

AN EVALUATION OF THE FEASIBILITY OF SOCIAL DIAGNOSTIC TECHNIQUES IN THE TRANSPORTATION PLANNING PROCESS

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An examination is made of the feasibility of using social diagnostic techniques in the transportation planning process. This was done through a survey of values and views of residents located within the general area of the corridor of the northern extension of the Stadium Freeway in Milwaukee. A questionnaire was prepared by a team of engineers and social scientists at the University of Wisconsin—Milwaukee. Results of the survey are presented relative to demographic characteristics, attitudes toward transportation services, attitudes toward nontransportation services, and analysis of freeway support and opposition to the freeway project. Conclusions of the research are such that techniques appear to be feasible and can provide valuable information for the development of transportation plans.

•THROUGHOUT the nation, we have seen in many areas a series of seemingly endless controversies over the form or shape of transportation systems to be developed within individual communities. The time-proven process of citizen representation by elected officials appears to be unable to cope with satisfying the desires and needs of local citizens in the implementation of very broad transportation plans. Stormy public hearings, protest marches, petitions, and angry confrontations seem to have become a regular part of the transportation design and decision-making process.

This phenomenon seems to be truest in large metropolitan areas where the principle means of communication is through news media. It is difficult to obtain a true sense of opinion. Even a relatively small segment of the population may in fact involve tens of thousands of people, and an individual freeway project may require the placement of thousands of homes. It may be impossible for the local decision-makers to assess adequately the opinions of the community on every subject affecting them. If the officials are to be responsive to the needs and desires of the people they serve, certainly such information is vital. The fact that the views and desires of the local citizens who will be affected by the proposed project should be taken into account is well recognized. However, the process of determining what these values and views are has been most difficult. Frequently they conflict, and those who talk the loudest are most often the only ones who are heard. It is apparent that new mechanisms for determining these views are needed.

This paper will discuss a research project that was aimed at dealing with some of the difficulties cited. The project was concerned with an evaluation of the feasibility of using social diagnostic techniques in the highway location process as a means of measuring and translating citizens' views and values into terms usable in planning highway facilities. A series of interviews was conducted with persons affected by the northern extension of the Stadium Freeway (NESF) in Milwaukee County to gain a fuller

understanding of the views and values that these individuals held. A questionnaire was developed and analyzed by a team of engineers and social scientists from the University of Wisconsin—Milwaukee (UWM) and administered by trained interviewers of the Wisconsin Survey Research Laboratory.

The study was in some ways similar to the national study of transportation attitudes and behavior (1) and studies of community values (2, 3); however, it differed in that it focused on a particular transportation project and on those people in the immediate area of the project.

This report will discuss the objectives of the research and the procedures used in the study and will indicate some of the findings of the survey as they relate to the respondents' attitudes toward transportation and other public services and to an analysis of freeway support and opposition. Conclusions are drawn on the general feasibility of social diagnostic techniques in the planning of large transportation projects. This report presents only a very brief summary of the project. Further details may be found in the final report (8).

OBJECTIVES OF THE RESEARCH

The primary objective of the research was to determine the feasibility of using social diagnostic techniques as a means of gathering data for dealing with problems raised by the construction of new highway facilities. Primary emphasis was placed on development of procedures that could be easily implemented by the local agencies concerned with development of highway facilities. Thus, it was considered vital that any procedures developed could easily be used by personnel from these agencies and understood by the citizens involved with the project. The feasibility question was addressed by treating a locally controversial freeway project as a case study wherein the utility of such data could be investigated. Beyond this primary objective, the research also had a series of secondary objectives. These were as follows:

1. To provide information collected in a scientific manner on the views and values held by persons affected by a proposed highway improvement;
2. To provide information that may be useful in determining means of resolving conflicts associated with highway improvements;
3. To provide information that may be used to develop means of more effectively communicating with those residents in project modification and implementation; and
4. To develop methodologies that could be used on studies of a similar nature.

STUDY AREA

The area chosen as a case study for use in this project was the corridor of the NESF in Milwaukee County. This project is in the north-central portion of the city of Milwaukee and is the combination of the completion of the gap in a partially built freeway system and the commencement of an Interstate highway between Milwaukee and Green Bay. This project has progressed through the corridor location stage including the public hearing. The location of the route has been submitted to the Wisconsin Highway Commission for its approval. The location of this highway had generated considerable public discussion and controversy. Approximately 2,000 persons were present at the public hearing on the project, which lasted from 10:00 a. m. until after midnight. Viewpoints were expressed at the public hearing by sponsoring agencies, government officials, local citizens' groups, church organizations, motor clubs, labor unions, and individual citizens. The project has an estimated total cost of approximately \$120 million in Milwaukee County and would involve the dislocation of approximately 1,400 households. It will be approximately 10 miles long, and its general location is shown in Figure 1.

PROCEDURE

The study involved development of a questionnaire, administration of the questionnaire, and analysis and evaluation of the test results. The study involved the following steps:

1. Formulation of the social diagnostic team,
2. Establishment of project orientation,
3. Selection of study area,
4. Selection of a sample,
5. Preparation of questionnaire,
6. Pretesting and modification of questionnaire,
7. Collection of data,
8. Analysis and evaluation of data, and
9. Recommendation and interpretations from project.

Each of these steps is discussed in some detail in the following sections.

