NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

NCHRP Report 436

Guidance for Communicating the Economic Impacts of Transportation Investments

Transportation Research Board
National Research Council

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Report 436

Guidance for Communicating the Economic Impacts of Transportation Investments

HAGLER BAILLY SERVICES, INC.
Arlington, VA

with

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Farmington Hills, MI

Subject Areas

Planning, Administration, Environment
Aviation
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Rail
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NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM

Systematic, well-designed research provides the most effective approach to the solution of many problems facing highway administrators and engineers. Often, highway problems are of local interest and can best be studied by highway departments individually or in cooperation with their state universities and others. However, the accelerating growth of highway transportation develops increasingly complex problems of wide interest to highway authorities. These problems are best studied through a coordinated program of cooperative research.

In recognition of these needs, the highway administrators of the American Association of State Highway and Transportation Officials initiated in 1962 an objective national highway research program employing modern scientific techniques. This program is supported on a continuing basis by funds from participating member states of the Association and it receives the full cooperation and support of the Federal Highway Administration, United States Department of Transportation.

The Transportation Research Board of the National Research Council was requested by the Association to administer the research program because of the Board's recognized objectivity and understanding of modern research practices. The Board is uniquely suited for this purpose as it maintains an extensive committee structure from which authorities on any highway transportation subject may be drawn; it possesses avenues of communications and cooperation with federal, state and local governmental agencies, universities, and industry; its relationship to the National Research Council is an insurance of objectivity; it maintains a full-time research correlation staff of specialists in highway transportation matters to bring the findings of research directly to those who are in a position to use them.

The program is developed on the basis of research needs identified by chief administrators of the highway and transportation departments and by committees of AASHTO. Each year, specific areas of research needs to be included in the program are proposed to the National Research Council and the Board by the American Association of State Highway and Transportation Officials. Research projects to fulfill these needs are defined by the Board, and qualified research agencies are selected from those that have submitted proposals. Administration and surveillance of research contracts are the responsibilities of the National Research Council and the Transportation Research Board.

The needs for highway research are many, and the National Cooperative Highway Research Program can make significant contributions to the solution of highway transportation problems of mutual concern to many responsible groups. The program, however, is intended to complement rather than to substitute for or duplicate other highway research programs.

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The project that is the subject of this report was a part of the National Cooperative Highway Research Program conducted by the Transportation Research Board with the approval of the Governing Board of the National Research Council. Such approval reflects the Governing Board's judgment that the program concerned is of national importance and appropriate with respect to both the purposes and resources of the National Research Council.

The members of the technical committee selected to monitor this project and to review this report were chosen for recognized scholarly competence and with due consideration for the balance of disciplines appropriate to the project. The opinions and conclusions expressed or implied are those of the research agency that performed the research, and, while they have been accepted as appropriate by the technical committee, they are not necessarily those of the Transportation Research Board, the National Research Council, the American Association of State Highway and Transportation Officials, or the Federal Highway Administration, U.S. Department of Transportation.

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FOREWORD

By Staff
Transportation Research Board

This report contains the results of research into communicating linkages between transportation investments and economic performance. It is intended to provide transportation organizations, planning practitioners, and transportation decision makers with practical guidance for developing, considering, and explaining economic rationales for transportation investment decisions. Presented as a communication guide, it brings together market-research results and lessons learned from different regions of the country on the levels of awareness—by stakeholders, decision makers, and the public—of transportation's contributions to economic performance. The guide provides approaches that will most effectively fulfill the needs of stakeholders, decision makers, and the public for increased understanding of the economic implications of transportation decisions. It should be especially valuable to state Departments of Transportation (DOTs), Metropolitan Planning Organizations (MPOs), and local transportation planners as well as other practitioners concerned with planning, programming, and implementing multimodal transportation projects. The report will also be useful as an educational resource into the concepts, approaches, and methods currently employed for most effectively considering economic impacts in order to sustain effective transportation planning consensus and timely project prioritization.

Recent federal transportation policy, as embodied in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21), placed a high priority on consideration of economic performance in transportation planning and decision making. This emphasis represents a shift away from predetermined modal decisions toward broader consideration of tailored multimodal solutions within the context of transportation performance expectations and investment commitments. As such, this emphasis is intended to result in transportation plans, programs, and decisions that are driven by the needs of the specific area as opposed to the modal restrictions of the funding source or program. Given this emphasis, transportation planning and development must be based on decisions that reflect the unique needs and characteristics of the area, including the expectations of economic contribution associated with transportation strategies.

The American Association of State Highway and Transportation Officials (AASHTO), through its Special Committee on Economic Expansion and Development and through its support of related NCHRP research, continues to develop a body of knowledge on the relationships between transportation investments and economic performance. There is little understanding, however, on how to communicate these relationships to decision makers and the general public. Moreover, there is little understanding of what linkage decision makers and the general public perceive between transportation investments and economic performance. State DOTs and other transportation agencies require assistance with improving the communication of the economic rationales for transportation investments by soliciting and assessing stakeholder

inputs and by tailoring supporting information to the need. Without improved communication about the economic impacts of transportation, improvements may be delayed or neglected or transportation resources may be lost to competing programs.

Under NCHRP Project 2-22, "Needs in Communicating the Economic Impacts of Transportation Investment," the research team lead by Hagler Bailly Services, Inc. of Arlington, Virginia, used extensive market research to develop this guide to assist state DOTs and other transportation agencies in more effectively and proactively communicating—to decision makers and to the public—the important contributions transportation improvements can make to the economy and to economic performance.

This report is composed of two parts. Part I is the Communications Guide, which is designed to provide transportation planners and policy makers guidance on strategies for more effectively communicating the economic implications of transportation decisions. The material presented in this Part is drawn directly from the market research and analysis conducted during the project.

Part II contains the results from the market-research carried out under this study. This section presents the cumulative findings from the study and traces the market research plan that guided the research. Although there is some overlap with the Communications Guide, the focus and tone of the market-research results report are distinct from those of Part I.

The reader is encouraged to focus on Part I or the market-research results depending on the intended use. The Communications Guide is more concise and action-oriented, while the market-research results report provides a thorough account of the multi-layered approach employed by the research team and the results that emanated from that research.

CONTENTS

AUTHOR ACKNOWLEDGMENTS

The reseach reported herein was performed under NCHRP Project 2-22 by the Transportation Group of Hagler Bailly (formerly Apogee Research, Inc.) and MORPACE International (formerly Market Opinion Research).

Sergio Ostria, a Principal with Hagler Bailly, was the Principal Investigator. In addition to Mr. Ostria, the principal authors of this report are Rudy Barnes, Senior Associate with Hagler Bailly; Laurie Wargelin, Vice President, MORPACE International; and Alison Simon, Ph.D., Project Director, MORPACE International.

Work under NCHRP Project 2-22 was conducted jointly by Hagler Bailly and MORPACE International.

GUIDANCE FOR COMMUNICATING THE ECONOMIC IMPACTS OF TRANSPORTATION INVESTMENTS

SUMMARY

NCHRP Project 2-22, "Needs in Communicating the Economic Impacts of Transportation Investment," aims to "assist state DOTs and other transportation agencies in improving the communication of the economic rationales for transportation investments by soliciting and assessing stakeholder inputs and by tailoring support information to the need."[1] The broad goal was to improve understanding—among decision makers and the general public—about the linkages between transportation investments and economic performance. A more specific objective was to develop a Communications Guide to "assist state DOTs and other transportation agencies in more effectively and proactively communicating, to decision makers and the public, transportation's importance and contributions to the economy."[2]

The Transportation Group of Hagler Bailly, Inc. (formerly Apogee Research, Inc.)[3] and MORPACE International, acting as the research agency (the research team), pursued a broad-based strategy toward this goal, closely following the tasks identified by the NCHRP in the Research Project Statement. This Final Report documents and presents the findings of a study of current needs among transportation planning agencies in the communication of the economic impacts of transportation investment. A literature review and extensive market research were conducted to explore linkages between transportation investment and the economy, existing understanding of these linkages, and needs in the communication of such linkages. Based on this research, recommendations have been offered to improve the communication of the economic impacts of transportation investments.

Findings indicate that transportation stakeholders—primarily policy makers and business executives—have a greater awareness of the strong impact transportation investments have on economic performance than does the public at large. Public understanding, however, varies along several parameters, including regional boundaries and socioeconomic factors, and can be further stratified by level of awareness of, and concern for, economic issues.

Market research conducted under NCHRP Project 2-22 strongly suggests that messages on the economic benefits of transportation investments are not always, in themselves, sufficient to create public support for transportation investments, particularly when competing public priorities are involved. This research also suggests that state and local transportation agencies can benefit from additional insight on public and stakeholder preferences among alternate economic impact messages and from additional guidance on communicating the impacts of transportation investments to their target audiences.

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[1] NCHRP Research Project Statement for NCHRP Project 2-22, FY '97.
[2] ibid.
[3] Apogee Research, Inc. merged with Hagler Bailly, Inc. on December 1, 1997.

Hagler Bailly Services, Inc.
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PART I. COMMUNICATIONS GUIDE

From the outset, the research to be conducted under NCHRP Project 2-22 was to have a unique, "built-in" deliverable presenting the research team's interpretation of the study's findings—the Communications Guide. The Communications Guide also represents the research team's recommendations for appraisal and application of the findings of NCHRP Project 2-22.

INTRODUCTION

Guide Objectives

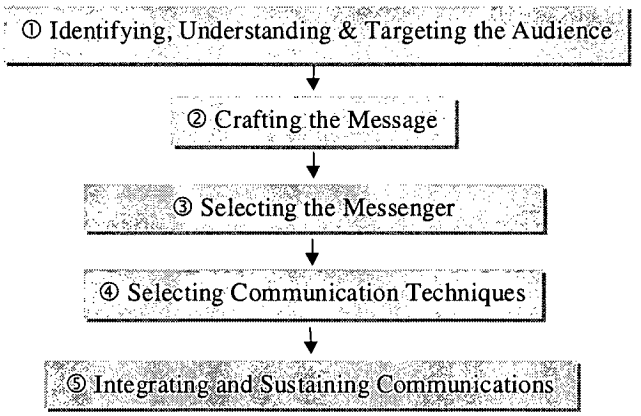
The objective of this Communications Guide (the Guide) is to help state and local transportation agencies more effectively communicate—to decision makers and to the public—the economic benefits of transportation investments. It is designed to be useful to transportation planners and communications professionals across a full range of major activities, from long-range planning and programming to more short-term project activities. A primary aim of the Guide, in fact, is to stress the importance of phasing communications into other agency activities, so that outreach and communications efforts are not add-ons to planning, programming, and project implementation efforts, but integrated components of those activities.

The Guide is intended primarily for transportation planners and communications professionals, but should be useful to transportation policy makers as well. It is critical for the reader to understand that the recommendations and guidance provided herein are suggestive, rather than prescriptive. Although the market research conducted through NCHRP Project 2-22 was far-reaching, it did not lend itself to an all-inclusive list of "do's and don'ts" for planners. Its recommendations are by design broadly applicable to the wide array of transportation investment issues, without being prescriptive.

Communications Process Elements

While there is no simple blueprint for success in communicating the economic impacts of transportation investments, the successful communication of economic impact messages involves a set of five broad elements. Among these elements is a broad but indispensable recommendation—that communications be "phased in" and sustained throughout the development and implementation of transportation plans, programs, and projects. Figure 1 illustrates these elements.

Figure 1: Key Elements of a Successful Communications Strategy



Guide Organization

The Guide is structured around the Communications Strategy Elements illustrated above. Each ensuing section describes the rationale for each recommended step, and includes illustrative findings from the research conducted under the NCHRP Project 2-22 study, "Needs in Communicating the Economic Impacts of Transportation Investments."

The Guide is "action oriented" in that it provides transportation planners and communications professionals with explicit recommendations for achieving the objective: implementing strategies for more effectively and proactively communicating the economic benefits of transportation investments. Throughout the Guide, the reader will find evidence from the NCHRP Project 2-22 study providing guidance on how to conduct original market research and how to translate research findings into effective strategies for communicating with target audiences the economic impacts of transportation.

The complete results of NCHRP Project 2-22 are presented in Part II, Market Research Results, which follows the Guide. Findings include the following research results:

1. Summary of Economic Linkages
2. Omnibus Survey
3. Executive Interviews
4. Follow-up Survey
5. Focus Groups
6. National Stated Preference Survey
7. Regional Stated Preference Field Tests

ELEMENT 1: IDENTIFYING AND UNDERSTANDING THE AUDIENCE

The first element in successfully communicating economic impact messages is actually comprised of two steps: the identification of the target audience and an assessment of that audience's understanding of relevant issues. The determination of the target audience is a prerequisite to an effective communications program, while information on the degree to which that audience understands and values the links between transportation and the economy will equip transportation planners and communications professionals to make the best choices among alternate messages and communications strategies. Together, these elements are vital to crafting economic impact messages that will resonate with target audiences.

Identify Target Audience

Identification must be based first on program, plan, or project goals. If, for example, an agency's goal is increased state funding for a local or regional priority, the target audience will consist largely of state officials, particularly those legislators who control appropriations. If, on the other hand, the aim is to ensure approval of a long-range Transportation Improvement Plan (TIP), with its attendant public involvement requirements, the target audience will include the general public, as well as interested community and environmental groups. The most appropriate communications strategies for each of these endeavors will vary, and it is important for planners and communications professionals alike to recognize such distinctions at the outset of a communications effort.

Link Program/Project Goals to Appropriate Stakeholders

Transportation agencies cannot effectively communicate economic impact messages without identifying the target audience. The critical path is to link program or project goals to appropriate stakeholders. Only by taking this first step can planners and communications professionals effectively focus resources on the right audience. Table 1 below illustrates how a set of hypothetical programs or projects might be paired with a targeted group of stakeholders (target audience).

Table 1: Target Audience Identification: Examples by Sample Program and Project

Sample Program/Project	Sample Stakeholders
Lane widening	neighborhood groups environmental groups local/area businesses
Development of a metropolitan long-range plan	state and federal policy makers neighborhood groups environmental groups public at large
Construction of an intermodal facility	business leaders neighborhood groups environmental groups

Explore Audience Understanding of Economic Linkages

Another initial step necessary before embarking on an effort to convey economic benefit messages is the exploration of the target audience's level of understanding of the linkages between transportation investments and economic performance. Without such knowledge, transportation planners and those charged with communications will be ill equipped to convey persuasively messages focused on the economic impacts of transportation investments.

Use Market Research to Gauge Audience Awareness

State and local officials need to employ market research tools to assess level of awareness among target audience(s). Appropriate market research tools will vary, so planners and communications professionals should choose research instruments based on target audience characteristics. For instance, if the target audience is the public at large, mailed surveys or public "town" meetings may be the most appropriate method of gaining the necessary feedback.[4] For a more selective target audience—regional business executives, for example—personal, on-site meetings or telephone interviews may be far more effective.

The instruments used by the NCHRP Project 2-22 research team help illustrate the benefits of this approach. To reach business executives and federal and state policy makers, for example, the research team initially planned to employ both executive interviews and focus groups. It proved difficult, however, to attract top executives and elected officials to planned focus groups, even when the sessions were scheduled to be brief (approximately 2 hours). The team thus employed personal telephone interviews with the executives (executive interviews), and used focus groups for a broad mix of policy makers, planners, and representatives from business and community groups. Table 2 illustrates some of the market research tools available to state and local transportation agencies for these purposes.

Table 2: Exploring Audience Understanding: Sample Market Research Instruments

Sample Target Audience	Potential Research Tool
federal policy makers	executive interviews
state/local policy makers	executive interviews focus groups
business executives	executive interviews
public at large	mailed survey follow-up phone survey

The chief benefit of this multifaceted approach is a large, varied body of research findings, which planners can use to broaden their understanding of audience awareness of the links between transportation investments and economic development and productivity. Using a

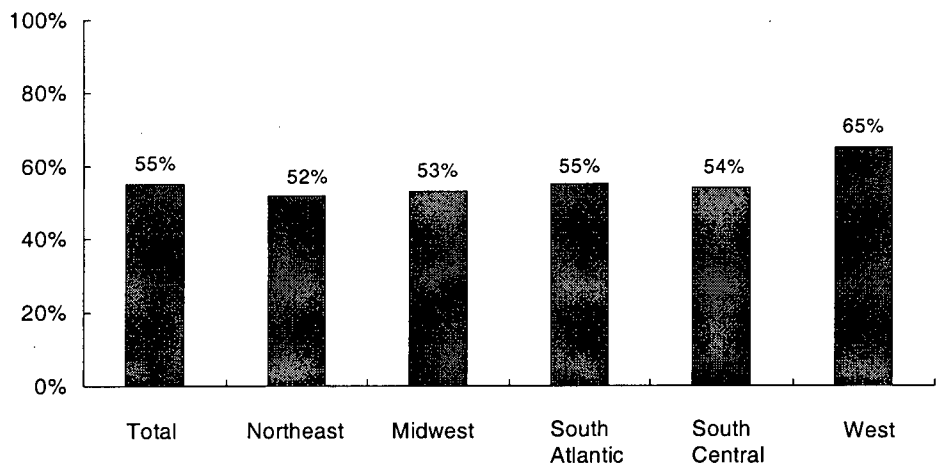
[4] As will be discussed later in the Guide, participants in the focus groups conducted during the NCHRP Project 2-22 study urged caution when using town meetings to explore public perceptions, warning that attendance was often poor.

national survey for example, the NCHRP Project 2-22 research team was able to gauge both public awareness of such linkages and the degree to which the public prioritizes economic impact messages. Some useful study findings are highlighted below; complete findings are included in Part II.

Public Awareness of the Economic Impacts of Transportation

The research team questioned respondents to a national survey[5] regarding their perceptions of the economic impacts of transportation. When asked how much of an impact people believed the condition of roads and their capacity for carrying vehicles have on the economic vitality of their region, a majority reported a belief that roads have a major impact. As shown in Figure 2, the strongest beliefs are held in the West, where two thirds of the population believes roads have a major impact on the economic vitality of their region.

Figure 2: Percent of Respondents Who Agree That Roads Have a Major Impact on the Economic Vitality of a Region, by Geographic Area



The Influence of Economic Benefit Messages

The survey also questioned respondents regarding the effectiveness of economic benefit messages in the context of a possible tax to fund the transportation improvements. These findings go straight to the heart of one of the most important and chronic hurdles facing transportation policy makers—gauging and developing support for investments when the cost is explicit. The findings also suggest an important avenue of market research for policy makers, planners, and communications professionals alike.

Knowledge of increased economic benefits leads about one-quarter of the population to increase their willingness to pay a tax.

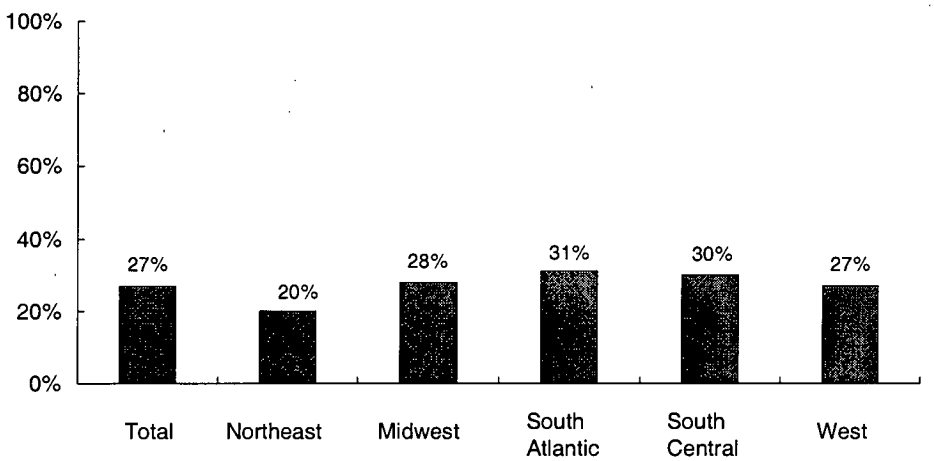
In the survey, an example was given: "If you knew that improving highways can lower a company's product distribution costs, allow them to reduce inventories, and have greater access to skilled labor while paying for itself within 3 years, would your willingness

[5] Respondents for the survey, which was conducted by telephone, were recruited through the annual "Omnibus Survey" conducted by MORPACE International.

to pay a special tax for highway construction increase, decrease, or stay the same?" Our findings: across the country, the knowledge of increased economic benefits to area companies would cause about one quarter of the population to increase their willingness to pay a tax.

Interestingly, residents in the Northeast—the most likely to rate their road system as only fair (one third)—are the least inclined to pay an additional tax (see Figure 3).

Figure 3: With Knowledge of the Economic Benefits of Highway Improvements, Percent Willing to Pay a Highway Tax to Derive Benefits



This form of original market research also allows agencies to segment their target audience(s) by classifying large groups—including the general public—by desired characteristics.

Understanding target audience knowledge and preferences allows transportation officials to more effectively craft and deliver messages on the economic benefits of transportation investments.

Identifying Audience Segments

Developing an understanding of target audience knowledge and preferences will enable state and local transportation planners and communications professionals to more effectively craft and deliver messages on the economic benefits of transportation investments. When the target audience is the public at large in particular, market research aimed at identifying sub-groups, or segments, can help agencies make the most efficient use of communications resources. Such research will also enable officials to tailor distinct messages to alternate segments, enhancing the effectiveness of the overall communications effort.

