every 2 or 3 months ____Almost never
253. Approximately how often do you shop in stores in Southwood Center?
____Twice a week or more often ____2 or 3 times a month ____Once a month ____Every 2 or 3 months ____Almost never

Comments: _____

Your help and cooperation are greatly appreciated. If you would like a summary of the results of this study, please indicate it and fill in your name and address. Yes_____ No _____

NAME AND ADDRESS (if results desired) _____



Council for Advanced Transportation Studies

THE UNIVERSITY OF TEXAS AT AUSTIN