Formulation of the Social Diagnostic Team

A team of engineers and social scientists was formed to assist in the research project and the analysis. The members of the team were Edward Beimborn, Professor, Department of Systems Design, College of Applied Science and Engineering, UWM; Brian Nedwek, PhD candidate in political science, UWM; Charles Ryan, Chief Maintenance Engineer, District 2, Wisconsin Department of Transportation; Jonathan Slesinger, Professor and Director of Research, School of Social Welfare, UWM; and Edward Wellin, Urban Anthropologist, College of Letters and Science, UWM. They were also assisted by Harry Sharp and Charles Palit of the Wisconsin Survey Research Laboratory. This team was assembled to ensure that the research benefited the viewpoints of persons of different disciplines. The members of the team represented the disciplines of civil engineering, systems analysis, sociology, anthropology, and political science.

Project Orientation

The team was briefed on the project by consulting engineers (Howard, Needles, Tammen and Bergendoff; Engineers, Architects and Planners), who were engaged for the corridor location study. An initial evaluation of the impact area was also made to arrive at tentative population classification in sociological terms. This appraisal was necessary to allow the questionnaire to be made more meaningful and to determine area evaluations. At this point in the research, the most important question was Who? Who will be affected by the new system, and who will be involved in the resolution of project impacts?

Selection of Study Area

The universe consisted of all persons residing in housing units in the area of Milwaukee and Wauwatosa. The boundaries of this area were West Lloyd Street on the south, North 68th Street on the west, Forest Avenue on the north, North 51st Boulevard to West Burleigh on the east, West Burleigh from North 51st Boulevard to North Sherman Boulevard on the north, and North Sherman Boulevard to West Burleigh to West Lloyd Street on the east as shown in Figure 1. The study area is approximately 1 mile wide and 5 miles long. At the point in time that the study was made, the route had been recommended from the public hearing but had not been approved by the highway commission.

Sample Selection

Households were selected in the study area by randomly sampling from the 1970 Milwaukee City Directory and a 2-stage area selected from the portion of the study area not included in the directory. A sample of 550 households was drawn. This represented a sampling rate of approximately one in 37. The sample response rate was 73 percent, resulting in 373 completed interviews.

Questionnaire Preparation

The questionnaire was prepared by the social diagnostic team. Contributions were not structured but were made with little or no restraint on the input. These contributions were combined or modified through the review of the questionnaire by the team. Major contributions to the effort were made by all members, reflecting the insight and background of each. Most of the questions were used in earlier studies or were modified to be somewhat consistent with previous work (1, 4). The questionnaire was reviewed by personnel at the University of Wisconsin Survey Research Laboratory, which has had extensive experience in survey research efforts.

Questionnaire Test Run and Modification

The prepared questionnaire was pretested on a small segment of the proposed test group to evaluate the questionnaire, the techniques used, and the information received. Factors considered in modification were anxiety of interviewees, communications between interviewer and interviewee, data received, estimate of time to completion of survey, and final estimate of cost. The data collected during the pretest are not included in the analysis. The final questionnaire consisted of 195 items and took approximately 1 hour to administer.

Data Collection

The questionnaires were administered by professional interviewers at the direction of the Wisconsin Survey Research Laboratory. The hour-long interviews were administered during the months of December 1970 and January 1971. The opinions of the interviewer on the willingness of the individual to participate in the data collection effort were included.

RESULTS

A sizable amount of information was obtained from the survey, and only a small portion of it will be presented here. The questionnaire was prepared to be a survey of community values and, as such, went beyond transportation issues. The results of the survey are presented in the following four sections:

1. Demographic profile—age, home ownership, length of residence, socioeconomic analysis, automobile ownership, organization involvement, partisanship, and political involvement;
2. Attitudes toward transportation—quality of services, expenditure preference patterns, mode evaluation, mode choice evaluation, and transportation improvements;
3. Attitudes toward nontransportation services—quality of services and expenditure preference patterns for fire, police, air, health, education, welfare, and others (other attitudinal factors included criteria for home selection, political and social trust, and efficacy); and
4. An analysis of freeway support and opposition—approval rates of freeway projects as related to quality of service, expenditure preferences, demographic factors (e.g., distance from freeways), age, and others.

Demographic Profile

The area can be generally described as white (97.8 percent), middle class, and politically democratic, with an average income somewhat above the national average. Nearly half (48 percent) of the respondents were over 50 years of age, and 70 percent had graduated from high school and 11 percent from college. Nearly three-fifths (58 percent) of the respondents owned their homes or were buying them, and 42 percent of them have lived at the same residence for 10 or more years. Eighty-two percent belonged to at least one organization, and 62 percent belonged to a church-connected or labor organization. More than half (57 percent) listed themselves as Democrats or weak Democrats, and 27 percent were Republicans or weak Republicans. The highest reported occupation was clerical and sales, 35 percent; followed by skilled, 15 percent;

service, 15 percent; semiskilled, 14 percent; managerial, 9 percent; and professional, 6 percent. Two-thirds were employed full time, and an additional 7 percent were employed part time. One-sixth of the households had no automobile available, and 27 percent had two or more available. Finally, the median income of the households was around \$10,000 with 16 percent of the households reporting less than \$4,000 per year and 4 percent reporting over \$20,000 per year.

Attitudes Toward Transportation

The attitudes of the respondents toward transportation services were found in a number of ways. They were asked to judge the quality of the services and indicate how they felt money should be spent for these services. They were also asked to evaluate different modes of transportation and to indicate how often they used them. The results of these questions are given in Tables 1 through 4.

Quality of Services—Respondents were asked to "Please give your opinion of the quality of the service listed in this area, according to the categories very good, good, good in some ways and not so good in others, not so good, and not good at all." The transportation services included were street lighting, expressways, condition of city streets, parking, and public transportation (bus services). These responses are given in Table 1.

Inspection of Table 1 reveals that the respondents tend to be most satisfied with the quality of street lighting and least satisfied with existing bus service. Moreover, the residents tend to be less satisfied with the condition of city streets and parking than with existing expressway service.