Market research aimed at identifying audience segments can help agencies make the most efficient use of communications resources. Such research will also enable officials to tailor distinct messages to specific groups, enhancing the effectiveness of the overall communications strategy.

To illustrate the benefits of such an approach, the research team held focus group discussions at the three demonstration sites (Detroit, Michigan; Tampa, Florida; and Seattle, Washington) to seek feedback from stakeholders on the range of communications

issues raised by NCHRP Project 2-22, including potential audience segmentation. Feedback suggested that differences in preferences for both economic benefit messages and messengers may exist based on the economic opinion or perception profiles of respondents, and that these opinions are in turn dependent on the economic climate of various locales. Following the focus groups, to test segmentation of national opinion by "clusters" of economic opinion, the research team conducted national and regional surveys designed to probe respondents' opinions regarding the economy of their region.

Specifically, participants were asked to respond to the following questions, using a 10-point scale (a ranking of 1 representing either a perception of weakness or low priority, a 10 representing perceived strength or high priority).

- How would you rate **the economic vitality** of your region: very weak to very strong?
- How important is it that your area **stays economically competitive** with other areas with which it is compared?
- How important is it that your region be competitive as a hub **for international trade**?
- To what extent is **a lack of good jobs** a problem within your region?
- To what degree is **traffic congestion** a problem within your area?
- How would you rate the **condition of the freeway and road system** within your area?

Using these questions, the research team was able to perform cluster analysis and determine three more or less equal clusters of economic opinion, based on the profiles generated by responses. It is worth noting that alternate questions could well have produced a similar number of clusters, based on different characteristics—preferences among modes of transportation, for example. In other words, market research can be specifically tailored to an agency's goals.

Brief descriptions of the identified clusters, each of which was found to account for approximately one third of national households, are provided below:

- Economic Profile 1: View the economy as strong (a response of 7-10) and place high importance on their region staying economically competitive (a response of 9-10): This cluster was deemed *"Economically Conscious";*

- Economic Profile 2: View the economy as strong (a response of 7-10) but place a low priority on the importance of their region staying economically competitive (response of less than 9): This cluster was deemed *"Economically Indifferent";* and

- Economic Profile 3: View the area economy as relatively weak (response of less than 7): This cluster was deemed *"Economically Affected."*

There was no differentiation among the three profile groups by ratings of traffic congestion or the condition of roads and freeways. Additional findings from the survey are illustrative of the insights that state and local transportation officials can derive from similar efforts.

The Economically Conscious are more likely to reside in suburban or rural areas of the country, rather than in urban cities. They are more likely to think that their region should stay economically competitive as a hub for international trade; however, they are less likely to say a lack of good jobs is a problem for their area.

The *Economically Indifferent* report that their regional economy is strong and that problems with finding good jobs in their area are minimal. They are less likely to place importance on the economic competitiveness of their region or on international trade. They are more likely to be college educated and to be in higher income groups. They reside proportionally within all population density areas.

The *Economically Affected* report that their local economy is relatively weak and that finding good jobs in their area is at least somewhat of a problem. However, they are less likely to place importance on their region being economically competitive with similar regions, or on international trade. This profile group is more likely to reside in rural or urban areas and to be among the lower income levels.

With insight on target audience knowledge and preferences such as the findings highlighted here, state and local transportation planners and communications professionals can more effectively craft and deliver messages on the economic benefits of transportation investments. In Element 2, the Guide will describe how agencies can move from findings of this sort into an exploration of audience preferences among alternate economic impact messages.

ELEMENT 2: CRAFTING THE MESSAGE

The second element in the communications process—crafting or developing appropriate economic impact messages—should flow directly out of the first element—identifying and understanding audience. Differences in level of understanding and concern are critical in shaping a message; targeting specific audience segments and discerning the knowledge and preferences of such segments will allow transportation agency officials to craft the most effective economic impact messages. The first step following Element 1, then, is to further develop the agency's understanding of the target audience.

Explore Target Audience Preferences

As transportation policy makers and planners know, messages about the positive impacts of transportation investments address just one of a broad group of issues prioritized by the public. Similarly, messages about the economic impacts of transportation are just one type of transportation-related message. Audiences will have preferences along each parameter, and it is critical for transportation planners and communications professionals to address such permutations.

For some audiences, messages about the job-creation effects to be derived from an enhanced system of highways may be effective, while, for other audiences, alternate concerns will be more important. These competing priorities might be quality of life issues such as time lost to congestion (though this, too, can be construed as an economic issue), or even nontransportation priorities such as education investments. The most effective strategy for communicating economic impact messages must, therefore, include agency awareness of

when to stress economic impacts and may include blending "pure" economic messages—such as improving productivity, lowering distribution costs, or even creating jobs—with messages on other issues, such as reducing personal travel costs or enhancing safety.

To develop the most effective message, agency officials must take into account the target audience and its preferences, which will in most cases require an effort to broaden their understanding of the target audience. The greater the understanding of audience preferences, the easier it will be for agency officials to match audience preferences with available messages. To this end, transportation agencies should expand on the market research activities initiated in Element 1 and explore audience preferences with more detailed inquiries. Again, depending on the characteristics of the target audience, planners and communications professionals should employ instruments such as mail or telephone surveys, targeted interviews, or focus groups to identify audience priorities. It is important to recognize that the nature of questions asked will determine the agency's ability to segment the audience, so planners should take care in the development of their research instrument(s). The sample market research instruments included in Appendix C should assist transportation planners and communications professionals with this development.

To account for target audience preferences, officials must broaden the agency's understanding of the target audience. Greater understanding of audience preferences will allow agency officials to match audiences' preferences with the available messages for more effective communications.

Appendix C includes survey questionnaires that can be used for large or small sample studies, but also instruments for market research that can be conducted on a more manageable level. The Moderator's Guide and Executive Interview Protocol should each be instructive for such purposes.

As alluded to above, agency officials should explore target audience message preferences along two major paths: (1) among a broad range of potential messages, including non-economic priorities and (2) among various economic messages. The first questions should be designed to assess whether target audience groups are more receptive to economic impact messages or to environmental, safety, or other non-economic messages. Subsequent questions should be geared toward trade-offs among alternate economic impact messages.

Use Surveys to Assess Preferences of Large Groups; Use Interviews or Focus Groups for Select Audiences

The identification of audience preferences and relevant audience segments requires market research of some form, but the method chosen will vary. Research techniques should themselves be tailored to the audience being addressed. The NCHRP Project 2-22 research team, for example, used mail and telephone surveys to gather information on public awareness and attitudes regarding transportation and the economy, and personal interviews and focus groups for policy makers, business executives, and other organized stakeholders.

Explore Public Attitudes

Using a follow-up survey conducted by the phone with respondents recruited through a national survey, the NCHRP Project 2-22 research team queried respondents regarding how

they prioritized alternate public investments and alternate economic messages. Findings from the trade-off analysis allowed the research team to draw several important conclusions:

- First, rural and suburban areas rate highways as more valuable to an area's economy than do urban areas.
- Second, highways and job-training programs appear closely aligned for all groups, indicating that the values placed on such programs by the public are interchangeable.
- Third, improved transit systems appear most important to urban residents, and only moderately important to suburban economies.

Additional questions asked respondents to report preferences among alternate economic impacts associated with transportation investments. Several conclusions with implications for communicating the economic impacts of transportation investments were drawn from this trade-off analysis:

- Traffic congestion plays an important role in garnering urban and suburban support for transportation investments;
- At the national level, people are concerned about bringing new businesses to their area;
- The relative competitiveness of a region is a top concern to urban dwellers, but of less concern to suburban communities than reducing congestion;
- Retaining area businesses is more important to rural residents than it is for urban or suburban residents; and
- Across population density levels, tourism was not reported as an important reason to invest in transportation.

Identify Segment Characteristics

The appeal of alternate economic messages should also be tested across the specific audience segments identified by state and local transportation officials through original market research. The "clusters" identified by the NCHRP Project 2-22 research team and referenced above provide an illustration.

Once the audience segments were identified, for example, differences in preferences among economic benefit messages were explored among the profiled groups through a separate mail survey. The following highlighted results are based on the percent of each profile group granting full support (9 to 10 on a 10-point scale) for a transportation investment, where a modest tax increase is required. The effects of each particular improvement message are considered separately in Table 3. Results are sorted by rankings among the *Economically Conscious* cluster.

Table 3: Percent of Identified Clusters Reporting Full Support for a Transportation Project by Alternate Economic Impact Messages

MESSAGES	ECONOMICALLY CONSCIOUS % Support	Rank	ECONOMICALLY INDIFFERENT % Support	Rank	ECONOMICALLY AFFECTED % Support	Rank
Reduce Traffic Accidents	74%	1	40%	1	55%	1
Create New Jobs	*70%*	*1*	*20%*	*2*	*52%*	*1*
Retain Jobs	*67%*	*1*	*17%*	*2*	*47%*	*2*
Reduce Personal Costs of Travel	*66%*	*1*	*23%*	*2*	*46%*	*2*
Improve Traffic Congestion	*64%*	*2*	*32%*	*1*	*47%*	*2*
Improve Air Quality	*64%*	*2*	*35%*	*1*	*53%*	*1*
Reduce Costs of Doing Business	*63%*	*2*	*16%*	*2*	*37%*	*3*
Improve Driving Experience	61%	2	21%	2	42%	2
Increase Tax Revenues	*61%*	*2*	*13%*	*3*	*34%*	*3*
Competitive with Other Regions	*60%*	*2*	*16%*	*2*	*34%*	*3*
Improve Image of Region	48%	3	13%	3	35%	3
Improve Physical Appearance	*46%*	*3*	*17%*	*2*	*36%*	*3*
W/O Economic Benefit	*33%*	*4*	*11%*	*3*	*17%*	*4*

Note: Italicized improvements indicate a difference in rank for at least one economic profile group.

Survey results offer useful insight into the priorities of the identified audience segments, providing state and local transportation planners and communications professionals with a basis for selecting among available messages. For example:

- The *Economically Conscious* are positively influenced by all improvement messages, particularly by the quality of life improvement of "Reducing Traffic Accidents," and the economic benefit messages of "Creating Jobs," "Retaining Jobs," and "Reducing the Personal Costs of Travel." Among this profile, all improvement arguments raise full support levels for a transportation investment above the 50 percent level, except the indirect economic benefit messages of "Improving the Image of the Region" and "Improving the Physical Appearance of the Region."

- No benefit message draws even 50 percent support from the *Economically Indifferent.* In fact, "Improving the Image of the Region" and "Increasing Tax Revenues" have no statistically significant impact on this group's low support for transportation projects. Only the quality of life improvements of "Reducing Traffic Accidents," "Improving Air Quality," and "Improving Traffic Congestion" have even a moderate impact on this group's support. This profile group is in effect, completely immune to economic benefit messages.

- At least 50 percent of *Economically Affected* respondents are influenced to the full support level by the two quality of life improvements "Reducing Traffic Accidents" and "Improving Air Quality," and the economic benefit message of "Creating New Jobs." In

addition, nearly 50 percent report full support upon presentation of the additional quality of life message "Improving Traffic Congestion," and the two economic benefit messages, "Reducing Personal Costs of Travel" and "Retaining Jobs."

Build on Messages that Resonate Most with Target Audience

The market research conducted under the previous steps should allow state and local transportation planners and communications professionals to identify the messages most likely to resonate with their target audience. Crafting the message on this basis will help ensure a more successful communications program.

Recognize That Economic Messages Will Not Always Prevail

Research conducted for this study found that among messages focused generally on the positive impacts of transportation, purely economic messages are generally no more powerful than messages about improved safety, environmental quality, or reduced personal travel costs/time (which is one form of an economic impact). Among alternate economic messages, the public prefers to know the specific costs and benefits of a project to their area, and their locality's relative share of those costs and benefits.

Emphasizing the Right Messages: "It's About Time" in Seattle

In this campaign to build public support for public funding to support an enhanced regional transit system, economic impact messages were blended with messages about quality of life issues (chiefly, alleviating congestion to reduce commuting times) because planners knew the public prioritized congestion and safety concerns as highly as purely economic issues. Local transportation agencies knew from previous market research which economic messages would be most pivotal: not attracting new businesses or jobs, but strengthening the position of the area versus other regions and metropolitan areas; i.e., enhancing the competitive position of existing businesses. Funding was approved.

Although anecdotal evidence suggests cost of the "do nothing" alternative is important, respondents in our national survey referred to information on:

- Specific costs and benefits by area within the region;
- Relative costs of the program/project (in context of overall transportation spending); and
- General costs and benefits.

Determine the Influence of Various Economic Benefit Messages

As noted earlier, research into the level of public awareness of the links between transportation investments and the economy will help state and local transportation officials develop better communications programs. Agencies also need to explore the impact of alternate economic messages, however; just as economic messages will not always carry the most influence, certain economic messages will resonate more fully with some audiences than others. To demonstrate the benefits of research on public reaction to alternate economic impact messages, the NCHRP Project 2-22 research team conducted national and regional "stated preference" surveys to discern public preferences among alternate messages.

In field tests conducted in three selected regional sites—Detroit, Michigan; Tampa, Florida; and Seattle, Washington—respondents were asked about their level of support for a hypothetical transportation project, with and without costs. Subsequent to those responses, participants were asked about their level of support for the same project, but with the added information that a given improvement would result from the project. These improvements, or alternate benefit messages, included the following:

- Improving traffic congestion/reducing travel time;
- Improving the quality of the driving experience (smoother roads, improved access);
- Reducing the number of traffic accidents;
- Creating new jobs;
- Increasing tax revenues by bringing in new businesses;
- Retaining jobs and tax revenues through retaining businesses;
- Making your metropolitan region more economically competitive with other regions;
- Improving the physical appearance of the region;
- Reducing business costs in the region (improved productivity, lower travel-related costs);
- Improving the image of the region;
- Conserving fuel and improving air quality; and
- Reducing the personal costs of traveling within the region.

Giving the public specific benefit information about improvements generally increases support for a transportation project. Which benefit messages work best, however, varies by program or project, and by metropolitan region.

The rationale for the three sites was to provide agency officials with findings from a diverse and representative set of metropolitan areas. Detroit was chosen because of its recent history of increasing congestion and political emphasis on improving deteriorating roads. Tampa was chosen based on its rapid population growth, its spread-out metropolitan character, and its emphasis on highways or lack of reliance on transit. Seattle was chosen because of its relative emphasis on transit and recent success with funding a major regional transportation investment.

Although support levels varied considerably by type of improvement, overall support for the project did change significantly in the Detroit and Tampa areas with the introduction of each improvement. In other words, introducing any improvement in these regions was enough to make support for the project increase significantly as shown in Table 4. Findings are presented only for transportation project scenarios where a modest tax increase is required, since this is the most likely scenario.

Table 4: Inclination to Change Support for Project Based on Various Accompanying Improvements, by Region

IMPROVEMENT INTRODUCED	Detroit	Tampa	Seattle
Reducing traffic accidents	47%	53%	51%
Conserving fuel and improving air quality	45%	49%	52%
Improved traffic congestion	45%	47%	58%*
Creating new jobs	45%	43%	38%
Reducing your personal traveling costs	40%	42%	40%
Retaining businesses	37%	36%	32%
Improve the quality of driving experience	39%	39%	43%
Reducing the cost of business	30%	34%	32%
Metro. region more economically competitive	35%	32%	31%
Bringing in new businesses	32%	30%	25%*
Improving the physical appearance	34%	30%	27%*
Improving the image of the region	36%	34%	23%*
Without improvement	21%	20%	29%*

Denotes Improvements that have the greatest impact on full support for transportation projects within each MSA.

* Denotes statistically significant MSA differences in full support at the 95-percent confidence level

The survey found that messages about creating jobs are as likely to produce full support for transportation projects in Detroit as are messages about reducing accidents, improving air quality, and improving traffic congestion—the three benefit messages with the most positive impact on support in Tampa. In Seattle, improving traffic congestion leads all other messages in its positive impact on full support for a transportation investment.

Among messages focused specifically on the impacts of transportation investments, economic benefit messages are not always more popular than non-economic impact messages such as safety or environmental concerns.

One of the chief benefits of the market research techniques described above and employed by the research team during the NCHRP Project 2-22 study is that the techniques allow transportation planners to segment audience groups. Categorizing the public, for example, into groups more or less concerned about regional competitiveness, and more or less convinced of the strength of the regional economy, helps transportation officials understand the potential reach and power of available economic impact messages. This sort of information will help planners create messages tailored to the various segments.

ELEMENT 3: DESIGNATING THE MESSENGER

Under many circumstances, state and local transportation agencies may not employ a specific messenger to deliver economic impact messages since the chosen communications technique may not require one. An educational campaign to support a set of transportation infrastructure investments, for example, might consist only of billboards and shopping mall displays, obviating the need for a personified messenger. Nevertheless, there will be numerous situations in which state and local transportation officials will find it necessary and/or advantageous to involve specific individuals in the dissemination of economic impact

messages. In such circumstances, it is important for officials to designate a credible messenger suitable for the message being delivered.

Rather than default to a predetermined messenger, agencies must make individual determinations of the most credible messenger. Local transportation officials and transportation officials are among the most well respected messengers; local and state elected officials, on the other hand, are not the most credible messengers for most audiences.

Tailor Messenger to Program or Project Goals

State and local transportation agencies historically have relied too often on standard messengers in their communications efforts. Increasingly, to effectively communicate the economic impacts of transportation investments, officials should avoid defaulting to a single method of delivering messages. Program or project goals should play a role in the determination of the messenger, as should the target audience. Planners and communications professionals should carefully consider these factors, as well as constraints such as available resources, before designating a messenger. A project whose outcomes affect one neighborhood in particular, for example, probably calls for an area resident to bring credibility to an economic benefit message. On the other hand, a long-term initiative or far-reaching plan may be most persuasively presented by an official with the local or state transportation agency.

Account for Public Views on Credibility of Alternate Messengers

Research conducted for NCHRP Project 2-22 suggests that the public does not view all messengers as equally credible. Economic impact messages in particular may be most effectively communicated by members of the business community, rather than elected officials or transportation planners themselves. Consequently, state and local transportation officials should incorporate into their market research efforts an exploration of audience preferences among potential messengers. Findings from such inquiries will enable planners and communications professionals to designate the most effective messenger(s).

Local Transportation Officials may be Preferable to Elected Officials

Findings from the national stated preference survey employed by the NCHRP Project 2-22 research team provide interesting insight into public perceptions about alternate presenters of economic impact messages. Among the surprising results, local transportation officials are viewed as more credible than are most potential messengers, outranked only by local businesspersons. Some of the key findings are summarized below, while a complete report of findings is included in Part II.

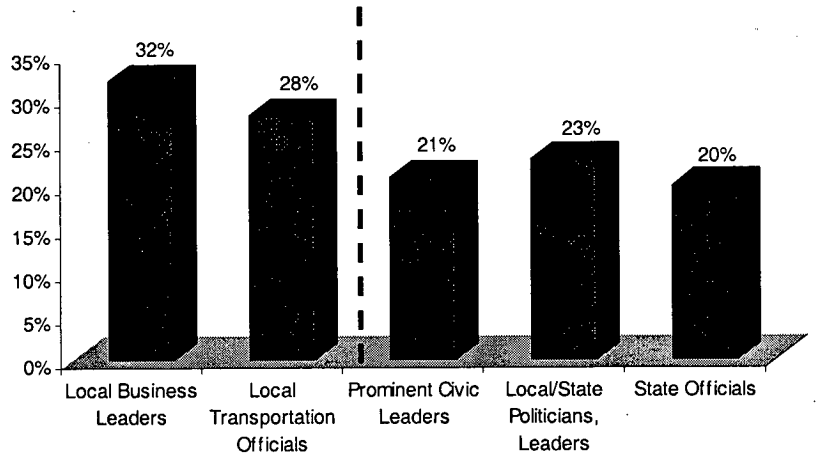
For the general public, local business leaders are the most credible messengers. Most are more likely to increase their support for a transportation investment project if they hear messages delivered by a messenger from this group.

Local business leaders are the messengers from whom the majority of national respondents say they prefer to hear economic benefit messages. Over 63 percent of respondents rated local business leaders either 7 or above (on a 10-point scale) for how likely their support for a proposed transportation project was to increase upon hearing a message delivered from this group. The second most persuasive messenger group is local transportation officials. About one half of respondents

say their support would increase if messages came from these officials. Local- and state-elected officials and civic leaders were less popular.

Figure 4 illustrates relative preference among alternate messengers reported by the national sample.