Transportation Expenditures—Some feeling of the respondents' priorities was gained from the question "For each of these services tell how much more or how much less money and effort you think should be spent for each one in this area." The responses to this question are given in Table 2. It was hypothesized that evaluations of the quality of services would be negatively related to expenditure preferences. This hypothesis was partially confirmed.

Street lighting is the service most highly rated and on which most agreement exists that the right amount of money and effort are being expended. There is a low level of satisfaction with the quality of public transportation service, and this service is ranked highest in the need for more money and effort to be expended. It is interesting to speculate why 12 percent do not know if public transportation should be improved or not. The case with expressways is also not clear. As a service, expressways are rated nearly as high as street lighting; but, unlike the situation with street lighting, expressways are the only service that a substantial proportion of the residents (25 percent) believe should have less money and effort expended. Similar findings were reported elsewhere(1).

Mode of Transportation—When the difference in the use of automobiles or buses as a mode of transportation was evaluated, the automobile rated the highest concerning least travel time, comfort, convenience, and cost. Moreover, there exists little difference in evaluation of the safety factor in comparing the automobile with the bus. Table 3 gives the percentage distribution of the evaluation of mode of transportation by characteristics.

When asked the single most important factor in choosing a means of transportation, the 371 respondents answered as follows:

<u>Factor</u>	<u>Response (percent)</u>
Convenience	37
Safety	29
Time	22
Cost	6
Comfort	6

Consideration of convenience and saving time lead to driving; safety was related to choosing the bus.

Figure 1. Proposed location of Stadium Freeway.

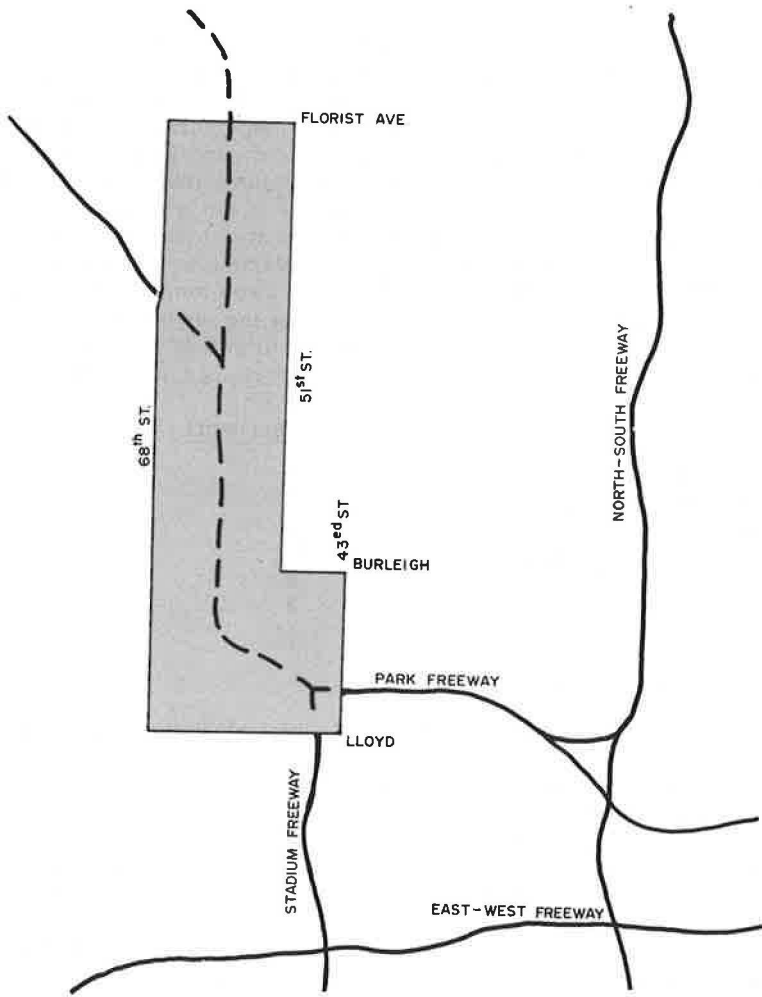


Table 1. Evaluation of the quality of transportation services.

Service	Responses (percent)					Undecided
	Very Good	Good	So So	Not So Good	Not Good at All	
Street lighting	31	49	9	7	4	0
Expressways	21	50	14	5	2	8
Condition of city streets	18	49	15	13	4	1
Parking	12	51	13	15	8	1
Public transportation (bus service)	9	27	17	20	12	15

Note: N = 373.

Table 2. Preferred change in level of expenditure for transportation services.

Service	Responses (percent)					Undecided
	Much More	More	Same	Less	Much Less	
Public transportation (bus service)	12	33	39	3	1	12
Condition of city streets	8	25	61	3	1	2
Parking	3	21	70	4	0	2
Expressways	3	15	51	17	8	6
Street lighting	2	18	76	3	0	1

Note: N = 373.

Further insight into the respondents' feelings for different means of transportation were obtained from the question "Tell me how you rate each of the means of transportation listed." The responses to this question are given in Table 4. The vast majority of respondents evaluate the automobile as the best mode of transportation. A striking contrast appears when expressways during non-rush hours and during rush hours are compared. In the former, more than 70 percent positively evaluate that mode of transportation; however, the highest proportion of dissatisfaction is found with rush-hour expressway traffic. Fairly large portions of the respondents rated local bus and train services as inferior relative to the other modes. It is also interesting to note the frequency of the response "undecided" for the public transportation modes. Apparently this finding reflects low usage rates of public transportation by the respondents.

Transportation Improvements—Each respondent was asked to select from the choices given the one that would improve his travel. The responses were as follows (N = 360):

<u>Improvement</u>	<u>Response (percent)</u>
Improved bus service	29
Improved arterials	22
Improved residential streets	20
Providing more expressways	17
Providing express buses	3
Providing rail rapid transit	3
Undecided	4

Attitudes Toward Nontransportation Services

Respondents were also asked to rate the quality of nontransportation services and their preference of level of expenditure for the services. The results of these questions are shown in Figures 2 and 3. Transportation services are also included in these figures for comparative purposes.

It is interesting to note that, in two service areas (welfare and urban renewal), nearly 40 percent of the respondents were unable to evaluate quality. One would anticipate an association between the qualitative evaluation and desired level of expenditure. Visual inspection of Figures 2 and 3 tends to support this hypothesis. The order of the percentage indicating a "good" quality of service roughly approximates the reverse order of the percentage of respondents who are willing to continue expending funds at the existing level.

Fire protection is the most highly evaluated service and on which most agreement exists that the right amount of money and effort are being expended. Air pollution control is ranked as near least satisfactory and where the highest agreement is found for spending more than the present level. Welfare and urban renewal are ranked as least satisfactory, but the high proportion of residents that could not evaluate these services (38 and 39 percent respectively) prohibits drawing reasonable conclusions about these two service areas. Expressway service is generally ranked as being good; however, it and welfare are services where a substantial portion of the respondents feel less money should be spent.

Further inspection of these figures demonstrates clearly that the vast majority of residents are satisfied with the existing quality of service provided in the area. Similar findings were reported recently in a study of Milwaukee by the Milwaukee Urban Observatory (5). The exceptions are air pollution control and bus services. In both cases there is a general feeling that the level of expenditure should be increased. This same concern for environmental services, e. g., water pollution, was reported recently elsewhere (5, 6).

Political Participation—The responses to the series of questions on political activities given in Table 5 reveal that the majority of the residents communicate their opinions by signing petitions, attending public hearings, and writing letters. Yet, due to limited time and opportunity at public hearings for individual response and the few who have done so in the past 5 years (Table 6) and to the relatively low percentage who have written or contacted officials in the same period, it would appear that the primary

Table 3. Evaluation of modes of transportation by characteristics.

Characteristic	Mode (percent)		
	Bus Passenger	Automobile Driver	Automobile Passenger
Most comfort	12	57	31
Most convenience	14	60	26
Least cost	22	36	36
Most safety	46	36	18
Least time	4	64	32

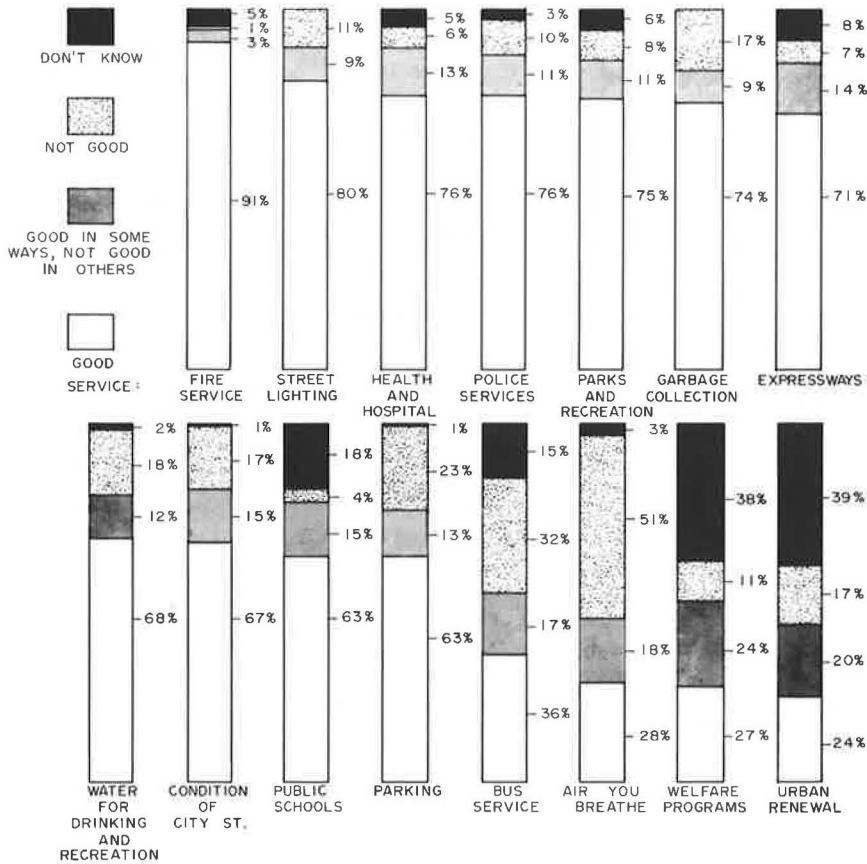
Note: N = 371.

Table 4. Evaluation of transportation modes.

Mode	Responses (percent)			
	Good	Good in Some Ways, Not Good in Others	Not Good	Undecided
Automobile	88	9	1	2
Expressway (non-rush)	77	12	4	13
Air	62	12	3	23
Taxicabs	43	20	6	31
Intercity bus	42	21	9	28
Local bus	37	30	20	13
Train	27	18	23	32
Expressway (rush)	16	16	50	18

Note: N = 373.

Figure 2. Evaluation of quality of government and public services.



effort is first through endorsement by voting, second through petitions, and third through letters, public hearings, and personal contact.