Figure 4: Percent of Respondents Very Likely to Increase Their Support for a Transportation Project upon Hearing an Economic Message from . . .
[Percentage of Respondents Who Rated 9 or 10 (on a 10-Point Scale)]

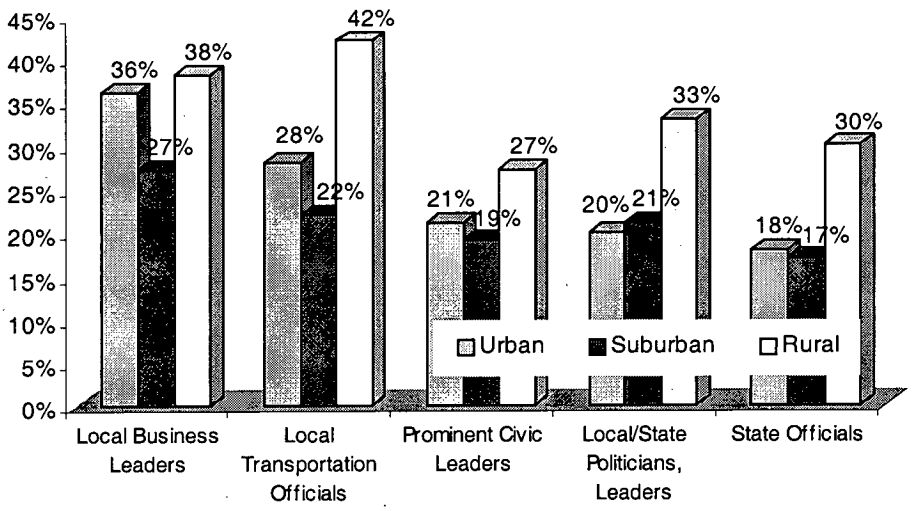


Note: Dashed lines represent significant differences between messengers' effectiveness.

These preferences, however, varied among population density levels. Rural respondents were much more positive about all the messengers tested than were suburban or urban audiences. Rural respondents expressed a preference for messages being delivered by local transportation officials; urban audiences expressed a preference for local business leaders; and suburban audiences did not express a clear messenger preference. Figure 5 illustrates this finding.

NCHRP Project 2-22 research also found that cooperation with affected or interested groups can add to the influence of a message. That is, when transportation-planning agencies cooperate with other stakeholder organizations, the public is more likely to view with favor messages about the positive impacts of transportation.

Figure 5: Percent of Respondents Very Likely to Increase Their Support upon Hearing an Economic Message from . . ., by Density
[Percentage of Respondents Who Rated 9 or 10 (on a 10-Point Scale)]



Knowing that the government is working closely with neighborhood or community and environmental groups, for example, is likely to lead to public support for a project—significantly more so than knowledge of government cooperation with other groups. Approximately 40 percent of respondents say they are more likely to support a transportation project if they know that the government is working in conjunction with neighborhood/community groups and environmental groups. Only 15 percent of the public make that claim for the anti-growth groups. It is interesting to note that nationally, government cooperation with neighborhood and environmental groups is as likely to increase public support for a transportation investment project as hearing about the economic benefits from business leaders.

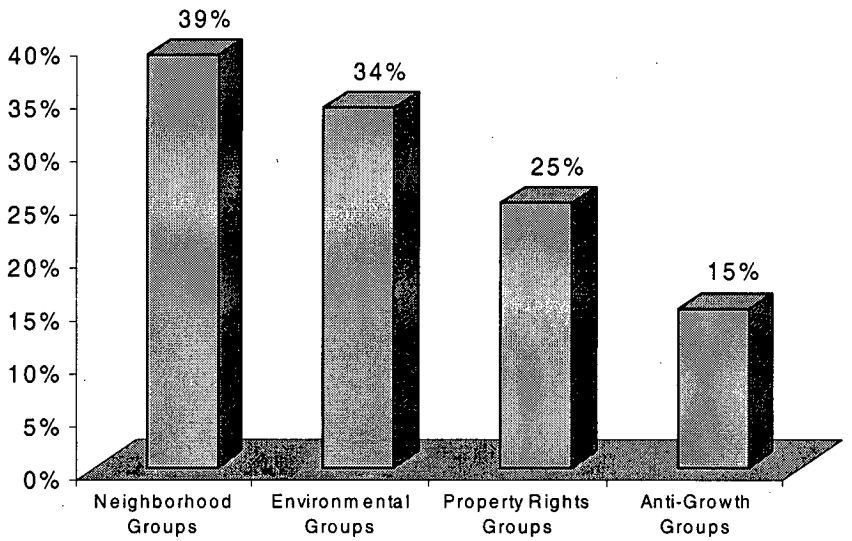
Knowing the government is working closely with neighborhood, community or environmental groups is likely to cause the public to support a project more than if no such cooperation occurs.

Four types of activist groups were presented to respondents along with the question, "How likely is your support for the proposed project to increase if you know that the government has actively negotiated agreements with..." The groups included the following:

- Neighborhood and community groups,
- Environmental groups,
- Anti-growth groups, and
- Property rights groups.

Respondents were asked to rate the likelihood (from 1 to 10) that their support level would increase based on knowledge of government cooperation with each of these groups. Figure 6 illustrates these results.

Figure 6: Percent of Respondents Likely to Support a Project, Given the Alliance of Government and Activist Groups
Percent of Respondents Choosing 9 or 10 (on a 10-Point Scale)



Some significant differences were found within demographic subgroups by age and income level:

- Older respondents are significantly less likely to support the project knowing the government is working with neighborhood and community groups;
- Respondents below age 30 are most interested in hearing about the government working together within the neighborhoods; and
- Households making under $25,000 per year are significantly more likely to support a project knowing the government is working with the neighborhoods than are households making over $50,000 per year.

Insight of this sort can help agencies prioritize strategies and activities relevant to a communications effort. Depending on program or project goals, that is, agencies should strive to ascertain such variation in audience segments and designate messengers more likely to be viewed as credible.

ELEMENT 4: SELECTING COMMUNICATIONS TECHNIQUES

No single set of communications techniques can be confirmed as the most appropriate or effective across the myriad circumstances and situations with which transportation agencies are faced. Moreover, it is not the purpose of the Guide to provide a comprehensive accounting of all available communications techniques. As stressed throughout the Guide, however, market research can provide important insights into likely audience responses to alternate strategies. The same is true of the various communications techniques available to state and local agencies. During the research conducted for NCHRP Project 2-22, for instance, the research team was able to explore the value of a variety of techniques

(primarily through the executive interviews and focus groups). Our chief findings are two-fold:

- Some traditional approaches have limited value (e.g., town meetings) and should be employed selectively and
- Emerging technology (e.g., World Wide Web home pages) can be very effective.

Appropriate Technique Depends on Audience

Identification of Communication Strategies

Feedback from the interviewed stakeholders and focus group participants on specific methods for communicating with the public and stakeholder groups was clear—techniques and strategies must be developed in case-specific fashion. Feedback was received, however, on a range of specific techniques:

- **Public meetings** should be used with caution. They can be helpful, but may not be the most effective mechanism for communicating with the general public, as they often produce low attendance.

- **Talk radio** bears increasing consideration—it is a very powerful medium when used effectively. A cautionary note was raised, however, that experts be engaged to communicate using this medium, as untrained communicators using talk radio have the potential to undermine a message.

- **Conferences** for planners and certain target audiences can be effective, but only for specialized audiences; they are most effective in communicating among governmental groups rather than with the public or business community.

- **Round table discussions** can be effective when invitations are extended to specific individuals. Again, this technique works best with the business community, though it is important to avoid generic invitations.

- **One-on-one meetings** with pivotal people are useful, particularly when the target audience is a policy maker or business figure. Such meetings can be crucial to gathering consensus from large business stakeholders.

- **Shopping mall displays** are a low-cost and often effective option for communicating with the public. Such displays should be used for disseminating information, rather than gathering feedback.

- **Door-to-door canvassing** allows planners and project managers to bring a message to people directly. This direct approach, though time consuming, can demonstrate a pro-active, community-oriented attitude.

- **Focus group type meetings**, where several neighbors come to one household and discuss a topic, can be very effective in garnering public feedback on a program or project.

- **Cable television,** including local-access cable, has perhaps the greatest reach of any available communications technique. Many focus group participants reported that they would receive comments when they appeared on the local access station and that the public expressed the view that cable TV allowed them to more actively participate in local government.

- **Traditional marketing and advertisements** can be useful, but planners must be sensitive to the potential public perception that a public agency may be seen as spending (or wasting) public funds on advertising. A stakeholder in Tampa, though, told of how she took all the money used for public meetings and transferred it into marketing and was able to advertise her programs sufficiently to draw significant community support.

Taking Economic Impact Messages to the Public: Maryland Department of Transportation Statewide Transportation Tours

The Maryland Department of Transportation (MDOT) makes an ongoing effort to educate the public about the economic impacts of transportation investments by delivering regular presentations to public officials and community members. A primary component of its educational outreach is the annual "Consolidated Transportation Tour." Each year, MDOT representatives visit every county in Maryland and educate audiences of elected officials and county citizens about ongoing and planned transportation projects in their region. They outline the transportation funding process, explain the rationale behind recent transportation decisions, and talk about how those decisions will benefit the area.

MDOT does not limit its outreach to specific projects and plans; it also shares broader goals with the public. Every three years, as the department rewrites its Transportation Plan (a comprehensive vision for transportation throughout the state) it organizes forums in which ideas about transportation goals can be shared.

As a supplement to its transportation tours, MDOT has published a booklet titled "Bridging Maryland Mobility and Commerce." The document explains how the facilities and services owned and operated by the Department contribute to the State's economy, directly and indirectly affecting industrial development, jobs, taxes, and productivity. It also outlines the project planning and funding process, describes the organization of MDOT, and explains the evaluation process for project proposals.

Consider Message and Messenger Characteristics

In addition to considering the target audience, state and local transportation agency officials should consider the nature of the economic impact message and the messenger before settling on a communications technique. Failure to do so can result in a message going unheeded and an otherwise well planned communications effort falling short of its goals.

Base Selection on Market Research Findings and Specific Goals

Communications techniques for all situations and circumstances cannot be prescribed, as noted above, but insight into the techniques likely to be most effective can be gathered through original market research. Such market research to support the selection of communications techniques can be addressed through both qualitative and quantitative means. The NCHRP Project 2-22 research team pursued this sort of two-pronged approach: qualitative evidence on the most effective methods of communicating economic impacts was gathered from policy makers

and major transportation business stakeholders through the executive interviews and focus groups, while quantitative evidence on public preferences was gathered through the national and regional stated preference surveys. Both the executive interviews and focus groups allowed for discussion of specific communications strategies, while the national and regional stated preference surveys were focused on identification of public preferences among alternate messages and messengers.

The Potential Costs of Uncoordinated Messenger/Technique Designation: Chicago Transit Authority Study

In 1994, Chicago's Regional Transportation Authority (RTA) hired a private consulting firm to analyze the economic impacts of the RTA system on the regional and state economies. The firm prepared a model that compared the benefits and costs associated with various levels of future investment in RTA, including baseline, disinvestment, "state of good repair," and system expansion scenarios. The study clearly indicated that the return on investment for both investment scenarios was positive and that disinvestment in the system would prove economically detrimental to the region and the state.

RTA officials expected that the report would be used to demonstrate the positive effects of transit to elected officials in Springfield. The study, however, was never even introduced to its audience. The conservative RTA board was not a particularly strong advocate of transit spending and did not push the agency to share its findings with public figures or the public.

Organizations outside of the RTA also had interest in taking the proposal to Springfield. PACE, the company that provides public transportation inside Chicago's suburbs, for example, would have benefited by an increase in transit funding. Unfortunately, a lack of communication among agencies coupled with the lack of motivation from the RTA board resulted in inertia. The RTA does hope to use the study sometime in the future.

Transportation planning agencies thus need to consider a combination of factors when selecting a communications technique or techniques. This consideration, moreover, should be both cumulative and coordinated with the other elements of the communications process, rather than an unconnected step.

Link and Coordinate Communications Process Elements

The market research instruments and communications elements discussed so far cannot be viewed as distinct from each other. State and local transportation officials should treat the elements of a communications strategy as interrelated, and should work to draw guidance from each successive step. Approaching the elements in a coordinated fashion is the surest way to develop more effective strategies for communicating the economic impacts of transportation investments. The matrix on the following page (Table 5) provides an illustration of one way planners and communications professionals can draw such linkages among the elements. By following the order of steps across the matrix, depending on the target audience, planners and communicators can organize the elements of a potential strategy for communicating the economic impacts of transportation investments.

Table 5: Matrix of Major Communications Process Elements and Considerations, by Major Audience Groups

	1: Identify and Understand Audience	2: Craft Message	3: Designate Messenger	4: Select Communications Technique(s)
Policy makers	Federal or state? Authorizers or appropriators? Recognize that officials will have solid base of understanding of linkages between transportation investments and the economy, but at a broad level.	Emphasize specific economic impacts, as employment creation and economic development messages resonate with most elected officials. Messages should emphasize local/regional impacts if possible.	Credibility of local/state officials should be sufficient; content is more important to this audience. Business representatives can be effective emissaries.	Select with sensitivity to short attention span of audience and need for hard-hitting, quantitative information. Personal meetings can be effective, as can evidence of public support, such as phone calls and letters.
Businesses	Most likely to understand economic impacts of trans. investments. Identify most interested and most directly affected parties.	Most influential messages will emphasize access to labor, lower distribution costs, and improved productivity.	Enlist business executives as emissaries, if possible. Like policy makers, these audiences are most concerned with content and specific impacts of interest to them.	Business organizations (e.g., chambers of commerce) offer existing channels of communication for both feedback and outreach.
Public	Identify differences in awareness of economic linkages and preferences among alternate benefit messages (economic and other). Quantitative market research is most important here.	Most influential messages will vary by demographics; emphasize those likely to resonate (e.g., job creation in rural and depressed areas; job retention and regional competitiveness in urban and high-growth areas).	Be sensitive to varying levels of credibility; original market research offers benefit of direct insight. Business representatives may have more credibility than elected officials.	Emerging technologies and creativity deserve emphasis. Traditional alternatives (e.g., town meetings) are not always most effective.
Activist Groups	Recognize that preferences may be for non-economic messages; identify economic messages that relate to group agenda(s)	Economic messages will likely need to be blended with quality of life, environmental or other non-economic messages.	Be sensitive to varying levels of credibility; original market research offers benefit of direct insight.	Meetings on-site with group leaders and members can be effective. Environmental and community group activists are also more likely to use the Internet.

ELEMENT 5: INTEGRATING AND SUSTAINING COMMUNICATIONS STRATEGIES

One of the most important elements of an effective communications strategy is to sustain communications from start-to-finish and maintain ongoing communications throughout the life cycle of plans, programs, and projects. Communications must be a factor throughout program/project planning, design and execution. Moreover, successful communications efforts will include monitoring to ensure achievement of objectives.

Sustaining Communications: Plans, Programs, and Projects

Transportation planners and communications professionals face different time frames for the initiatives they undertake. Long-range *plans* cover time periods ranging from 5 to 20 years, *programs* may cover similarly long periods or may have limited lifetimes, while the timing of *projects* depends on myriad factors and can range from a few months to a few years. Goals for transportation planners—and the specific goals of communications professionals—can vary widely across this range of circumstances. For example, an agency putting together a long-range Transportation Improvement Plan (TIP) will be faced not only with public involvement and environmental requirements, but will also confront the daunting task of building public support for projects that are years from implementation. Likewise, an agency faced with public opposition to a lane addition project about to break ground also must develop public support, but in a far more immediate time frame.

The role of economic impact messages in such different settings necessarily will vary. It is important, therefore, for transportation planners and communications professionals to develop realistic response goals based on an understanding of the audience at hand. The most important consideration for planners in confronting the very different contexts in which they work can be stated simply:

- Communications efforts cannot coincide with just one phase of a plan, program, or project—they must be phased in and sustained throughout the life cycle of any such undertaking.

The role of economic impact messages in different settings varies. Transportation agency officials need to develop realistic response goals, based on an understanding of the audience at hand. Communications efforts cannot coincide with just one phase of a plan, program, or project—they must be phased-in and sustained throughout the life cycle of any such undertaking. When they do not, as with the Chicago RTA example described on p. 21, the impact of a message can be lost. When a message is coordinated and sustained, as with Maryland DOT's annual communications campaign, economic impacts are more likely to resonate with the audience or audiences.

If transportation planners and communications professionals bear these overall goals in mind, they will have greater success crafting and delivering messages on the economic benefits transportation investments, which will in turn assist in the pursuit of the even larger mission before state and local transportation agencies: mobility and sustainable economic growth for society.

PART II. MARKET RESEARCH RESULTS

CHAPTER 1: OVERVIEW OF NCHRP PROJECT 2-22 RESEARCH

Recent research efforts by the National Cooperative Highway Research Program (NCHRP), federal and state agencies, and academic institutions have begun to focus on the national and regional economic impacts of transportation investments. Significant advances have been made in understanding the immediate and longer-term effects of transportation, including the role of transportation investments in stimulating productivity improvements. This work has increased understanding of the linkages between transportation investments and economic performance among countless interested parties. There is less understanding, however, of how transportation agencies should go about communicating the relationships between transportation investments and economic performance to decision makers, business interests, citizen groups, and the public at large.

The lack of understanding about effective communication methods has resulted in processes that stress the negative externalities of transportation (e.g., congestion, air pollution, noise, etc.), more persuasively than the positive economic impacts of transportation investments, from increases in economic productivity, to improved mobility and access to jobs, housing, recreation, goods, and services. Even programs and projects that aim to increase system efficiency without augmenting the physical infrastructure (Intelligent Transportation Systems [ITS], for example) can be caught in an undercurrent of opposition to transportation investments based on concerns regarding such external effects.

The scope of the NCHRP Project 2-22 study entailed not only defining the process for developing more successful programs for the communication of economic messages (see Part I – the Communications Guide), but also providing interpreted market research results that will be generically useful to program developers faced with these challenges. Specifically, the research effort comprised the following phases and tasks:

- **Phase I: Project Design**
  - Task 1: Literature Review on (a) Linkages Between Transportation Investments and the Economy and (b) Recent Advances in Public Sector Communications
  - Task 2: Identify Key Linkages
  - Task 3: Develop a Market Research Design
  - Task 4: Phase I Interim Report
- **Phase II: Market Research and Analysis**
  - Task 5: Conduct Market Research on Awareness of Relationships Between Transportation Investments and Economic Vitality
  - Task 6: Analyze Results of Market Research
  - Task 7: Identify Communication Approaches
  - Task 8: Phase II Interim Report
- **Phase III: Development of the Guide**
  - Task 9: Draft a Communications Guide
  - Task 10: Submit Draft Guide
  - Task 11: Prepare and Submit Final Report

Part II of this final report—Market Research Results—provides detailed description and analysis of work conducted under Phase II of NCHRP Project 2-22.

CHAPTER 2: FINDINGS

The presentation of the market research findings will not presume the reader has read the Phase I and II Interim Reports, but will summarize those findings, rather than present them precisely as they were included in those prior reports. Findings and analyses are presented in order from the most recent to the least recent research steps.

- National Pilot Survey III: "Support for Transportation Investments" (a national pilot for the regional stated preference surveys/field tests);
- Regional Variations in Support for Transportation Investments (the regional field tests);
- National Pilot Survey II: Understanding Economic Impact Issues (a national follow-up to the regional focus group sessions);
- Regional Focus Group Sessions (Detroit, Tampa, and Seattle);
- Targeted Stakeholder Insights (the Executive Interviews);
- National Pilot Survey I: Understanding of Transportation Issues (the Omnibus Survey);

National Pilot Survey III: The Effect of Economic Messages on Support for Transportation Investments

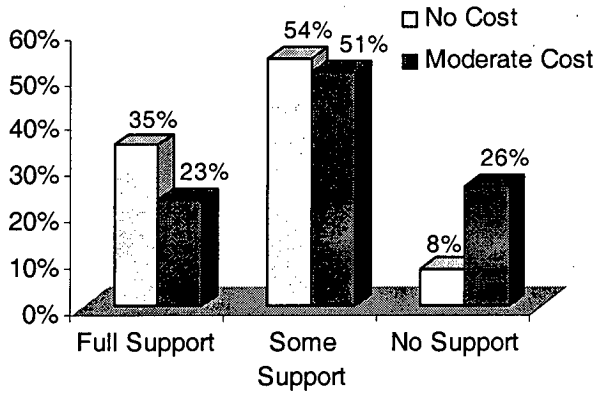
Subsequent to three focus groups (see focus group summary report), the research team conducted a national pilot (or pre-test) of the Research Plan Task 5—Execute the Market Research. The pre-test was a national sample forerunner to market research at the three demonstration metropolitan area sites (Tampa, Detroit, and Seattle). The objective of the pre-test was to better understand differences in preferences in regard to alternative economic benefit messages, messengers, and methods of communication as these relate to transportation investments. The results that follow are from the pre-test survey using a national random sample.

General Support for Transportation Projects

Public support for transportation projects (defined as improvements of one kind or another to existing transportation infrastructure) is generally strong, but weakens when costs are attached and highlighted. This finding, while primarily a confirmation of common wisdom, has an important implication for planners and communicators: a primary goal for advocates of transportation investments must be the explanation – in persuasive terms – of the costs associated with such investments, and the benefits to be derived from the investments. Absent such messages, support for transportation improvements will erode when the costs are communicated; most importantly, the portion of the public lacking any support at all for the investment will grow.

The survey first asked respondents for their general level of support for transportation projects. Specifically, the question was posed, "If a major transportation improvement project was proposed for your region, generally, how likely is it that you would support this project?" The same question was posed again later, but with the added information that a $0.04 per gallon increase in the gas tax would accompany the improvement. When costs were attached, full support declined noticeably, and opposition grew. ("Full support" is defined as a rating of 9 to 10 on a 10-point scale, in terms of willingness to support a transportation investment project; "some support" is a rating of 5 to 7, and "no support" a rating of less than 5.) Figure 7 illustrates this finding.

Figure 7: Support for General Transportation Projects With and Without Costs

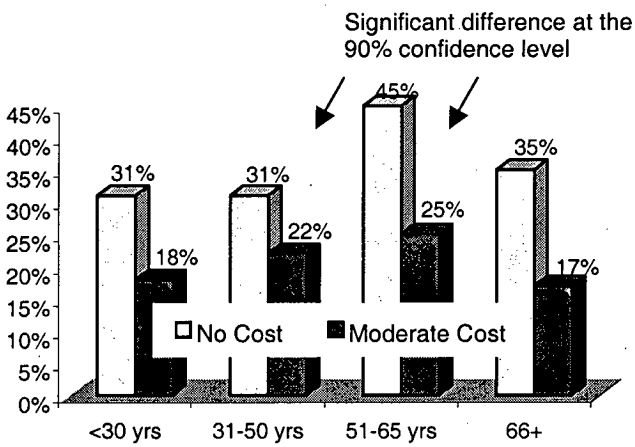


***FINDINGS**: Support for transportation projects clearly drops when costs are attached. An interesting note emerged: although respondents' support declined with a tax, it did not disappear. Only approximately 18% switched to no support. Full support lowered to about the one-quarter level.*

Note: All differences shown above between no cost and moderate cost levels for full support and no support are significant at the 90% confidence level.

As shown in Figure 8, support for the identical but cost differentiated projects (one without cost and one with costs) were also considered by subgroups such as age-differentiated segments.

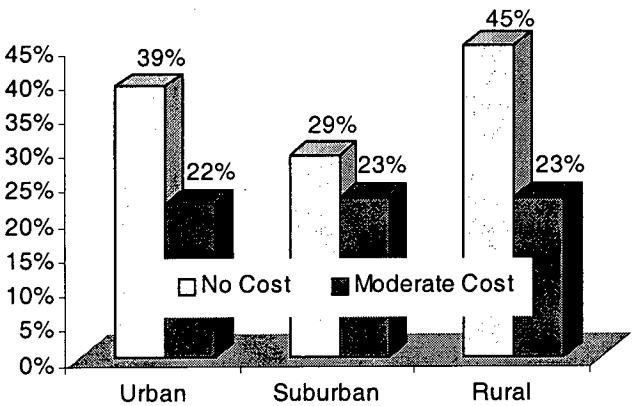
Figure 8: Full Support for General Transportation Projects by Respondent Age, With and Without Cost



***FINDINGS**: Those over 50 years old are most likely to lower their support for a transportation project when costs are attached.*

Overall, there are no significant differences by age groups in support for transportation investments, once costs are attached. Consideration was also given to differences in opinion by geographic densities as shown below in Figure 9.

Figure 9: Full Support for General Transportation Projects by Density, With and Without Cost



Note: Urban and rural differences between no cost and moderate cost are significant at the 95-percent confidence level.

As with the other subgroups, when costs are added to the project, significant declines in full support levels occur, with full support leveling off among all density groups at approximately the one quarter level, once costs are attached.

The Introduction of Economic Benefits

Giving specific benefit information about improvements increases public support for a transportation project. On a national level, those improvements that, when introduced, result in full support levels above 50 percent in the presence of a tax increase are: reduced traffic accidents, improved air quality, improved traffic congestion, and creating new jobs.

A series of potential improvements *(some of which are economic benefits to their region)* were also introduced to respondents. That is, respondents were again asked for their level of support for a transportation project, but this time were also asked to consider the project in light of a series of improvements, individually considered. In other words, respondents were asked for their level of support for the same transportation project but now on the basis of knowing that a certain improvement would result from the project. Improvements included the following:

- Improving traffic congestion, thus reducing travel time;
- Improving the quality of driving experience (smoother roads, improved access);
- Reducing traffic accidents;
- Creating new jobs;
- Increasing tax revenues by bringing in new businesses;
- Retaining jobs and tax revenues by retaining businesses;
- Making the metropolitan region more economically competitive with other regions;
- Improving the physical appearance of the region;
- Reducing the cost of doing business within the region (improve productivity, lower travel related costs);
- Improving the image of the region;
- Conserving fuel and improving air quality; and
- Reducing the personal costs of traveling within the region.

Improvements were introduced one at a time and respondents revised their initial support rating for each one. Although support levels vary considerably by type of improvement, overall support for the project increases significantly with the introduction of each improvement. In other words, introducing any improvement is enough to make support for the project increase significantly.

Table 6: Change in Support for Project With Improvements With and Without Costs

IMPROVEMENT INTRODUCED	NO TAX Full Support	TAX Full Support	Difference
Metro. region more economically competitive	47%	39%	8%
Improving the physical appearance	47%	36%	11%
Improved traffic congestion	63%	51%	12%
Improving the image of the region	48%	35%	13%
Retaining businesses	59%	46%	13%
Reducing the cost of business	54%	41%	13%
Reducing traffic accidents	75%	61%	14%
Reducing your personal traveling costs	62%	48%	14%
Bringing in new businesses	51%	37%	14%
Creating new jobs	65%	50%	15%
Conserving fuel and improving air quality	70%	54%	16%
Improve the quality of driving	63%	46%	17%
Without improvement	35%	23%	12%

▲ Tax Has Little ▼ Tax Has Some ▼ Tax Has The Most Impact ▼

Support for improvements varies according to the population density. In the United States, approximately 50 percent of households are suburban, 30 percent urban, and 20 percent rural. As shown in Table 6, improvements are ranked according to statistical significance. For that reason, several improvements fall into the same rank. Moreover, some improvements have a greater impact on certain population densities than others.

Reducing accidents was the number one benefit message, regardless of density and whether or not a tax accompanied the project. After reducing accidents, improving air quality received the next highest ranking among urban and suburban audiences, although the ranking slips for suburban audiences once a tax is applied. Creating jobs and improving traffic congestion were the only other two improvements that scored consistently among the top two ranks across all audiences, regardless of whether or not a cost was involved. Creating jobs appeared to have a higher impact on urbanites, while improving driving experience was more influential with suburbanites. Lower on the improvement spectrum, retaining jobs had a greater impact on urban and rural respondents than on suburban respondents (see Table 7).

The last scenario shown, W/Out Economic Benefit, is the case where no improvement information was given. Rather, the public was asked for their support level for a transportation project without being told of any improvements. In all six cases, the scenario with no information about the improvements came in last place. Each of the population density groups had an individualized set of improvements that worked best for them. The improvements not only varied by density but also by whether or not a tax is in place. In many cases, a tax associated with the improvement decreased its ranking one and sometimes two places. Although several improvements maintained their ranking in the presence of the tax, no single improvement, except reducing traffic accidents, worked consistently for all densities when a tax was in place.

Table 7: Ranking Changes for Project With and Without Taxes, by Density

	SUBURBAN		URBAN		RURAL	
	NO TAX	TAX	NO TAX	TAX	NO TAX	TAX
Reduce Accidents	1	1	1	1	1	1
Conserve Energy/Improve Air Quality	***1***	***2***	1	1	2	2
Create Jobs	2	2	***2***	***1***	2	2
Improve Traffic Congestion	2	2	2	2	2	2
Improve Driving Experience	2	2	***2***	***3***	***2***	***3***
Reduce Personal Costs of Travel	2	2	***3***	***2***	***3***	***2***
Retain Jobs	3	3	2	2	2	2
Reduce Cost of Doing Business	***4***	***3***	***3***	***2***	2	2
Increase Tax Revenues	4	4	3	3	3	3
Improve Image of Region	4	4	3	3	3	3
Competitive with Other Regions	***4***	***3***	3	3	***4***	***2***
Improve Physical Appearance	***4***	***3***	3	3	***4***	***3***
W/Out Economic Benefit	5	5	***4***	***2***	4	4

Note: Italicized improvements indicate a difference in rank between the no tax and tax scenarios for at least one density level

Cost Information

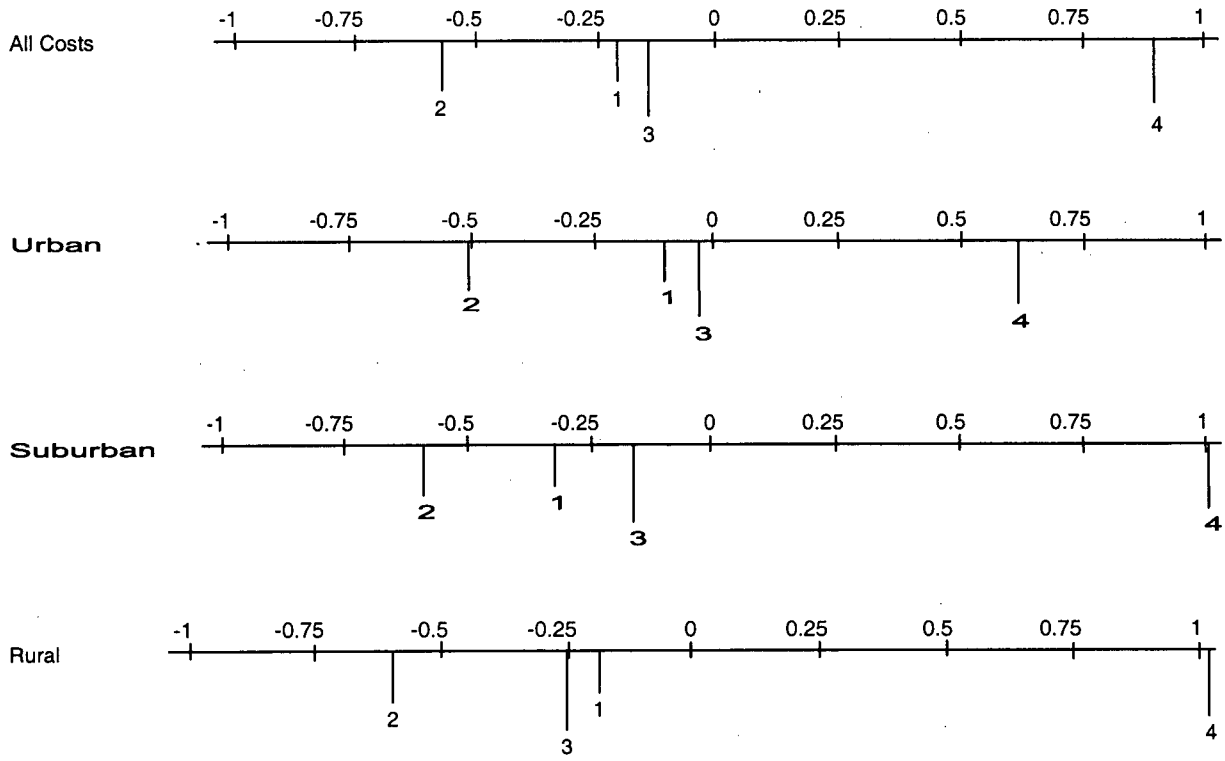
Information on the amount that each region would pay compared with how many benefits they would receive is the most influential cost information. Urban, suburban, and rural respondents all indicated that knowing the amount their region, community, or neighborhood would pay—compared with what that same jurisdiction would receive in benefits—would influence them most when making a decision about supporting a transportation project. The next most influential cost information elements were first, a comparison of project costs to overall transportation costs in the region, and second, overall costs compared to overall benefits. In general, respondents placed these two elements of information at about the same level of importance. Cost information about the "no go" situation where no project is implemented drew the least support from respondents. Very little difference in level of support was observed among the population density groups. Rural audiences, though, were slightly more interested in an overall cost/benefit discussion than a comparison of project cost to all transportation costs.

For this element of the research, four different levels of cost information were presented to respondents:

- Overall information about the costs and benefits of the project,
- Specific information about how much each area within the region will pay for the project and how much benefit each area will get,
- This project's cost as a part of all transportation projects for your region, and
- Specific information about how much each area within the region will pay for the project and how much benefit each area will receive.

Each level of cost information was positioned against each of the others to gauge the priorities of survey participants. Respondents had to rate which of the two was more likely to convince them to support a project. As Figure 10 shows, the way cost information is presented is important to securing higher levels of support for transportation investments.

Figure 10: Trade-Off Analysis of Reasons to Support a Transportation Project[6]



01 – Overall information about the costs and benefits of the project
02 – The costs to the region if the project is not implemented
03 – This project's cost as a part of all transportation projects for the region
04 – Specific information about how much each area within the region will pay for the project and how much benefit each area will get

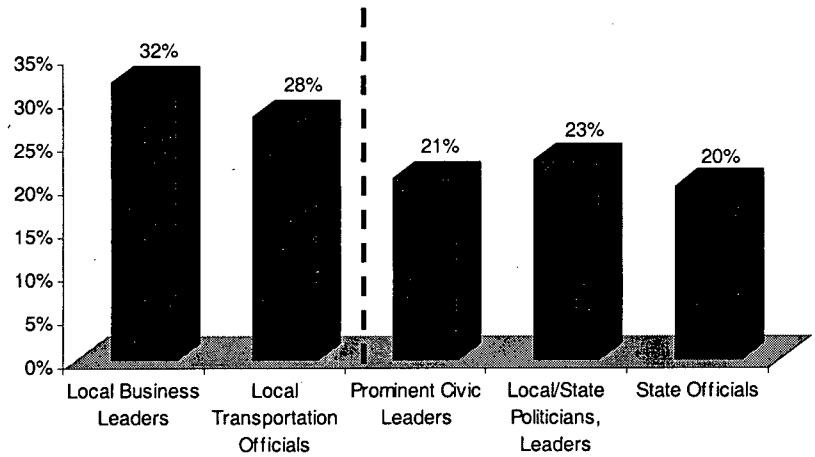
[6] Reading the Scale:
The scaled values are measures of dispersion. If the values vary from 1.5 to -1.5 there is considerable dispersion among (distance between) alternative orderings. Likewise, if the alternative values are close together (clustered) there is little difference in the ordering of alternatives. Each alternative is assigned a number in the legend box. The position of this number on the scale indicates its value for the sample. The scales are read from the negative score (left) to the positive score (right). The score furthest to the left (negative) of the scale is the least important alternative, the score furthest to the right (positive) of the scale is the most important alternative. Thus, preference orderings are provided which show relative positioning.

The Messenger

Local business leaders and local transportation officials are the messengers from whom the majority of national respondents say they prefer to hear economic messages. Over 63 percent of respondents rated local business leaders either 7 or above (on a 10-point scale) for how likely their support for a proposed transportation project would increase hearing a message delivered from this group. The second most persuasive messenger group was local transportation officials. About one half of respondents say their support would increase if messages came from these officials. Local and state officials receive the lowest ratings (7 to 10 on a 10-point scale). Figure 11 illustrates these findings.

Figure 11: People Who Are Very Likely to Increase Their Support upon Hearing an Economic Message from . . .

Percentage of Respondents Who Rated 9 or 10 (on a 10-Point Scale)

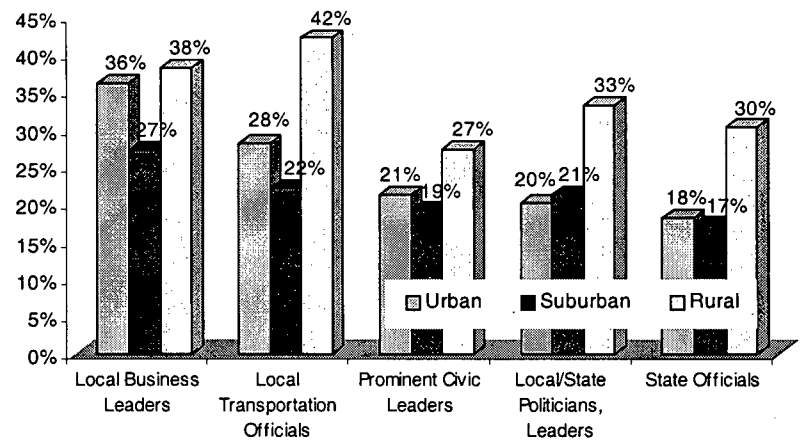


Note: Dashed lines represent significant differences between messengers' effectiveness.

Significant differences between messengers were also noted across population density levels. Figure 12 illustrates these results.

Figure 12: People Who Are Very Likely to Increase Their Support upon Hearing an Economic Message from . . ., by Density

Percentage of Respondents Who Rated 9 or 10 (on a 10-Point Scale)



Overall, rural respondents are much more positive about all the messengers tested than are suburban or urban audiences. Rural respondents, however, expressed a preference for messages being delivered by local transportation officials and local business leaders. Urban audiences express a slight preference for local business leaders as messengers, while suburban audiences did not express a clear messenger preference. Table 8 shows the rankings for each of the density levels by messenger.

Table 8: Rankings of Messengers by Density

	RANKING BY DENSITY		
	Urban	Suburban	Rural
Local Business Leaders	1	1	1
Local Transportation Officials	2	1	1
Prominent Civic Leaders	2	1	2
Local/State Politicians, Leaders	2	1	2
State Officials	2	1	2

Does It Matter with Whom the Government Cooperates?

Knowing the government is working closely with neighborhood/community and environmental groups is significantly more likely to cause the public to support a project. As shown in Exhibit 13, approximately 40 percent of respondents said they were more likely to support a transportation project if they knew that the government was working in conjunction with neighborhood and community groups and environmental groups. Only 15 percent of the public made that claim for "anti-growth" groups.

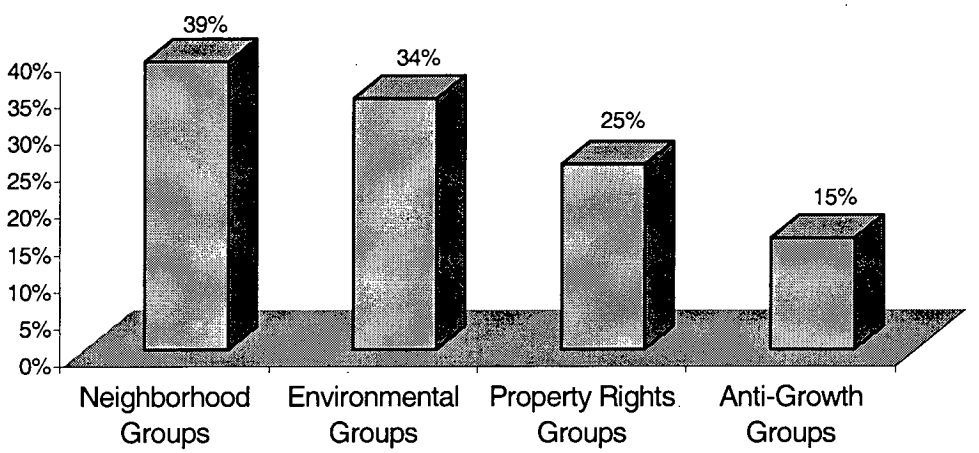
At the national level, government cooperation with neighborhood and environmental groups is as likely to increase public support for a transportation investment project as hearing about the economic benefits from business leaders. These results reinforce one of the dominant themes that emerged from the NCHRP Project 2-22 research: namely, that economic benefit messages can be powerful, but do not always outrank other pubic concerns or priorities. More importantly for practitioners, the message is that planning for transportation investments—and communication of the economic benefits expected from the investment—must be an integrated process.

The survey presented four types of activist groups to respondents along with the question, "How likely is your support for the proposed project to increase if you know that the government has actively negotiated agreements with..." The groups included

- Neighborhood and community groups,
- Environmental groups,
- Anti-growth groups, and
- Property rights groups.

Again, a scale of 1 to 10 was given.

Figure 13: People Who Are Likely to Support Given the Alliance of Government and Activist Groups by Respondents Choosing 9 or 10 (on a 10-Point Scale)



The research strongly suggests that messengers as well as messages should be tailored to the audience, as significant differences in preference for messenger were found among age and income level sub-groups. Older respondents were significantly less likely to support the project knowing that the government was working with neighborhood and community groups. The younger population group, those respondents below 30, was the age group most interested in hearing about the government working together within neighborhoods. Similarly, lower level income groups were much more interested in hearing about the government working with the neighborhood groups than were higher income level participants. Households making under $25,000 per year were significantly more likely to support a project knowing the government was working with the neighborhoods than were households making over $50,000 per year.

Differences by income levels were also observed for the other activist groups. Lower income levels consistently showed significantly more support when presented with each of the activist groups than did the higher income levels. This was not, however, the case with the age groups: no significant differences are found within the age groups for three of the four activist groups. Only the neighborhood/community groups show significant differences by age.

Differences by Economic Opinion Profiles

Focus group discussions at three demonstration sites—Detroit, Tampa, and Seattle—suggested that differences in preferences for both economic benefit messages and messengers may exist based on the economic opinions and/or perceptions of respondents. These opinions and perceptions would in turn be dependent on the economic climate of various locales. To validate this hypothesis, the research team tested segmentation of national opinion by cluster of economic opinion, by including a series of questions about the respondent's area or region. All responses were based on a 10-point scale.

- How would you rate **the economic vitality** of your region: very weak to very strong (Q43)?
- How important is it that your area **stay economically competitive** with other areas with which it is compared (Q44)?
- How important is it that your region be competitive as a hub **for international trade** (Q45)?