Preferred Living Place—Analysis of the responses to questions concerning preferred places to live revealed that 47 percent would prefer living in the suburbs, 40 percent in the city, and 13 percent in other places. Respondents were asked: "Which of these items would you consider most important in selecting a new house?" Table 7 gives the first, second, and third most important factors in selecting a new home. Lower taxes is the most highly valued item in selection of a home. Proximity to friends and recreation is of minimal import in home selection. Summarily, lower taxation and police and fire protection emerge as the two most important factors with proximity to shopping and the quality of schools rating very important in the selection of a new home.

Analysis of Freeway Support and Opposition

The data presented a rather unique opportunity to examine the characteristics of those persons who expressed negative attitudes about expressways. This was done through a series of bivariate analyses. Four dependent variables were selected for analysis: approval of the NESF, evaluation of the quality of expressway service, evaluation of the expenditures for expressways in the area, and attitudes concerning spending for freeways in general. A total of 53 independent variables were used in the analysis. The four questions used as dependent variables are given in Table 8.

In the following sections, a discussion of the bivariate analysis with the first dependent variable will be made. The other bivariate analyses will not be discussed here. It should be noted, however, that the results of all four analyses were generally consistent.

Comparisons With Other Dependent Variables—The first comparisons that were made were between the dependent variables to determine the consistency of the responses. The results are given in Tables 9, 10, and 11. The comparison in Table 9 of the responses to the question on approval of NESF and the responses to the question on quality of expressway service is more revealing. Evaluations of the quality of the expressway service in the corridor area indicate that 77 percent evaluated expressway service as good or very good.

The bivariate analysis of approval of the NESF to the responses on evaluation of spending on expressways in this area (Table 10) shows a sharp change in opinions from those in the previous analysis. These results are also shown in Figure 4. As noted earlier, 40 percent approve, 45 percent disapprove, and 15 percent are undecided. However, in the attitude toward expressway spending in the area, 51 percent feel spending should continue at the same level, 18 percent at a higher rate, and 25 percent at a lower rate, and 6 percent are undecided. The table produced by the comparison clearly showed that those who tended to support spending on expressways in this area also tended to support the NESF, and the group that felt spending for freeways in the area should be reduced tended to oppose the NESF.

In the analysis given in Table 11, approval of the NESF and evaluation of expenditures for expressways in general, it was found that those who favor spending at the same or higher levels tend to support the NESF, and those who oppose the NESF tend to oppose spending money for expressways. There was some mix, of course. Of those who felt spending should be at about the same level, 55 percent were in favor of NESF. Of those who favored higher spending, approximately 75 percent were in favor of the NESF; and, of those who favor less spending for expressways, about 20 percent were in favor of the NESF. Thus the attitudinal orientation toward transportation services appears to be related to individual judgments concerning a specific program like the NESF.

Demographic Profile—An analysis was made of the characteristics of those persons who approve of the northern extension of the Stadium Freeway and those who oppose it. Those who were undecided were eliminated from this analysis. Comparisons will be made in this section on the basis of income, education, age, and sex. A curvilinear relationship was found between socioeconomic status (income, education) and support for the NESF. Lower income groups tend to oppose the NESF more than those with

Figure 3. Expenditure preference pattern for services.

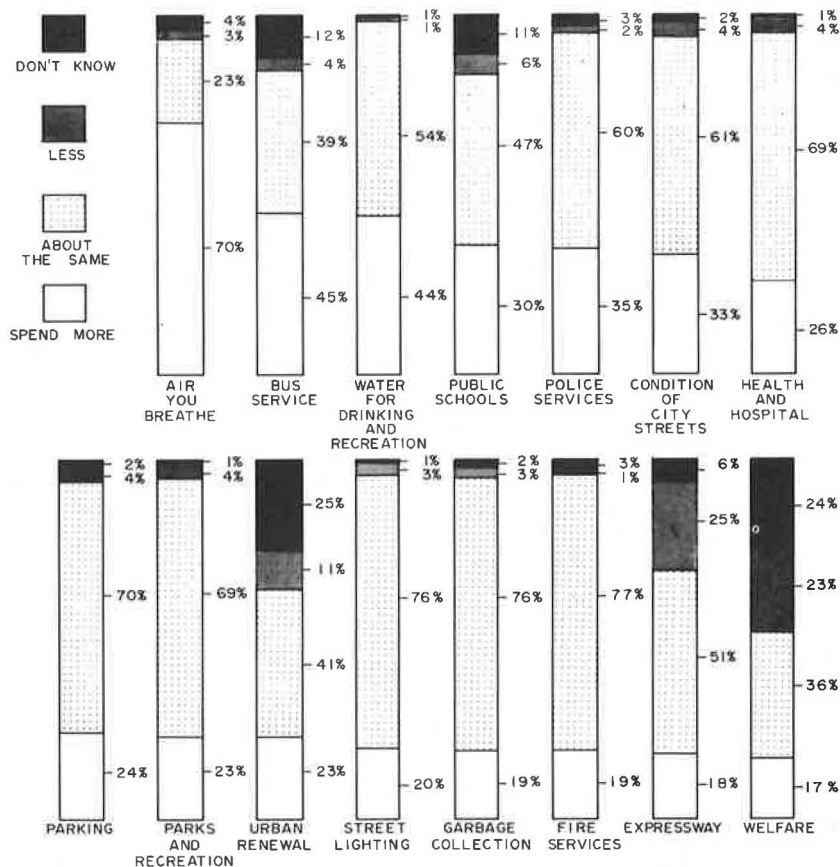


Table 5. Effectiveness of political activities.

Activity	Somewhat or Very Effective (percent)	Percentage Who Participate
Writing letters	66	54
Attending public hearings	76	62
Signing petitions	76	49
Picketing City Hall	21	4
Demonstrations	18	4
Picketing official's home	10	2
Use of force	7	2

Note: N = 373.

Table 6. General political activism within past 5 years.

Activity	Response (percent)	
	Yes	No
Voted	82	18
Signed petitions	62	38
Wrote letters	24	76
Attended public hearing	23	77
Contacted public officials	18	82
Participated in a boycott	8	92
Picketed	5	95
Joined a political party	3	97
Marched	2	98
Ran for public office	0	100
Participated in a sit-in	0	100

Note: N = 373.

Table 7. Factors considered in selection of home.

Factor	First Choice ^a (percent)	Second Choice ^b (percent)	Third Choice ^c (percent)
Lower taxes	34	18	12
Police and fire protection	15	14	17
Location and quality of schools	13	13	9
Availability of public transportation	10	10	8
Size of lot	7	7	6
Proximity to work	7	8	8
Proximity to shopping	6	19	22
Availability of sewer and water	3	6	6
Proximity to friends	3	3	9
Proximity to recreation	2	2	3

^aN = 370.

^bN = 366.

^cN = 361.

higher incomes (Fig. 5). However at an income level greater than \$20,000 per year (6 percent of the sample) the rate of approval drops to below 50 percent. Figure 6 shows that those who have more education tend to favor the NESF with some shift on the part of those with college degrees to be evenly divided on the NESF project.

The relationship between the age of the respondents and approval of the project supports the hypothesis that age is negatively related to support of the NESF. These results are shown in Figure 7. There appears to be a "generation gap" in the opinions of the respondents on the project. This phenomenon was also observed in similar analyses with the other dependent variables. These results indicate a need for persons engaged in the planning of highways to develop a greater awareness and understanding of the impacts of their facilities on persons over 60 years of age. In summary, age appears to be a major factor in approval or disapproval of this particular highway project.

Data given in Table 12 show that sex has a definite relationship to attitudes toward the NESF. Males are rather evenly divided in their attitudes, whereas women are opposed by a 3 to 2 ratio. Further multivariate analyses indicated that education appeared to modify the attitudes of both sexes, with those attaining a higher education tending to be more likely to support the NESF.

Comparison With Scaled Variables—Variables representing neighborhood satisfaction, personal trust, political trust, personal efficacy, civic duty, and evaluation of planners were constructed based on a Guttman scale of questions. This is a process in which an evaluation of responses is rated on the basis of a coefficient of reproducibility. The coefficients of reproducibility for the attitude scales all were above the 0.90 criterion as established by Guttman (7). The respondents were rated or scaled in comparison for a relatively high or low sense of neighborhood satisfaction; political trust; political and personal efficacy; and civic duty. In general, these sociopolitical variables were not related to evaluations of transportation services. However, those who positively evaluated highway planning tended to approve the NESF project. The same relationship remained when controlling for education and age.

Distance From Proposed Route and Rate of Approval—Information on the distance of respondents' homes from the proposed freeway was also available. It was hypothesized that those respondents who lived nearest the proposed route would tend to oppose the NESF more than those living further away. The results of the bivariate analysis of the distance from the centerline of the proposed freeway and approval of the project are shown in Figure 8. Those persons nearest the proposed freeway tended to disapprove of the freeway by a 3 to 2 ratio, whereas persons who lived more than 1,100 ft from the centerline of the proposed freeway approved of the project by a 3 to 2 ratio, confirming the hypothesis. Data given in Table 13 show that, when distance from the NESF and approval of the NESF are cross-tabulated with education, both education and distance are related to approval of the project. As the distance from the project and education increase, the rate of approval also increases. It should be noted, however, that the rate of approval as a function of distance did not increase so rapidly as expected. Nearly two-fifths of the respondents (38 percent) within 200 ft of the centerline approved of the project, and two-fifths (40 percent) of those greater than 1,400 ft away did not approve of the NESF. The rate of change of the approval rate was not so pronounced as that of age as described earlier.

Summary of Results

The preceding sections have discussed some of the results of this survey. As mentioned earlier, the quantity of data available is quite extensive, and only a limited portion is presented here.

The demographic material indicated that the respondents were nearly all white with three-fifths of them owning or buying their own homes. The area is middle income, primarily nonprofessional, and politically Democratic.

Respondents expressed satisfaction with the existing levels of public services. An exception was the quality of air. They also seem to feel that the level of expenditures should stay at about the same level for most services with the exceptions of air and water pollution control and public transit services.

Table 8. Questions used as dependent variables and responses to them.

Question	Response	Respondents	
		Number	Percent
Did you approve of a northern extension of the Stadium Expressway?	Yes	148	40
	No	169	45
	Undecided	66	15
What is your opinion of the quality of expressway service in the area?	Good	264	71
	Good in some ways, not good in others	51	14
	Not good	28	7
	Undecided	28	8
How much money and effort should be spent for expressway services in the area?	More	65	17
	Same	191	51
	Less	95	26
	Undecided	21	6
How much money should be spent to build additional expressways?	More	105	26
	Same	117	31
	Less	136	37
	Undecided	12	4

Table 9. Bivariate comparison between approval of NESF and quality of freeway service in the area.

Quality of Expressway Service in Area	Opinion of NESF		Percentage of Sample Response
	Approve	Disapprove	
Very good	58	42	24
Good	44	56	43
Good in some ways	51	49	15
Not so good	55	45	6
Not good at all	14	86	2

Note: N = 298.

Table 10. Bivariate comparison between approval of NESF and expenditure preference pattern for freeways in the area.

How Much Money and Effort Should Be Spent in This Area	Opinion of NESF		Percentage of Sample Response
	Approve	Disapprove	
Much more	89	11	3
More	73	27	15
Same	55	45	51
Less	14	86	17
Much less	11	89	8

Note: N = 307.

Table 11. Bivariate comparison between approval of NESF and expenditure preference pattern for freeways in the area.