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- To what extent is **a lack of good jobs** a problem within your region (Q46)?
- To what degree is **traffic congestion** a problem within your area (Q47)?
- How would you rate the **condition of the freeway and road system** within your area (Q48)?

Using these questions, the research team identified three more or less equal clusters of economic opinion. Each of the following groups was found to account for approximately one third of national households.

- Economic Profile1: *The Economically Conscious*—Economy is strong (7-10 on Q43) and awareness of the importance of their region staying economically competitive is high (9-10 on Q44). *The Economically Conscious* are more likely to reside in suburban or rural areas of the country, rather than in urban cities. They are more likely to think that their region should stay economically competitive as a hub for international trade; however, they are less likely to say a lack of good jobs is a problem for their area.
- Economic Profile 2: *The Economically Indifferent*—Economy is strong (7-10 Q43) while awareness of the Importance of their region staying economically competitive is weak (<9 on Q44). The *Economically Indifferent* reported that their regional economy is strong and that problems with finding good jobs in their area are low. They are less likely to place importance on the economic competitiveness of their region or on international trade. They are more likely to be college educated and to be in higher income groups. They reside, proportionally, within all population density areas.
- Economic Profile 3: *The Economically Affected*—Economy is relatively weak (<7 on Q43). The *Economically Affected* reported that their local economy is relatively weak and that finding good jobs in their area is at least somewhat of a problem. However, they are less likely to place importance on their region being economically competitive with similar regions, or on international trade. This profile group is more likely to reside in rural or urban areas, and to be among the lower income levels.

This phase of the research demonstrates the value of segmenting large audiences by level of understanding and prioritization of economic issues, as preferences among messages and messengers vary significantly across the economic profiles.

Once identified, differences in preferences for economic benefit messages were explored among the three nationally profiled groups. Results suggest that economic messages will be most successful among population subgroups that place a high priority on economic competitiveness and perceive the economy as already strong. It is important, therefore, to identify the level of economic awareness of audiences, as well as the level of transportation awareness. There is no differentiation among the three profile groups by ratings of traffic congestion or the condition of roads and freeways.

The following results are based on the percent of each profile group granting full support (9 to 10 on a 10-point scale) for a transportation investment, when a modest tax increase is required. The effects of each particular improvement message are illustrated separately in Table 9.

Table 9: Changes in Support by Message for Project With Taxes, by Economic Profiles

MESSAGES	ECONOMICALLY CONSCIOUS % Support	Rank	ECONOMICALLY INDIFFERENT % Support	Rank	ECONOMICALLY AFFECTED % Support	Rank
Reduce Traffic Accidents	74%	1	40%	1	55%	1
Create New Jobs	*70%*	*1*	*20%*	*2*	*52%*	*1*
Retain Jobs	*67%*	*1*	*17%*	*2*	*47%*	*2*
Reduce Personal Costs of Travel	*66%*	*1*	*23%*	*2*	*46%*	*2*
Improve Traffic Congestion	*64%*	*2*	*32%*	*1*	*47%*	*2*
Improve Air Quality	*64%*	*2*	*35%*	*1*	*53%*	*1*
Reduce Costs of Doing Business	*63%*	*2*	*16%*	*2*	*37%*	*3*
Improve Driving Experience	61%	2	21%	2	42%	2
Increase Tax Revenues	*61%*	*2*	*13%*	*3*	*34%*	*3*
Competitive with Other Regions	*60%*	*2*	*16%*	*2*	*34%*	*3*
Improve Image of Region	48%	3	13%	3	35%	3
Improve Physical Appearance	*46%*	*3*	*17%*	*2*	*36%*	*3*
W/O Economic Benefit	*33%*	*4*	*11%*	*3*	*17%*	*4*

Note: Italicized improvements indicate a difference in rank for at least one economic profile group.

The *Economically Conscious* were positively influenced by all improvement messages, particularly by the quality of life improvement of reducing traffic accidents and the economic benefit messages of creating jobs, retaining jobs, and reducing the personal costs of travel. Among this profile, all improvement arguments raised full support levels for a transportation investment above the 50-percent level, except the indirect economic benefit messages of improving the image of the region and improving the physical appearance of the region.

The *Economically Indifferent* were not affected to the 50-percent support level, regardless of the message. In fact, improving the image of the region and increasing tax revenues had no statistically significant impact on this group's very low support for transportation projects. Only the quality of life improvements of reducing traffic accidents, improving air quality, and improving traffic congestion had even a moderate impact on this group's support. This profile was technically deaf to economic benefit messages.

The *Economically Affected* were positively influenced to the 50-percent full support level by the two quality of life improvements of reducing traffic accidents and improving air quality, and the economic benefit message of creating jobs. In addition, close to 50-percent support was shown once the additional quality of life improvement of improving traffic congestion was presented, and the two economic benefit messages of reducing personal costs of travel and retaining jobs.

Table 10 shows the combined increase in support among profile segments when either the transportation project is promoted by various types of messengers, or information is provided that the government has negotiated project agreements with the group tested. Increased support levels, with each messenger or group are at the "very likely to increase support" level (9 to 10 on a 10-point scale).

Table 10: Changes in Support by Interest Groups and Messengers for Project With Taxes, by Economic Profiles

INTEREST GROUP OR MESSENGER SUPPORT	ECONOMICALLY CONSCIOUS % Support	Rank	ECONOMICALLY INDIFFERENT % Support	Rank	ECONOMICALLY AFFECTED % Support	Rank
Neighborhood Groups	49%	1	27%	1	37%	1
Local Transportation Officials	*45%*	*1*	*10%*	*2*	*31%*	*1*
Business Leaders	*40%*	*1*	*25%*	*1*	*28%*	*2*
Environmental Groups	*37%*	*2*	*24%*	*1*	*35%*	*1*
Prominent Civic Leaders	*31%*	*2*	*14%*	*2*	*22%*	*2*
Property Rights Groups	*33%*	*2*	*13%*	*2*	*27%*	*2*
State Officials	30%	2	11%	2	19%	3
Local Politicians	*34%*	*2*	*13%*	*2*	*24%*	*2*
Anti-Growth Groups	20%	3	6%	3	11%	4

Note: Italicized improvements indicate a difference in rank for at least one economic profile group.

All three economic profile groups were most positively influenced by the knowledge that government had negotiated agreements with involved neighborhood groups. The *Economically Conscious* were equally influenced by promotion of investments by business leaders and local transportation officials, while the *Economically Indifferent* were equally influenced by negotiated agreements with environmental groups as well as local business leaders. The *Economically Affected* were more likely to be influenced by agreement with environmental groups and promotion by transportation officials.

As the medium for communications, all three economic profile groups preferred direct mail, talk radio, and exhibits at shopping malls. The *Economically Indifferent* are less likely to favor talk radio and more likely to favor directly mailed information.

All three groups reported that involvement of the public in transportation investment decisions is currently only adequate (a rating of only 5 on a 10-point scale), and that involvement of the public typically occurs around the time a project is being finalized. The *Economically Affected* are the least likely to say governments in their area have recently used economic benefit arguments in support of transportation investments; the *Economically Conscious* are most likely to say these arguments have recently been used.

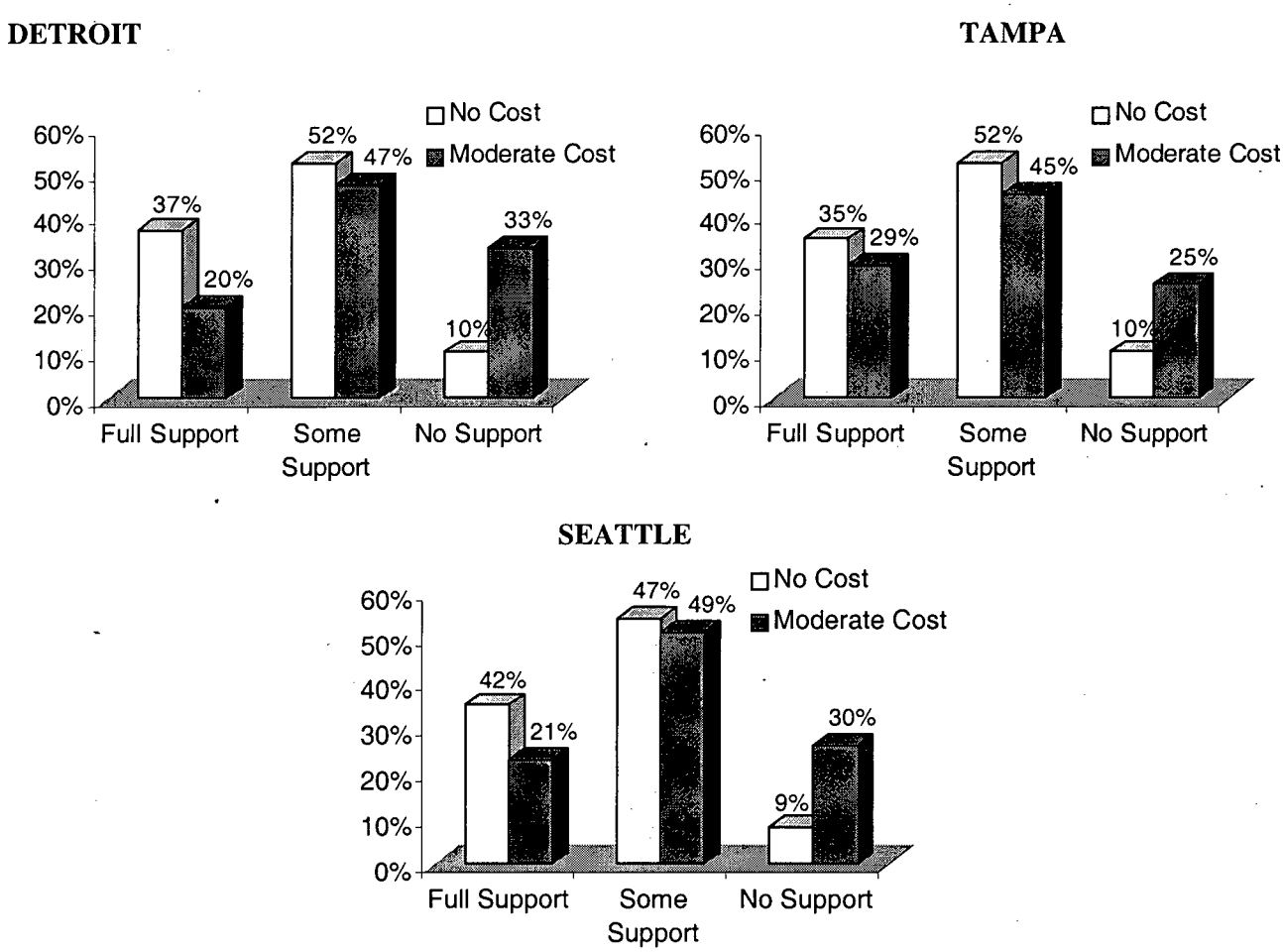
As to the key question of whether economic benefit arguments should be used in support of transportation investments, 66 percent of all (national) respondents said communications about major transportation projects should be based on information about their economic benefit to the region. Strength of response on this issue varied significantly by economic profile, however: 62 percent of the *Economically Indifferent* agreed that economic benefit messages should be used (7 to 10 on a 10-point scale); 57 percent among the *Economically Affected* indicated such a preference; and an overwhelming 81 percent of the *Economically Conscious* indicated that transportation investment messages should focus on economic impacts.

Regional Variations in Support for Transportation Investments

General Support for Transportation Projects

The regional field tests were designed to explore the nature and extent of any variations from national findings by region, as represented by the three demonstration sites: Detroit, Tampa, and Seattle. There was little deviation from national-level findings at the level of general support of transportation investments. As depicted in Figure 14, in Detroit and Tampa, full support for transportation projects clearly dropped when costs were attached. In Seattle, cost did not have as great an impact on the full support segment. Interestingly, although respondents' support declined when presented with a tax, it did not disappear at any of the sites. In each region, less than a quarter of respondents switched to "no support" when a tax was added.

Figure 14: Support for General Transportation Projects With and Without Costs, and By Region

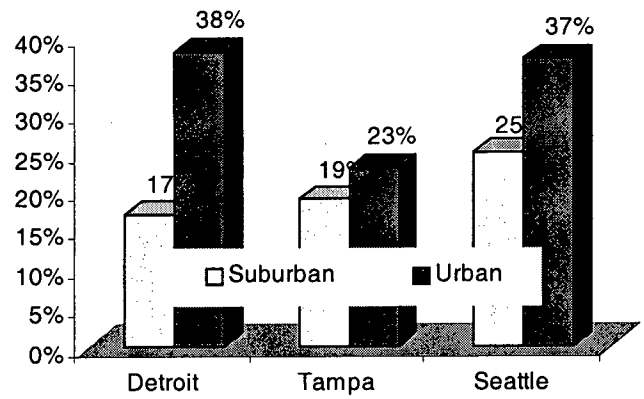


Note: All differences shown above between no cost and moderate cost levels for full support and no support are significant at the 90-percent confidence level.

As with the national survey, support for the identical but cost-differentiated projects (with and without explicit costs) were considered by demographic subgroups. While no significant differences in support were observed by age groups, population density groups did exhibit differences.

In both Detroit and Seattle, as shown in Figure 15, urban households were significantly more likely than suburban households to be in full support of transportation investments, even with a modest tax attached. In Detroit, in fact, urban households were twice as likely as suburban households to fully support a transportation project, even when a modest tax is involved. In contrast, differences in support levels between Tampa urban and suburban households were not statistically significant. [Note: within the Detroit MSA, 21 percent of households were designated as urban and 79 percent as suburban. In Tampa, 24 percent of households were urban, 76 percent suburban. In Seattle, 38 percent of households were urban, 62 percent suburban.]

Figure 15: Full Support for General Transportation Projects by Density and Region, With Cost



Note: Differences between urban and suburban in Detroit and Seattle are significant at the 95-percent confidence level.

Giving the public specific benefit information about improvements, for the most part, increases the public's support for a transportation project. However, which benefit messages work best varies by metropolitan region. Although support levels varied considerably by type of improvement, overall support for the project did change significantly in the Detroit and Tampa MSAs with the introduction of each improvement. ***In other words, introducing any improvement in these regions was enough to make support for the project increase significantly***, as shown in Table 11. Findings are presented only for support for a transportation project when a modest tax increase is attached, since this is the likely scenario.

Table 11: Change in Support for Project With Improvements With Costs and By Region

IMPROVEMENT INTRODUCED	Detroit	Tampa	Seattle
Reducing traffic accidents	47%	53%	51%
Conserving fuel and improving air quality	45%	49%	52%
Improved traffic congestion	45%	47%	58%*
Creating new jobs	45%	43%	38%
Reducing your personal traveling costs	40%	42%	40%
Retaining businesses	37%	36%	32%
Improve the quality of driving experience	39%	39%	43%
Reducing the cost of business	30%	34%	32%
Metro. region more economically competitive	35%	32%	31%
Bringing in new businesses	32%	30%	25%*
Improving the physical appearance	34%	30%	27%*
Improving the image of the region	36%	34%	23%*
Without improvement	21%	20%	29%*

* Denotes statistically significant MSA differences in full support at the 95-percent confidence level

Improving traffic congestion was among the top impact messages in all three tested MSAs. In Detroit, creating jobs had as much impact on full support for transportation projects as reducing accidents, improving air quality, or improving traffic congestion—the three improvements with the most positive impact on support within the Tampa MSA. Within the Seattle MSA, improving traffic congestion led all other improvements in its positive impact on full support for a transportation investment.

While all improvements have a statistically significant positive impact on full support within the Detroit and Tampa MSAs, in the Seattle MSA only five improvements, in addition to improving traffic congestion, significantly increased full support for transportation projects: improving air quality, reducing traffic accidents, improving the quality of the driving experience, reducing personal traveling costs, and creating jobs. ***Only two of these (reducing personal travel costs and creating jobs) are straightforward economic messages.***

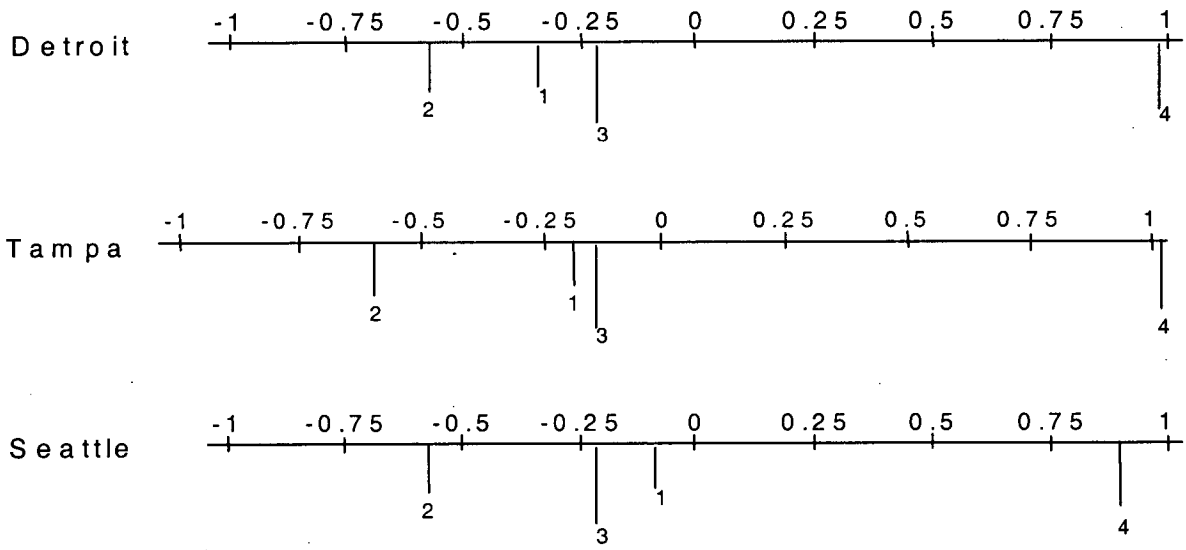
Cost Information

As with the national pilot survey, four possible types of cost information were introduced to respondents in the regional field tests:

- Overall information about the costs and benefits of the project,
- Specific information about how much each area within the region will pay for the project and how much benefit each area will get,
- The project's cost as a part of all transportation projects for the region, and
- Specific information about how much each area within the region will pay for the project and how much benefit each area will receive.

Information on the amount each region would pay compared to how much in benefits it would receive was the most influential cost information in all three regions. Further, as Table 12 shows, differences were noted by region and some costs were more important than others.

Table 12: Trade-Off Analysis of Reasons to Support a Transportation Project, by Region



01 - Overall information about the costs and benefits of the project

02 - The costs to the region if the project is not implemented

03 - This project's cost as a part of all transportation projects for the region

04 - Specific information about how much each area will pay for the project and how much benefit each area will get

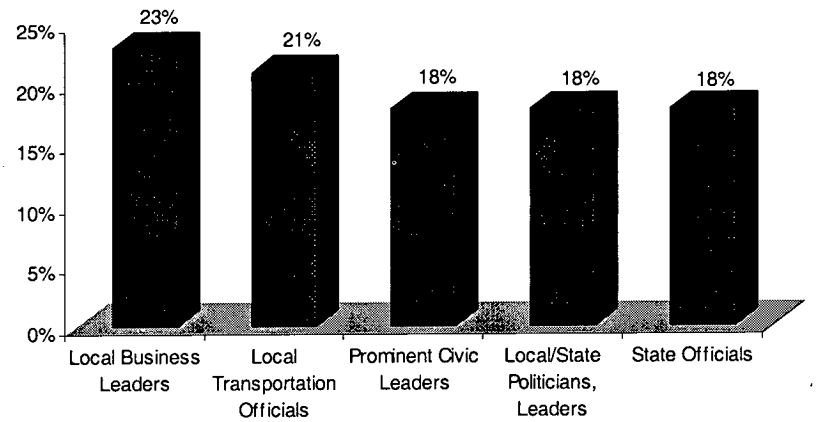
Respondents in each of the regions believe knowing the amount their region, community, or neighborhood will pay compared to what the same jurisdiction will receive in benefits would influence them most when making a decision about supporting a transportation project. The second two most influential cost information elements were a comparison of project costs to overall transportation costs in the region, and overall costs compared to overall benefits. In general, respondents place these two elements of information at about the same level of importance. Finally, ***cost information about the "no go" situation where no project is implemented draws the least interest from respondents.***

The Messenger

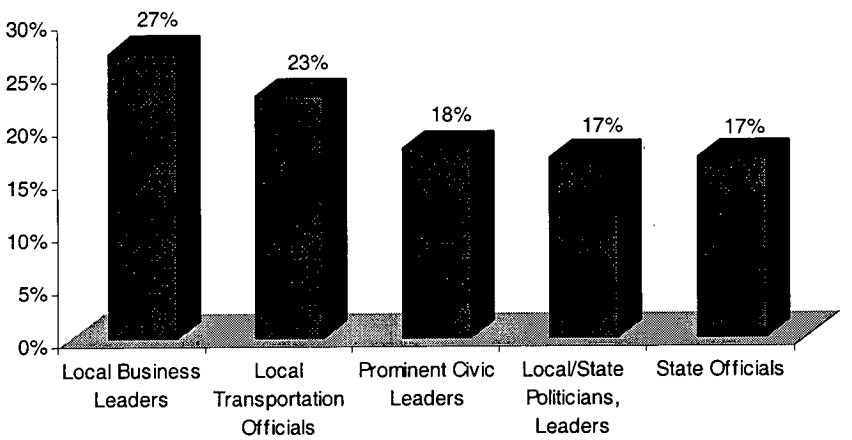
To explore whether economic benefit messages require a special messenger or not, a series of questions were designed to test messengers. As shown in Figure 16, ***in Tampa and Seattle, local business leaders and local transportation officials are the messengers from whom the majority of respondents say they prefer to hear the economic messages. In Detroit, no statistically significant difference was found in the effectiveness of messengers.***

Figure 16: People Who Are Very Likely to Increase Their Support upon Hearing an Economic Message from . . .
Percentage of Respondents Who Rated 9 or 10 (on a 10-Point Scale), by Region

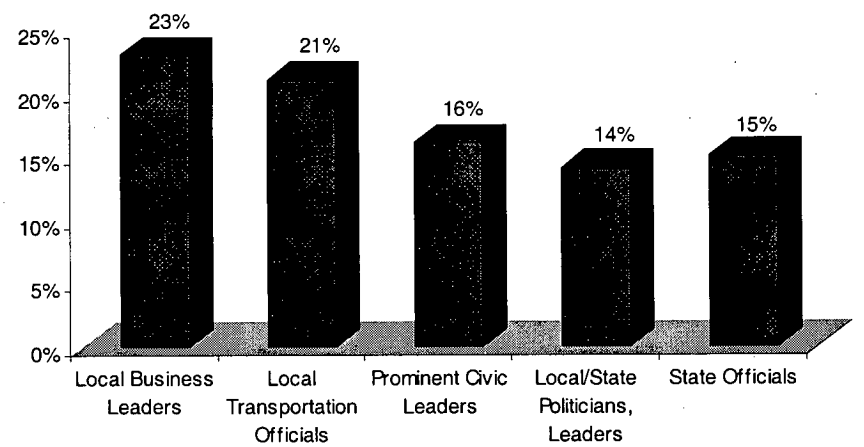
DETROIT



TAMPA

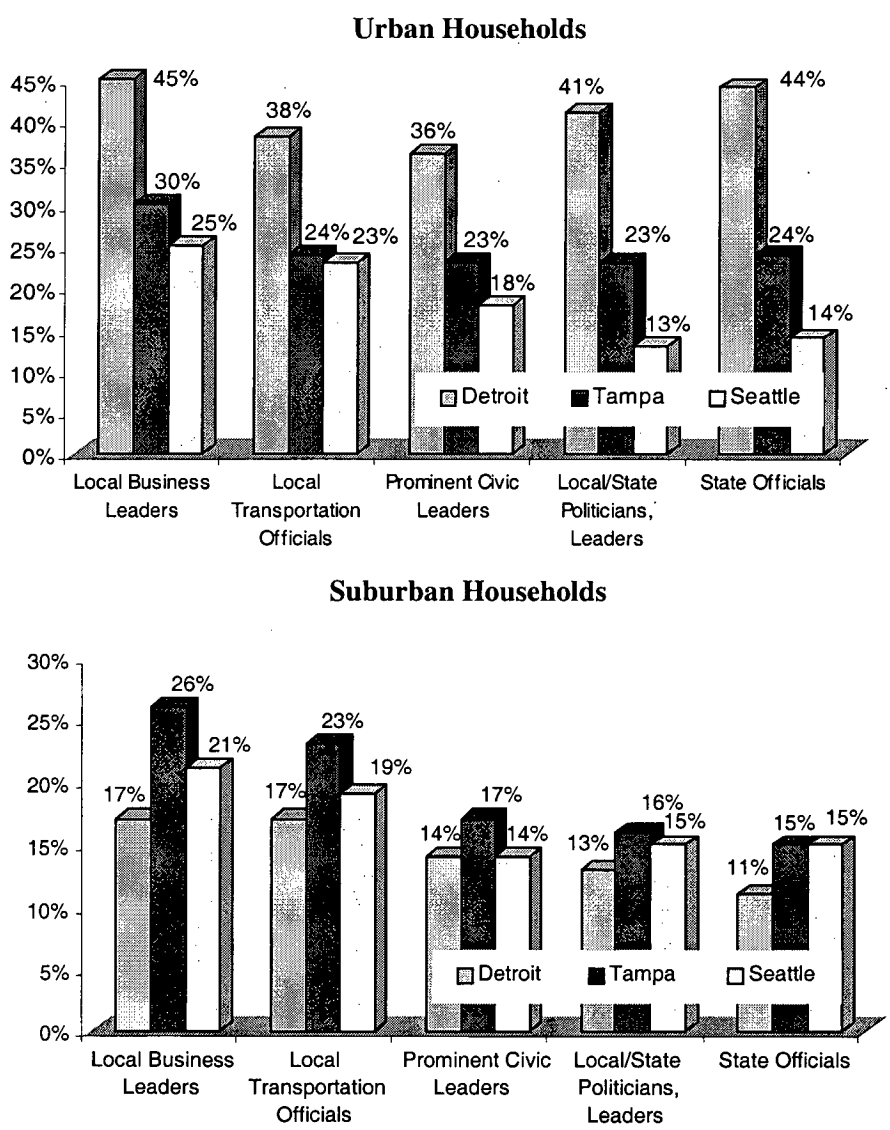


SEATTLE



Over half of respondents in all three regions rated local business leaders either 7 or above (on a 10-point scale) for how likely their support for a proposed transportation project would increase hearing a message delivered from this group. The second most persuasive messengers are local transportation officials. As shown in Figure 17, about 45 percent of respondents in all three regions say their support would be increased if messages came from these officials. The only statistically significant difference among regions is that 43 percent of Detroit respondents say that their support for a proposed transportation project would increase if they heard a message from local or state politicians (7 to 10 on a 10-point scale), as compared with only 37 to 35 percent of Tampa and Seattle respondents, respectively. Significant differences between messengers were also noted among population density levels.

Figure 17: People Who Are Very Likely to Increase Their Support upon Hearing an Economic Message from . . ., by Region and Density
Percentage of Respondents Who Rated 9 or 10 (on a 10-Point Scale)



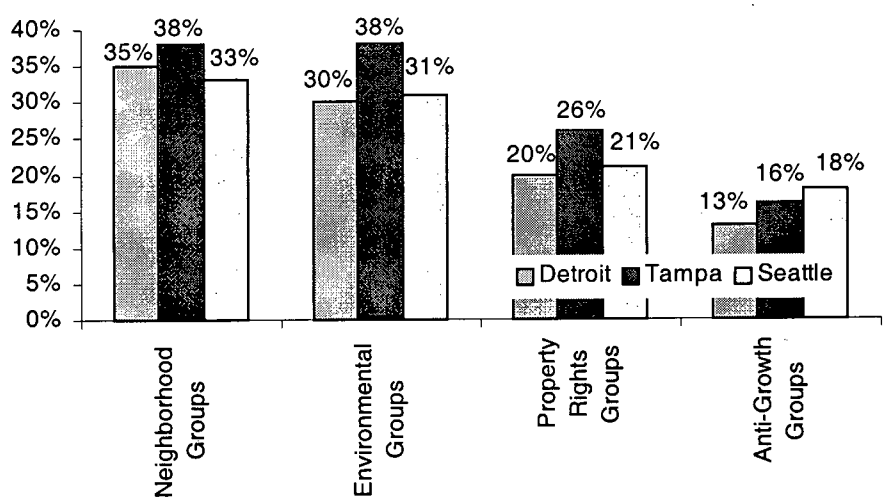
When the effectiveness of messengers was analyzed within region by population density, significant differences emerged. By region, Detroit urban residents were the most influenced by all messengers, particularly business leaders, state officials, and local and state politicians. However, Detroit suburban residents were far less influenced by, and were almost impervious to, all of the tested messengers. Both Tampa's and Seattle's urban and suburban residents were about equally influenced the most by business leaders and local transportation officials.

It should be noted that the national survey conducted for this study found that, overall, rural respondents were much more positive about all the messengers tested than were suburban or urban audiences. Rural respondents expressed a preference for messages being delivered by local transportation officials and local business leaders. Urban audiences expressed a slight preference for local business leaders as messengers, while suburban audiences did not express a clear messenger preference.

Does It Matter With Whom the Government Cooperates?

As with the national survey, respondents in the regional test sites exhibited stronger support for transportation investments when presented with evidence of government cooperation with neighborhood and community groups. Cooperation with environmental groups was also more likely to raise support, as Figure 18 illustrates. These findings have important implications for transportation planners and policy makers, as they suggest that economic messages will be better received if they are presented under the context of a cooperative government effort.

Figure 18: Percent of Respondents Likely to Support a Transportation Project, Given the Alliance of Government and Activist Groups
by Respondents Choosing 9 or 10 (on a 10-Point Scale)



A plurality of respondents—33 to 38 percent—said they are more likely to support a transportation project if they knew that the government was working in conjunction with neighborhood and community groups and environmental groups. Only 13 to 18 percent of the public made that claim for the anti-growth groups. These findings comport well with the national-level findings, which indicated that government cooperation with neighborhood and environmental groups is as likely to increase public support for a transportation project as hearing about the economic benefits from business leaders.

Some significant differences were found within demographic subgroups by age and income level in the three regions, but regional variations in these categories were not significant. Younger respondents in each region were significantly ***more*** likely to support the project knowing the government was working with both neighborhood and community groups, and environmental groups. The youngest population, group, below 30, was most interested in hearing about the government working together with neighborhoods and environmental groups. Similarly, lower level income groups were much more interested in hearing about the government working with neighborhood and environmental groups than were the higher income levels. Households making under $25,000 per year were significantly more likely to support a project knowing the government was working with the neighborhoods and environmental groups than were households making over $50,000 per year. Likewise, African-Americans are more likely to be concerned about government negotiations with neighborhood and environmental groups.

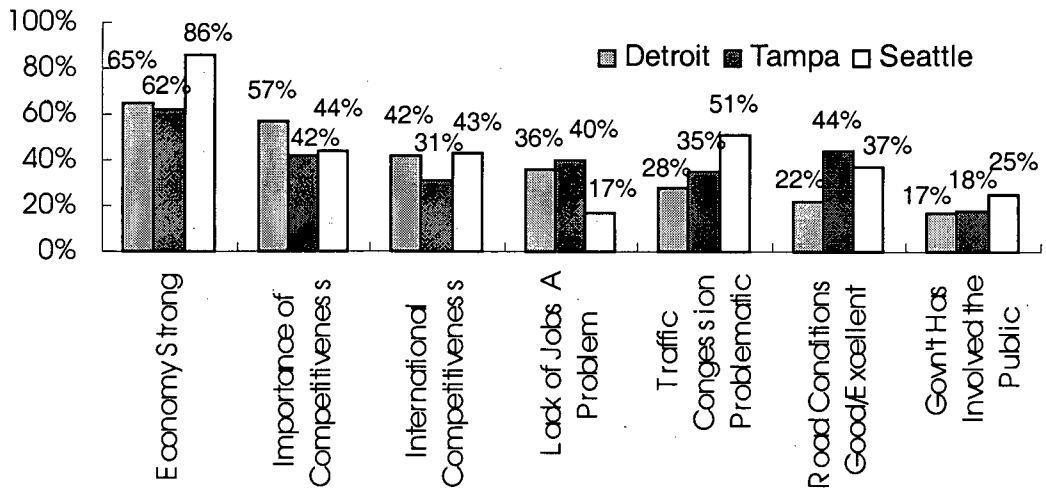
The significant differences by income levels also occurred with the other activist groups as well. Lower income levels consistently showed significantly more support when presented with each of the activist groups than did the higher income levels. This was not, however, the case with the age groups. No other significant differences were found within the age groups for the other three activist groups. Only the neighborhood/community groups and environmental groups showed significant differences by age.

Field Test Analysis of Economic Profiles at Demonstration Sites

As with the national pilot, respondents in the regional field tests were segmented by level of economic awareness and perception of economic performance (i.e., segments defined as *"The Economically Conscious," "The Economically Indifferent,"* and *"The Economically Affected").*

Each region in the field test was analyzed by the economic conditions in their area, as measured in the national survey. The results are as shown in Figure 19.

Figure 19: Local Economic Condition Ratings, Within Regions



Note: Economy strong, roads good to excellent, lack of jobs a problem, and gov't has involved public = 7 to 10 on a 10-point scale. Importance of regional competitiveness, international competitiveness, and traffic congestion = 9 to 10 on a 10-point scale.

Detroit area residents placed a high importance on staying regionally and internationally competitive (Detroit is on the border of Canada). Respondents from Detroit were also concerned about the area's potential lack of jobs and the condition of its roads. Tampa residents rated the importance of its regional and international competitiveness relatively low; but were concerned about a potential lack of jobs, while rating its roads as mostly good to excellent. Seattle residents rated their economy as strong and international competitiveness as important, but they listed regional competitiveness as only a modest concern. Lack of jobs was seen as almost no problem at all, while traffic congestion was a major concern. Seattle residents were the most likely to say their government involves the public in transportation investment decisions.

When these assessments of their local economy are segmented into our three nationally identified groups the breakdown by region is as shown in Table 13.

Table 13: National Economic Profiles, by Region

SEGMENTS	Detroit	Tampa	Seattle
Economically Conscious	40%	31%	40%
Economically Indifferent	25%	30%	44%
Economically Affected	35%	39%	16%

Since the Detroit MSA has the highest combined percent of Economically Conscious and Economically Affected segments, the researchers expected respondents from Detroit to be the most attuned (least indifferent) to pure economic benefit messages. At the same time, Seattle residents, with the highest percent of respondents segmented as Economically Indifferent, were expected to be the most indifferent to economic arguments. Actual results are as shown in Table 14.

As expected, the economic benefit message of creation of new jobs works as well in the Detroit MSA as the more non-economic messages of reducing traffic accidents, improving air quality, and improving traffic congestion. Tampa area residents' support for transportation projects is impacted the most by the quality of life messages of reducing traffic accidents and improving air quality. In Tampa, improving traffic congestion is a secondary consideration; whereas, in Seattle, improving traffic congestion is in the forefront as the benefit that most positively influences support for a transportation project. The only other messages with a significant impact on support in Seattle are reducing traffic accidents and improving air quality. In Seattle, a number of improvement messages—including the economic messages of bringing in new businesses or retaining businesses—have absolutely no impact on support for a transportation project. However, it should be noted that, overall, Seattle MSA residents are more predisposed to supporting a transportation project with a tax attached tax, than are residents in either Detroit or Tampa.

Understanding a market and its market segments is extremely important to selecting the most effective strategies for communicating economic benefit messages associated with transportation investments, since the impact of messages varies by region and by audience segments. In Detroit, for example, if the target audience was comprised largely of Economically Indifferent residents, the most effective economic message might be one augmented with messages about reducing personal travel costs and improving the driving experience.

Table 14: Changes in Support by Message for Project With Taxes, by Regional Economic Profiles

Seattle IMPROVEMENT INTRODUCED	Economically Conscious	Economically Indifferent	Economically Affected	**Overall Seattle**
Reducing traffic accidents	64%	37%	56%	**51%**
Conserving fuel and improving air quality	62%	40%	58%	**52%**
Improved traffic congestion	72%	46%	56%	**58%**
Creating new jobs	55%	21%	44%	**38%**
Reducing your personal traveling costs	54%	25%	42%	**40%**
Retaining businesses	51%	15%	32%	**32%**
Improve the quality of driving experience	56%	32%	42%	**43%**
Reducing the cost of business	46%	18%	36%	**32%**
Metro. region more economically competitive	50%	14%	28%	**31%**
Bringing in new businesses	38%	13%	28%	**25%**
Improving the physical appearance	39%	17%	24%	**27%**
Improving the image of the region	35%	10%	28%	**23%**
Without improvement	37%	25%	22%	**29%**
Total Seattle	**40%**	**25%**	**35%**	100%

Tampa IMPROVEMENT INTRODUCED	Economically Conscious	Economically Indifferent	Economically Affected	**Overall Tampa**
Reducing traffic accidents	67%	33%	56%	**53%**
Conserving fuel and improving air quality	67%	32%	48%	**49%**
Improved traffic congestion	65%	30%	47%	**47%**
Creating new jobs	65%	18%	43%	**43%**
Reducing your personal traveling costs	63%	21%	41%	**42%**
Retaining businesses	62%	10%	36%	**36%**
Improve the quality of driving experience	57%	21%	37%	**39%**
Reducing the cost of business	56%	10%	34%	**34%**
Metro. region more economically competitive	56%	9%	30%	**32%**
Bringing in new businesses	47%	8%	34%	**30%**
Improving the physical appearance	48%	13%	30%	**30%**
Improving the image of the region	55%	11%	35%	**34%**
Without improvement	35%	3%	21%	**20%**
Total Tampa	**40%**	**25%**	**35%**	100%

Detroit IMPROVEMENT INTRODUCED	Economically Conscious	Economically Indifferent	Economically Affected	**Overall Detroit**
Reducing traffic accidents	57%	20%	55%	**47%**
Conserving fuel and improving air quality	53%	28%	45%	**45%**
Improved traffic congestion	56%	22%	48%	**45%**
Creating new jobs	56%	22%	48%	**45%**
Reducing your personal traveling costs	48%	20%	48%	**40%**
Retaining businesses	46%	13%	43%	**37%**
Improve the quality of driving experience	49%	20%	41%	**39%**
Reducing the cost of business	39%	13%	33%	**30%**
Metro. region more economically competitive	44%	14%	38%	**35%**
Bringing in new businesses	39%	12%	38%	**32%**
Improving the physical appearance	44%	13%	38%	**34%**
Improving the image of the region	46%	16%	38%	**36%**
Without improvement	26%	7%	26%	**21%**
Total Detroit	**40%**	**25%**	**35%**	100%

Field Test Analysis of Messenger Preferences by Economic Profile

Within each of the three MSAs tested, government cooperation with, or messages from, neighborhood and community groups and environmental groups were most important to boosting support for a transportation investment project. Moreover, with minor exceptions, there was agreement among the economic profiles on the importance of these messengers. Messages from environmental groups were a little less important to the Economically Affected in Detroit, and messages from business leaders had a stronger impact on the Economically Conscious and Economically Affected in Seattle. Also within the Seattle MSA, messages from property rights groups had a significant impact on support for transportation projects.

As the medium for communications, over half of respondents in all three regions preferred direct information mailed to their home, with just under one half in each location also mentioning local newspaper articles and local TV news and commentary programs. One quarter in each location mentioned evening public meetings in a location near their home, and about one fifth mentioned radio talk shows. Only 5 percent mentioned displays in shopping malls. Preferred communication mediums were consistent and did not vary by region.

Overall, 37 percent of Seattle residents, 30 percent of Detroit residents, and 25 percent of Tampa residents said their local governments had recently used economic benefit arguments to support transportation projects. In Seattle and Tampa, the Economically Conscious were most likely to say their governments had used economic benefit arguments, while the Economically Affected were most likely to think these arguments had not been used. In Detroit, the Economically Affected were as likely as the Economically Conscious to say their governments have used economic benefit arguments; while the Economically Indifferent were much less likely to report their use.

As to the base question of whether economic benefit arguments *should be* used in support of transportation investments: 55 percent of Detroit and Seattle area residents and 50 percent of Tampa residents said these arguments should be used to a great extent. While two thirds of the Economically Conscious in each region think economic benefit messages should be used, it is important to note that in each location, over 40 percent of the Economically Indifferent agreed that economic messages are important.

Table 15 shows preferences for messengers by region and economic profile. Shown are the percent of respondents **very likely to increase** their support for a transportation project promoted by various types of messengers, or when information is provided that the government has negotiated project agreements with the group tested. Increased support levels, with each messenger or group are at the "very likely to increase support" level (9 to 10 on a 10-point scale). This analysis combines testing of messengers with groups with which the government might negotiate.

Focus Group Sessions

In December, 1997, and in January, 1998, a series of three focus groups were conducted around the country. The groups included Detroit, Michigan, on December 2, 1997; Tampa Bay, Florida, on January 6, 1998; and Seattle, Washington, on January 29, 1998. These sessions were designed to provide the research team with detailed feedback from a mix of transportation stakeholders, including business leaders and transportation planners in the local/regional area, state DOT officials, community organizers, local political leaders and environmental activists. The specific purpose of the sessions was to explore the

opinions of such stakeholders with respect to the importance of communicating the economic impacts of transportation investments, and how to prioritize various strategies for doing so.