How Much Money Should Be Spent for Expressways	Opinion of NESF		Percentage of Sample Response
	Approve	Disapprove	
Much more	71	29	6
More	78	22	25
Same	55	45	31
Less	23	77	20
Much less	11	89	18

Note: N = 310.

Table 12. Bivariate comparison between approval of NESF and sex of respondent.

Sex	Opinion of NESF		Percentage of Sample Response
	Approve	Disapprove	
Male	53	47	48
Female	41	59	42

Note: N = 311.

Figure 4. Rate of approval of NESF as compared to expenditure preference pattern.

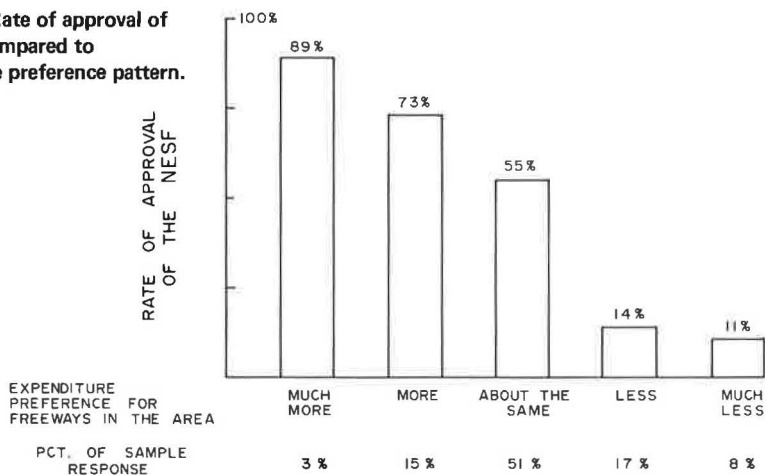


Figure 5. Rate of approval of NESF by income group.

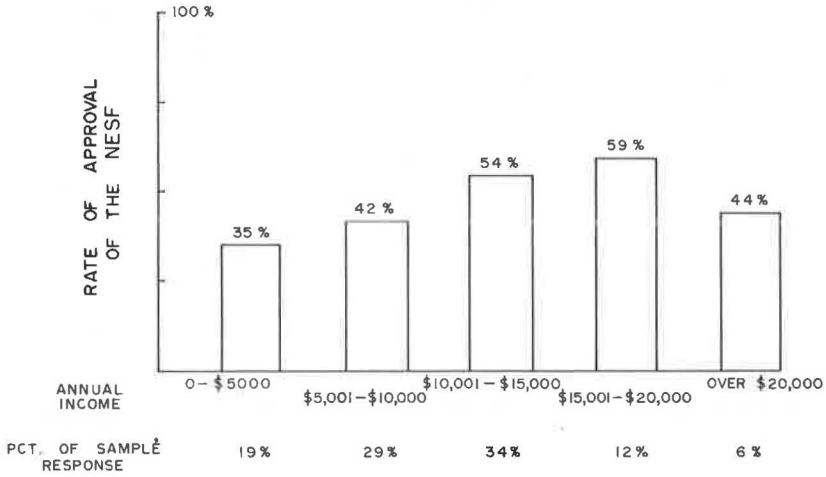


Figure 6. Rate of approval of NESF by educational level.

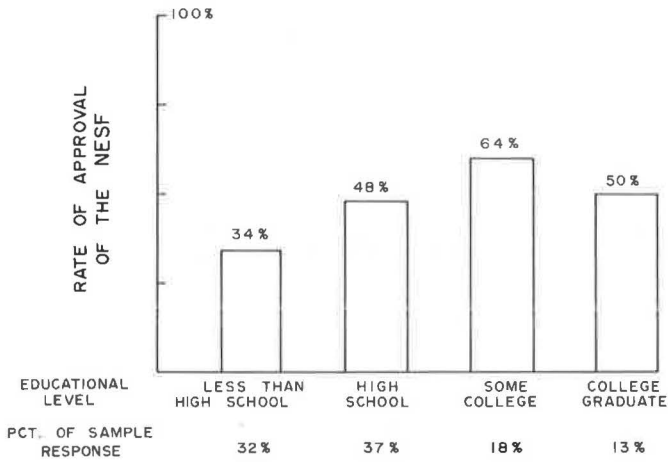


Figure 7. Rate of approval of NESF by age group.

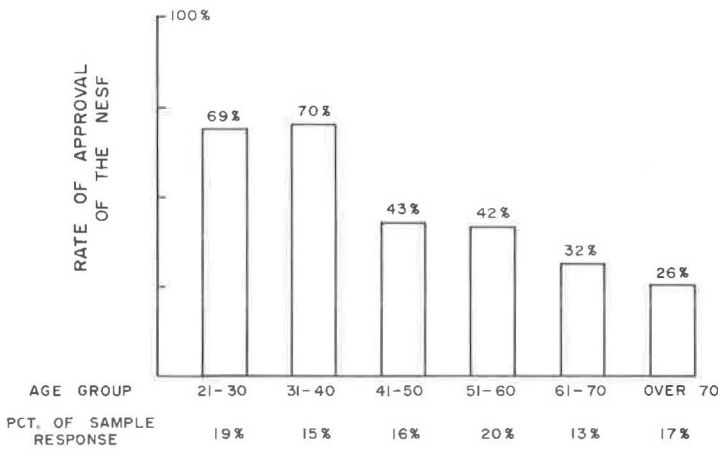


Figure 8. Rate of approval of NESF as compared to distance from proposed freeway.