Table 15: Changes in Support by Interest Groups and Messengers for Project With Taxes, by Region and Economic Profile

DETROIT MESSENGERS	Economically Conscious	Economically Indifferent	Economically Affected	**Overall Detroit**
Neighborhood Groups	*48%*	*12%*	*38%*	***35%***
Local Transportation Officials	32%	5%	21%	**21%**
Business Leaders	35%	4%	23%	**23%**
Environmental Groups	*44%*	*13%*	26%	***30%***
Prominent Civic Leaders	29%	3%	17%	**18%**
Property Rights Groups	38%	7%	19%	**20%**
State Officials	23%	5%	21%	**18%**
Local/State Politicians	24%	4%	20%	**44%**
Anti-Growth Groups	18%	7%	13%	**18%**
Total Detroit	**40%**	**25%**	**35%**	**100%**

SEATTLE MESSENGERS	Economically Conscious	Economically Indifferent	Economically Affected	**Overall Seattle**
Neighborhood Groups	*42%*	*26%*	*26%*	***32%***
Local Transportation Officials	33%	12%	16%	**21%**
Business Leaders	*37%*	10%	*22%*	**23%**
Environmental Groups	*37%*	*26%*	*30%*	***31%***
Prominent Civic Leaders	27%	7%	12%	**16%**
Property Rights Groups	33%	9%	*24%*	**21%**
State Officials	24%	5%	16%	**15%**
Local/State Politicians	24%	5%	14%	**14%**
Anti-Growth Groups	26%	13%	12%	**18%**
Total Seattle	**40%**	**25%**	**35%**	**100%**

TAMPA MESSENGERS	Economically Conscious	Economically Indifferent	Economically Affected	**Overall Tampa**
Neighborhood Groups	*53%*	*29%*	*32%*	***38%***
Local Transportation Officials	46%	6%	17%	**23%**
Business Leaders	47%	8%	24%	**27%**
Environmental Groups	*55%*	*26%*	*32%*	***38%***
Prominent Civic Leaders	40%	6%	11%	**18%**
Property Rights Groups	38%	15%	23%	**26%**
State Officials	33%	6%	13%	**17%**
Local/State Politicians	33%	6%	14%	**17%**
Anti-Growth Groups	21%	9%	17%	**20%**
Total Tampa	**40%**	**25%**	**35%**	**100%**

Because the groups built on one another, these findings are presented for all three groups, rather than each one individually, and focus on ideas presented on messages and communication strategies, rather than on the specific projects highlighted during the groups.

Part II: Market Research Results

Feedback from the focus groups constituted some of the most valuable findings from the study. In each of the three focus group sessions the content of economic messages was a major point of emphasis. All three groups stressed the importance of addressing specific messages to specific projects. Nevertheless, some common themes and strategies emerged. These themes are useful in understanding how economic messages can be formulated, and reflect the types of messages and message characteristics that our stakeholders believe are most important to communicate with the public. ***Readers should compare the insights offered by focus group participants with the quantitative results of the National Pilot Surveys and Regional Field Tests, as on some issues, public perception diverge.***

The dominant theme stressed by stakeholders was clear: economic benefits mean different things to different people. In one community, it may mean creation of new jobs (if jobs are in short supply); in another, it may mean retention of existing businesses. Agencies must find the economic issues most pertinent for a given community and stress those, rather than a common set of themes. Again, it must be the economic "hot button" issues—impacts that are immediately relevant to a specific community—rather pre-determined economic messages. In general, practitioners should take into account the following.

- Keep the message simple and straightforward. Unless speaking to a specifically trained audience, technical details are too tedious.

- Messages must be brought to the level of the audience, and should be related to a "hot button" issue of the audience.

- Direct benefit messages are easier to understand than indirect benefit messages. For example, in Denver local officials used road signs to show exactly where potential mileage funds would be spent (on road expansions and similar projects).

- Messages that show people where money will be spent and who will pay which portion of project costs are usually more successful than less specific messages.

- Cost/Benefit information, which can be expressed in several ways, can be helpful. Creativity in showing costs and benefits is critical: the overall costs/benefits of a given project, costs/benefits of alternative projects, and the costs/benefits of elements of a project can all be useful.

- Stress the opportunity-cost of transportation investments foregone. Seattle proponents of the "Smart Travel" initiative, for example, distributed a "Quality of Life Index" leaflet to the public that touted the types of projects and businesses the area was losing due to the lack of a transit system. It described business lost, environmental harm caused, and dollars lost to Seattle commuters while they were stuck in traffic, and specified each of these factors per minute of traffic jam time. Stakeholders involved with this campaign reported strong, positive feedback.

- Present the impacts of the "do nothing" scenario to put costs in perspective for the public. Without such a basis of comparison, the public may not see the full importance of a potential program or project. The Seattle Smart Travel initiative, for instance, found success by comparing how much was spent annually on transportation in the area—several billion each year—with the relatively small cost of a single project over 10 years, $4 billion.

Communicating the Message

Communication strategies and their implementation were emphasized at each of the focus groups. Specific findings are listed below.

- Involve the public at the beginning of the planning or programming process.
- Time business community outreach and communication based on specific circumstances. Some businesses may be happy to be brought into the planning process towards the end, depending on the level of involvement expected from them. For example, a coalition of business interests might be shown a final set of four options to get input, rather than a limitless number at the outset of the planning process.
- Consensus among planners and key constituents on the message to be communicated is critical. Specifically, political parties should be aligned and work on communicating the same message before the message is taken to the public. Because a project "belongs" to everyone, everyone must work together for the outcome. One participant's comment sounded a warning: "When the finger pointing starts, the project will not work."
- Address problems with the public as soon as possible. In several situations, communities recognized inherent problems with their projects, yet they were not addressed by project leaders—thereby, costing those planners credibility with the public. Most participants felt that discussing problems early in the process fostered a sense of trust between the people and project officials.

National Pilot Survey II: Understanding Economic Impact Issues

From the Executive Interviews conducted in Phase II, the research team confirmed that stakeholders in transportation policy differ in their view of how the public perceived the role of economic impacts in transportation. Many believed that the public did not consider transportation to be a national issue, but rather responded to local, and sometimes regional, issues alone. For this reason, a national pilot study was undertaken to further determine how the public viewed economic issues relating to transportation investments, and what sort of economic impacts from transportation investments are perceived. Respondents reflected 1990 U.S. Census Population statistics, as illustrated in Table 16.

Table 16: Population Figure Comparison for Follow-up Survey

U.S. Census Regions	Percent of U.S. 1990 Census	Percent of Transportation Survey Sample	Condensed Categories	Number of Households
New England	5%	7%	Northeast	40
Mid Atlantic	15%	9%		
Great Lakes	17%	21%	Midwest	77
Plains	7%	8%		
South Atlantic	18%	19%	South Atlantic	49
South Central	11%	8%	South Central	46
Southeast	6%	8%		
Mountain	6%	10%	West Coast	47
Pacific	11%	8%		
TOTAL				259

In addition, as shown in Table 17, a rural, urban, and suburban breakdown emerged that also resembled the 1990 U.S. Census figures.

Table 17: Census Comparison

	1990 U.S. Census Population	Percent from Transportation Survey
Urban	31%	28%
Suburban	50%	49%
Rural	19%	23%

Measuring How Economic Impacts Play a Role: An Overview

A key aim of this national survey was to measure how the public views economic impacts playing a role in the transportation investment process. Respondents were first presented with a set of paired comparisons of the relative importance of various economic development tools along two parameters:

- A first test identified along a continuum where transit and highway developments lie in the public's opinion of what factors contribute most to a "better community;"
- A second test that investigated which economic development factors would most likely encourage support for transportation investments.

A second analysis tested the public's view of traditional areas of concern with and without the knowledge of economic impacts, and a third clarified who the public looks to for implementing and communicating impacts of transportation investments.

Analysis One: Paired Comparisons

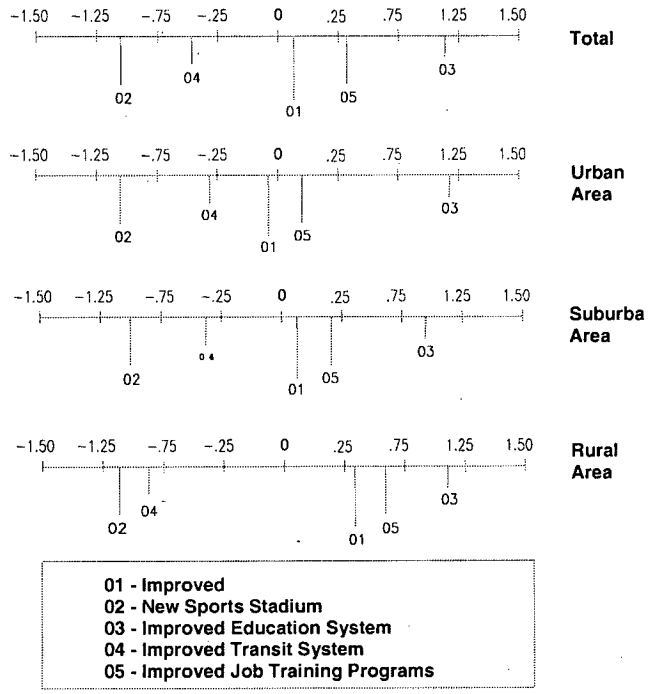
The first set of paired comparisons tested the public's perception of where, along a continuum of economic development tools or projects, the public views transit and highway development as affecting a region's economy. The tools or projects chosen included education, transportation, sports facilities, and social programs. The analysis pairs each attribute or project type with every other attribute in response to the question, "Which project do you feel is more likely to have a positive affect on your area's economic condition and vitality?" The projects tested included the following:

- Improved highways,
- New sports stadium,
- Improved education system,
- Improved transit system, and
- Improved job training programs.

At each population density level, education rated as the highest economic development tool. The public, that is, rated education as the project most likely to have a positive affect on the area's economic condition and vitality. Improved job training rated as the second highest economic development tool, although job training also consistently appeared with improved highways, indicating little dispersion between the two attributes (or indicating little dispersion between which of the two attributes contributes most, in the minds of respondents, to positive economic conditions). Improved transit, on the other hand,

stood alone and fluctuates somewhat with density. Not surprisingly, urban and suburban areas ranked transit higher than did rural areas. Results, considered by population density, are shown in Figure 20.[7]

Figure 20: Trade-Off Analysis of Features Considered Likely to Have a Positive Effect on the Economic Conditions and Vitality of an Area, by Population Density

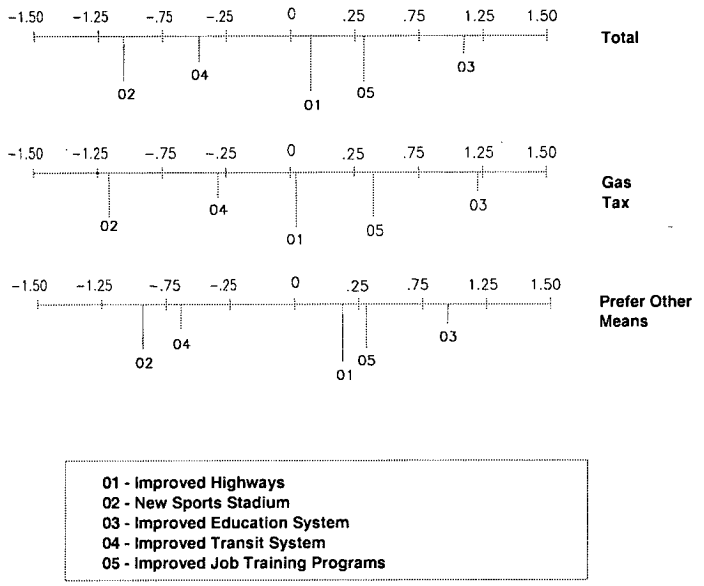


Rural and suburban areas consider highways more valuable to an area's economy than do urban areas. Second, highways and job training programs appear closely aligned for all population density levels indicating, perhaps, an interchangeable relationship between the two. Finally, improved transit systems appear most positively correlated to urban economies and only somewhat correlated to suburban economies.

A second analysis, completed using the same set of economic development options, was employed, based on the respondent's answer to the question, "If you do not believe that your State has sufficient funds to fix the roads, what alternative would you suggest to raise the money needed?" Two choices were offered to raise funds—a gas tax or other means—and respondents were divided into two groups based on their responses—gas tax supporters and non-gas tax supporters. Since transportation itself contributes to economic development, the hypothesis was that those who believed a gas tax to be the preferred method of raising funds may think differently about which factors contribute to a vibrant economy. ***In fact, gas tax supporters reported believing that highways contributed to an economy less than did non-gas tax supporters. Similarly, gas tax supporters believed that transit systems contributed to an economy more than did non-gas tax supporters.*** Figure 21 illustrates these results.

[7] Reading the Scale: The scaled values are measures of dispersion. If the values vary from 1.5 to –1.5, there is considerable dispersion (distance) between alternative orderings. Likewise, if the alternative values are close together (clustered), there is little difference in the ordering of alternatives. Each alternative is assigned a number in the legend box. The position of this number on the scale indicates its value for the sample. The scales are read from the negative score (left) to the positive score (right). The score furthest to the left (negative) of the scale is the least important alternative, the score furthest to the right (positive) of the scale is the most important alternative. Thus, preference orderings are provided that show relative positioning.

Figure 21: Trade-Off Analysis of Features Likely to Have a Positive Impact on the Economic Conditions and Vitality of One's Area, by Respondent's Preference for Raising Highway Revenue



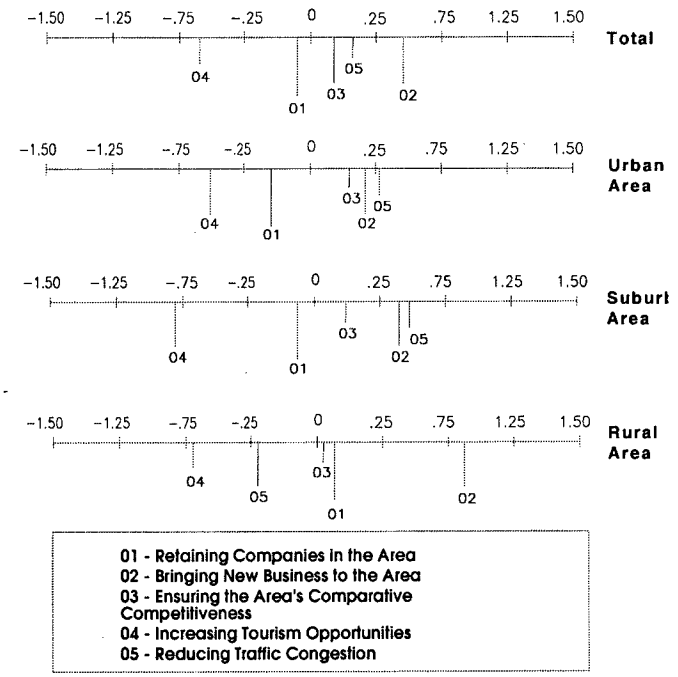
Education and job training programs still ranked as the two attributes most affecting the economy among both gas tax and non-gas tax supporters. Second, non-gas tax supporters believed improved highways have more of an effect on the economy than did gas tax supporters. Lastly, gas tax supporters responded that an improved transit system would contribute more to the economy than non-gas tax supporters believed it would.

The other set of paired comparisons undertaken considered which economic development factors were most likely to affect a person's propensity to support a transportation project. As with the first two attribute trade-offs, data for this analysis were captured by pairing each attribute with every other attribute in response to the question, "Thinking about a proposed statewide highway or bridge project, which attribute would most likely convince you to support the project?" The following attributes were tested:

- Knowing that companies will be retained in the area,
- Knowing that new businesses will come to the area,
- Ensuring the comparative competitiveness of the area,
- Increasing tourism opportunities in the area, and
- Knowing that traffic congestion will be reduced.

As demonstrated in Figure 22, results of the attribute trade-off, considered by density, show the most important consideration for support by urban and suburban areas to be reduction of traffic congestion. In other words, ***urban and suburban areas were more willing to support a transportation project if they knew that traffic congestion would be reduced. Rural areas were more willing to support a project if it brought new businesses to the area (this criterion was a close second for both urban and suburban areas).*** The close third for urban dwellers and a distant third for the suburbanites was ensuring an area's relative competitiveness. These findings reinforce the conclusion that understanding audience segments is critical. Moreover, for transportation agencies without the resources to conduct primary market research, they suggest that important inferences can be drawn about certain demographic groups such as urban, suburban and rural population densities.

Figure 22: Trade-Off Analysis of Features Considered Likely to Convince a Person to Support a Statewide Highway or Bridge Project, by Density



These findings indicate that traffic congestion plays an important role in gathering urban and suburban support for transportation investments. Second, throughout the country, people remain concerned about bringing new businesses to their area. Third, the comparative competitiveness of a region is a top concern to urban dwellers and of secondary concern to suburban communities. Fourth, rural areas are quite focused on their economies and the ability of the business community to remain there. And fifth, across density levels, there is consensus that tourism is not an important reason to invest in transportation.

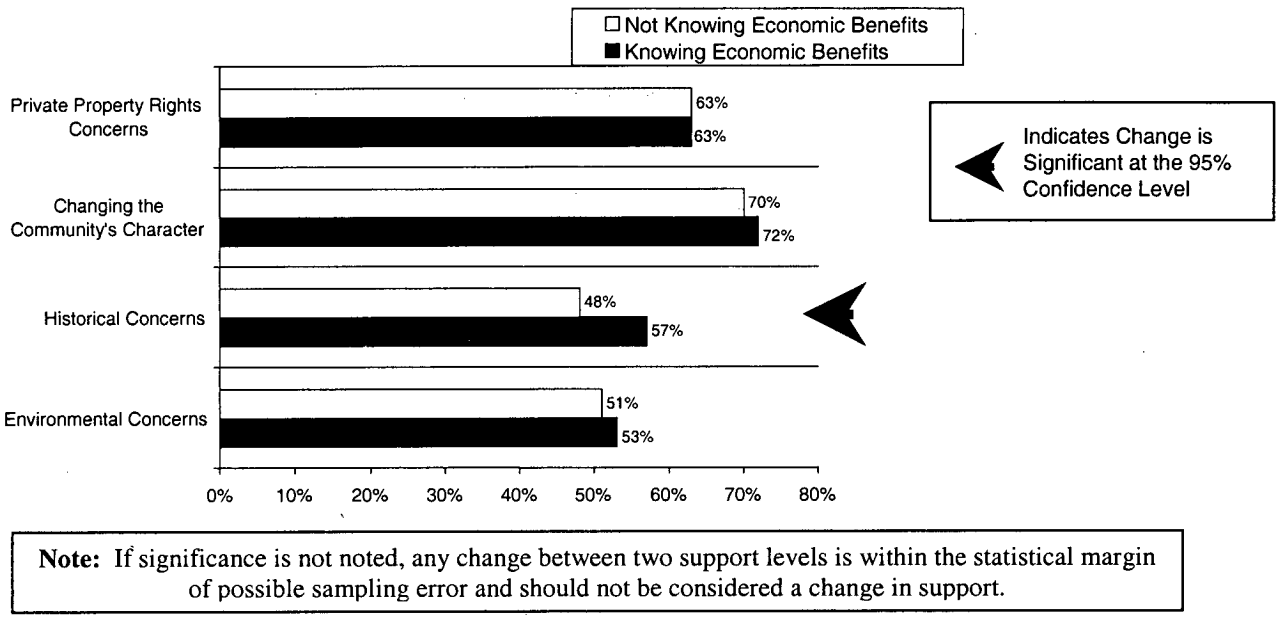
Analysis Two: Areas of Traditional Concern with Transportation Projects

The second analysis was an examination of traditional concerns often associated with transportation projects. The analysis considered the concerns two ways. First concerns were tested alone, gauging support levels for projects given specific concerns. Second, concerns were combined with knowledge of economic benefits to test support levels for projects with both concerns and economic benefits in place. Based on feedback from the stakeholder interviews and focus group sessions, the concerns tested included the following:

- Environmental impacts,
- Historical site impacts,
- Community character issues, and
- Private property rights.

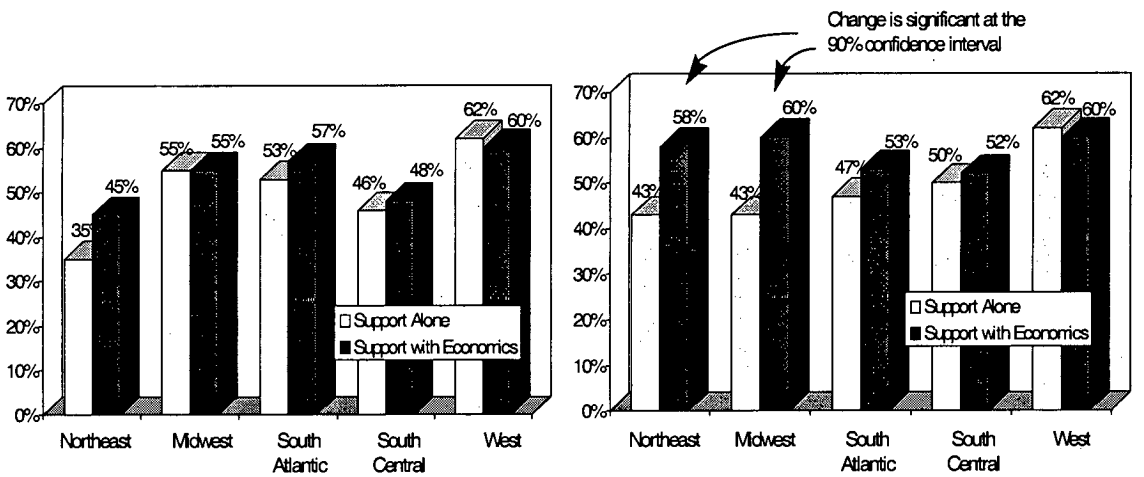
For the country as a whole (with no stratification by region or density), the introduction of economic benefits outweighs only the presence of historical site concerns. That is, there was a statistically significant increase in respondents' willingness to support a transportation investment project that is characterized as having historical site concerns, when told that the transportation project will lead to economic benefits for the region. Support for transportation projects with other concerns does not increase with the presence of economic benefits. Figure 23 and 24 illustrate these results.