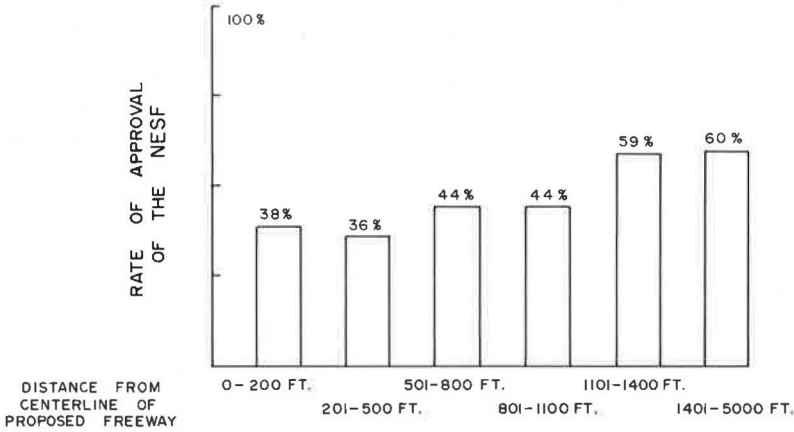


Table 13. Multivariate comparison among approval of NESF, distance of residence from centerline of proposed freeway, and education.

Education Level	NESF Attitude	Distance of Residence From Centerline of Proposed NESF (ft)						Percentage of N
		0 to 200	200 to 500	500 to 800	800 to 1,100	1,100 to 1,400	1,400 to 5,000	
To 8th grade	Approve	0	34	34	0	—	29	6
	Disapprove	100	66	66	100	—	71	
Percentage of group		11	17	17	17	0	38	
Some high school	Approve	33	33	25	50	57	31	25
	Disapprove	67	67	75	50	43	69	
Percentage of group		8	12	11	8	9	52	
High school graduate	Approve	50	47	46	35	45	59	40
	Disapprove	50	53	54	65	55	41	
Percentage of group		10	13	11	14	9	43	
Some college	Approve	67	33	50	78	60	62	18
	Disapprove	33	67	50	22	40	38	
Percentage of group		6	6	8	17	9	54	
College graduate	Approve	0	0	80	33	100	62	11
	Disapprove	100	100	20	67	0	38	
Percentage of group		9	6	15	9	12	49	
Percentage of N		8	11	11	13	9	48	100

Note: N = 298.

Respondents were nearly evenly divided on the proposed project in the study area. When asked about the level of expenditures for transportation services, they tend to be generally satisfied with the existing level of services. Finally, the residents registered great use and preference for the automobile over other modes.

An examination of those who oppose the proposed freeway project indicates that age may be a highly significant variable. Persons between the ages of 20 and 40 tend to approve of the project, whereas those over 60 show a high rate of disapproval. Other demographic factors, e. g., socioeconomic status and residential distance from the project, were related to support for the NESF.

CONCLUSIONS

Earlier the objectives of the research were described. Achievement of the objective cannot be ascertained, in a sense, until widespread use of such techniques occurs. However, certain elements of the feasibility question can be addressed. It is apparent that data can be collected and analyzed through social diagnostic techniques and that such data can provide useful information on the views and values of persons to be affected by a proposed project. Another element of feasibility relates to the cost of the project. Raw data were obtained at a cost of approximately \$30 per interview or a total of \$11,000 for the 373 completed interviews. The cost does not include the cost of questionnaire preparation or analysis of the results. When compared with the total estimated cost of the project (\$120 million), these costs appear to be very minor. If data and techniques as described here succeed in reducing the delay on the project by even a small amount or in improving the project, they can easily justify themselves.

It is the view of those who participated in the project that surveys and analyses are essential to the planning of new major highway facilities, especially in urban areas. Such data should be considered as important as or more important than good maps or knowledge of soils and drainage. In a sense, they can provide cognitive and attitudinal maps of residents of the impact area. They can provide valuable information on persons affected by the project and on how they think. Such information may be of value in understanding and communicating with the community and resolving conflicts. It is hoped that the study will serve as a basis for implementation of this process in any major project in an urban area, whether or not it is transportation oriented. Further efforts should be made toward standardization of procedures and questionnaires on projects of this sort to ensure some consistency in their widespread application.

RECOMMENDATIONS

The team of social scientists and engineers involved in this research project is unanimous in their opinion that this type of data collection is desirable in the implementation of any major project likely to affect a community, whether a transportation project or otherwise. The relatively small cost in comparison to the benefits of producing a project that will be enhancing to the aggregate of community values would seem to demand this effort. Accordingly, the following recommendations were made to the project sponsors:

1. Procedures should be devised to enable serious consideration of the findings of a survey in the development of a project. Such results could be used in (a) modification of the design and location of a facility to minimize adverse effects in light of community values as determined from the survey; (b) development of public information programs more responsive to the diverse needs and fears of persons affected by the project; (c) modification of public hearing procedures and presentations that are more meaningful to the attitudes of the community; (d) development of citizen participation procedures with a clearer understanding of the issues involved in a proposed project; (e) determination of what further data should be collected to aid in negotiating some resolution of conflicts raised by a proposed project; and (f) modification of relocation procedures to deal more effectively with the concerns of the people involved, with special attention given to the relocalational needs of the elderly and the poor.

2. Standardized survey techniques, questionnaires, and analysis procedures should be developed to carry out the above recommendation. Such standardization is important if consistent interpretation of survey results is to be made. Furthermore, standardization would enable comparative studies of different areas and communities to be made to assist in greater understanding of impact phenomena.

3. Strong consideration should be given to performing surveys of persons to be affected by all major transportation projects. These surveys should be scientifically conducted, and their content should reflect a number of viewpoints. Furthermore, these surveys should be conducted as part of the data collection phase of a project, prior to any location decisions on the project.

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