Figure 23: Amount of General Support for a Project, Total Sample



Note: If significance is not noted, any change between two support levels is within the statistical margin of possible sampling error and should not be considered a change in support.

Figure 24: Support for Transportation Projects With/Without Environmental/Historical Concerns



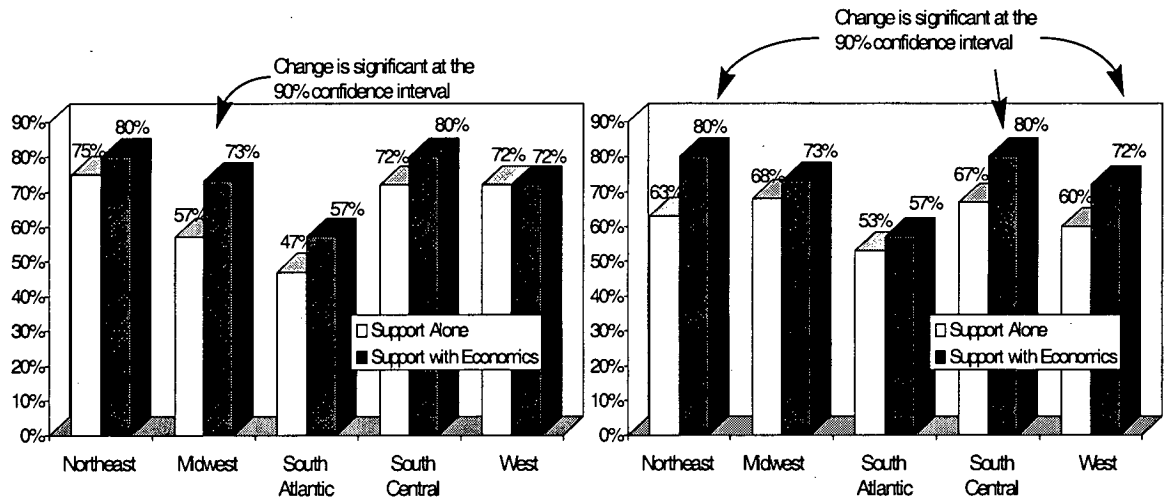
Concern: Environmental

Concern: Historical Site

No region of the country would significantly increase their amount of support for a transportation project given information about economic benefits if environmental concerns are present. This is one of the more suggestive findings of the NCHRP Project 2-22 effort. Planners and communicators should therefore be aware of the likelihood that, for many audience groups, environmental concerns will outweigh economic benefits messages associated with transportation projects. With historical site concerns, however, both the Midwest and the Northeast showed significant increases in support given information about economic benefits, suggesting that such concerns can be overcome by economic benefit messages.

As depicted in Figure 25, ***only Midwest respondents indicated that they would significantly increase their support for a project in the presence of a concern that changed the character of the community, given knowledge of economic benefits. With private property rights as the concern, however, respondents in the Northeast, South Central, and the West all said that they would significantly change their support for a project that brings economic benefits.***

Figure 25: Support for a Transportation Project With/Without Community Character Concerns and Property Rights Concerns



Note: If significance is not noted, any change between two support levels is within the statistical margin of possible sampling error and should not be considered a change in support.

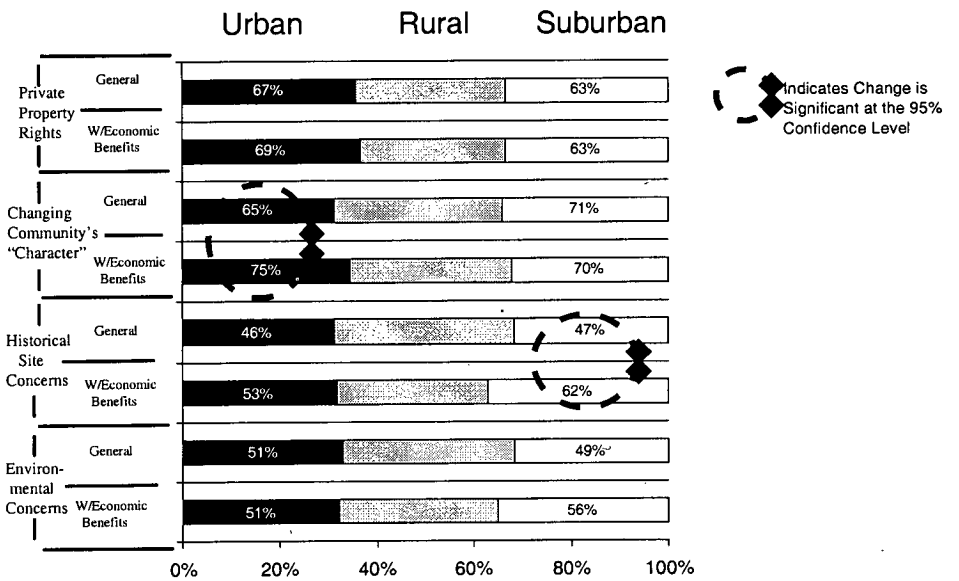
Table 18 summarizes the concerns that each region feels are the least obstructive in the presence of economic benefits.

Table 18: Summary Table of Concerns Deemed Flexible in the Presence of Economic Benefits

REGION	TRADITIONAL CONCERNS			
	Environmental Concerns	Historical Site Concerns	Changing Character Concerns	Private Property Rights Concerns
Northeast		☒		☒
Midwest		☒	☒	
South Atlantic				
South Central				☒
West				☒

Differences were also noted when preferences were considered by population density. For urban respondents, support increased significantly when economic benefit information was introduced only in the presence of a community character-changing concern. In the case of suburban respondents, support increased with economic benefit information only when the concern was historical site considerations. These results are depicted in Figure 26.

Figure 26: Those Who Support New or Expanded Highway With Barriers in Place



Note: If significance is not noted, any change between two support levels is within the statistical margin of possible sampling error and should not be considered a change in support.

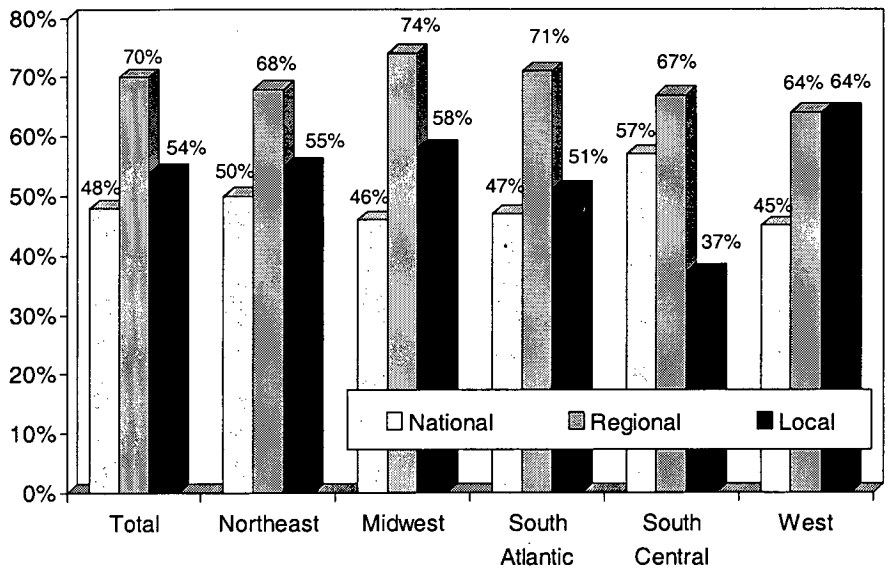
Analysis Three: Responsibilities of Transportation Investments

The third analysis undertaken under the National Pilot Survey II was of a more general nature, designed to gauge how much and how well transportation stakeholders were communicating with the public and at what geographic levels they believe economic benefits should be considered when undertaking a transportation investment. Responses were considered by region, as shown in Figure 27.

The overwhelming majority of respondents (70 percent) indicated that economic impacts should be considered at the regional level. About one half of respondents also reported that economic impacts should be considered at both the national and the local levels, though, suggesting that planners should convey the full range of impacts when communicating the economic impacts of transportation investments.

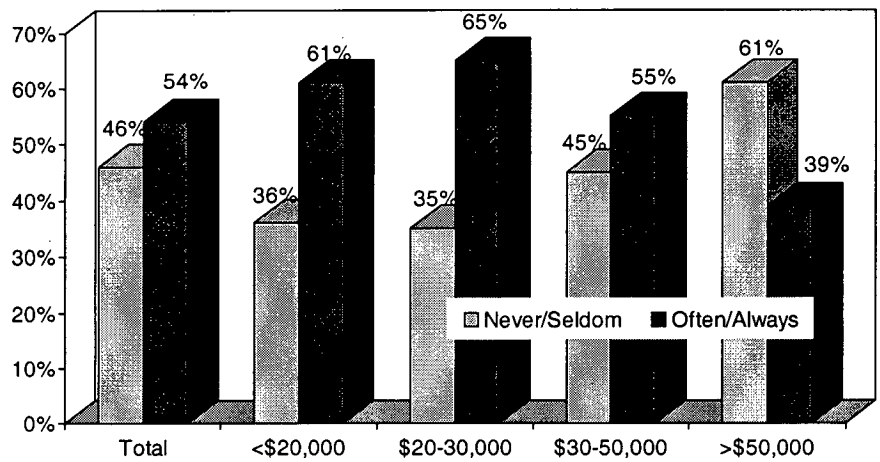
A follow-up question asked respondents to what degree are economic benefits currently being communicated to the public when a transportation investment occurs. To illustrate the potential for segmenting responses across a range of demographic characteristics, these results were stratified by household income level, as Figure 28 illustrates.

Figure 27: Suggested Levels to Consider Economic Impacts by Region



Note: Multiple answers allowed, totals will not equal 100%.

Figure 28: How Often Are Economic Benefits Communicated? [By Household Income Level]



Although a little more than one half of the respondents reported that economic benefits are communicated either often or always, nearly half (46 percent) indicated that economic benefits are communicated either seldom or never. Moreover, the strongest perception that benefits are rarely communicated came from the upper income level brackets. Almost two thirds of persons with family income over $50,000 a year reported that economic benefits are communicated either seldom or never. In contrast, the lower income brackets—households making under $30,000—believed economic benefits are communicated often or always two thirds of the time. ***This is a strong indication that economic messages are not adequately included in current communications efforts.***

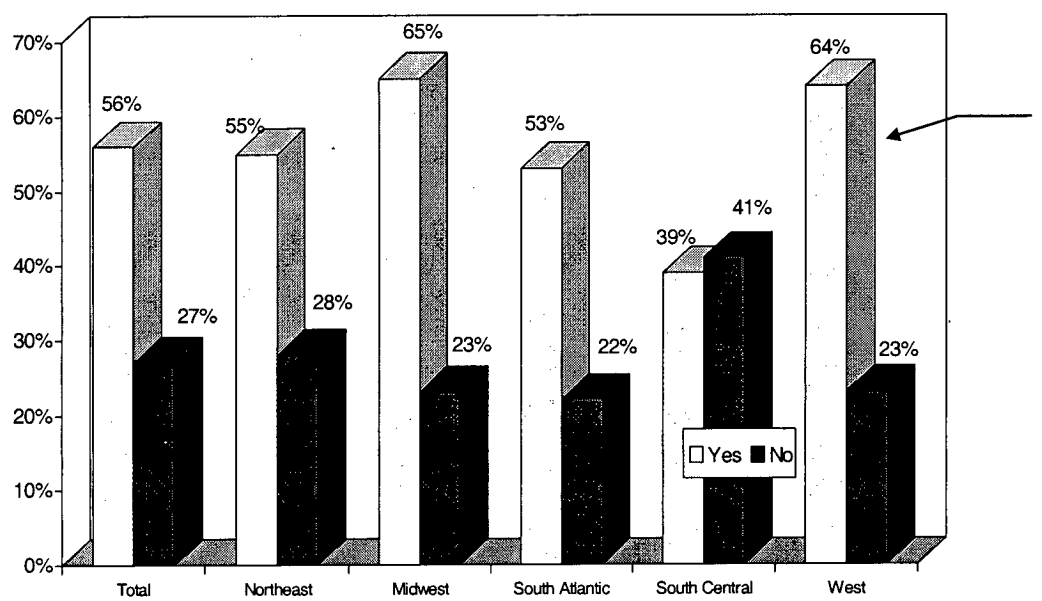
Part II: Market Research Results

General Perceptions about Transportation Issues

The next question was a follow-up from the first National Pilot Survey (the Omnibus Survey). In the Omnibus, respondents were asked, "Who should be responsible for fixing major highways and roads?" Three quarters of the population said that state government was responsible for maintenance and expanding infrastructure with the remaining one quarter saying the federal government was responsible. Several questions were then structured to address this issue.

Since it had already been determined that a large majority of the population believes state government is responsible for road maintenance and expanding infrastructure, the researchers wanted to next determine how, in the public's eyes, those state governments were doing. The first question asked, "Do you believe that your state government has sufficient funds to fix the roads and/or expand them as necessary?" The answers in Figure 29 are shown by region.

Figure 29: Does Your State Government Have Sufficient Funds for Road Maintenance and to Expand Infrastructure? [By Region]

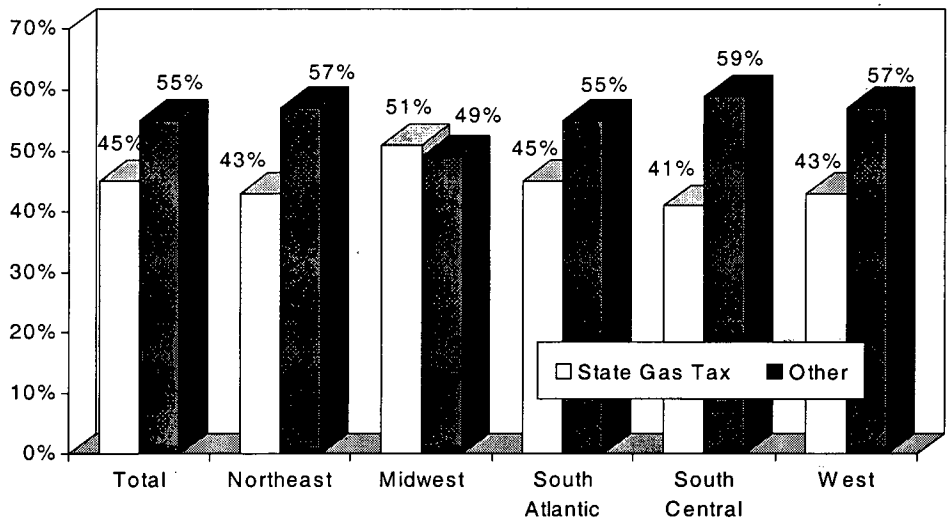


Note: Additional answer allowed was "I don't know." Difference between answers shown and 100% are "I don't know."

With the exception of the South Central states, one half or more of the population is confident of their state's budgetary ability to fund highway projects. Respondents were the most confident in the Midwest and the West, with two thirds reporting their state government had sufficient funds to conduct road investments. In the South Central states (Arkansas, Louisiana, Oklahoma, Texas, Kentucky, Tennessee, Alabama, Mississippi) just over one third of the population believed their states had sufficient road funds and just over one third believe their state did not have sufficient funds. In general, across all states, only one fourth of the population did not believe their state government had sufficient funds for maintenance and expanding infrastructure.

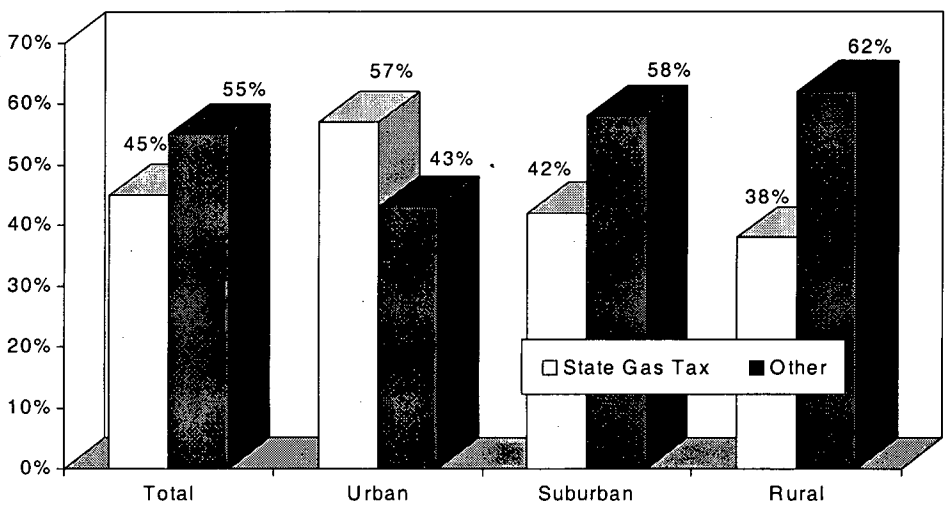
Respondents were also asked to consider funding sources; specifically, if the respondent knew definitively that their government did not have the resources for highway maintenance and enhancement, what they would suggest to raise the money needed? The answers are shown in Figure 30 by region.

Figure 30: Suggestions to Fund Maintenance and Expand Infrastructure, by Region



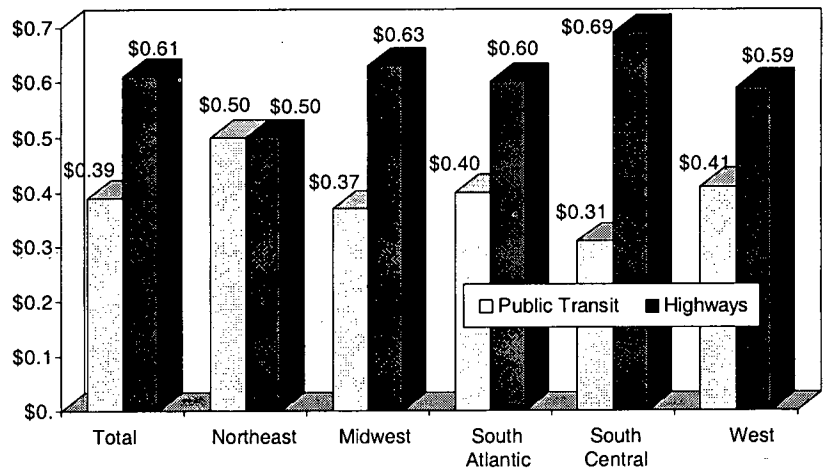
In the Midwest alone, over 50 percent of respondents suggested a gas tax should be used to raise needed maintenance funds. The remaining Midwesterners believed the government should find some other form of funding. Responses were also segmented by population density level to provide suggestive evidence for planners and communicators on tailoring their own unique strategies. When considered by population density levels, only urban respondents were the only group where over 50 percent suggested a gas tax, as shown in Exhibit 31.

Figure 31: Suggestions to Raise Road Repair Funds, by Population Density



Preferences on the expenditure of transportation funds were also examined. Specifically, the question asked, for every $1 spent on transportation, how much would the respondents suggest be spent on public transit and how much on highways. Answers were considered by region, and are illustrated in Figure 32.

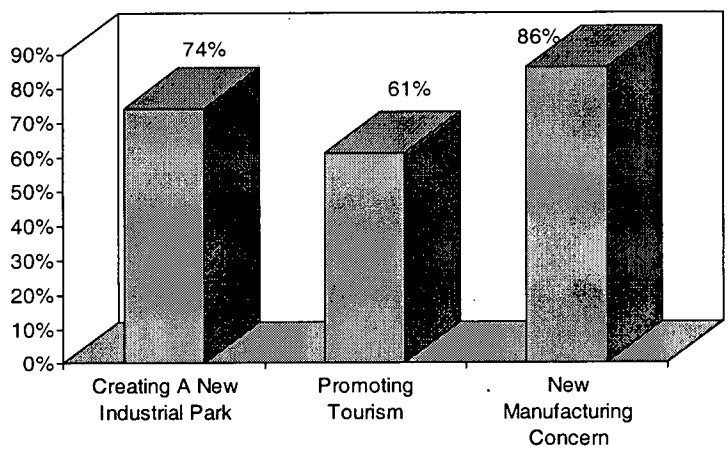
Figure 32: Recommendations for Spending Every $1 of Transportation Funds Mean Dollar Figure, by Region



With the exception of the Northeast, each region of the country favored spending more money on roads than on public transportation, with South Central and Midwestern respondents suggesting that two thirds of transportation funds should be spent on highways. ***These findings suggest that in most parts of the country, planners can expect residents to favor spending patterns weighted toward highways. At the same time, survey results also suggest that transit should account for nearly 40 percent of transportation expenditures.***

Finally, respondents were asked for what purposes they would most want to see served by a new road. Most respondents favored construction to support a new manufacturing concern and a new industrial park, as shown below in Figure 33. Each of the economic themes received strong support.

Figure 33: Would Agree to Support the State Building a New Road Exclusively for...



Executive Interviews

To identify the types of target audiences with which transportation planning agencies must communicate, the research team interviewed policy makers and executives from a segment of the transportation industry. Interviews were conducted with representatives of metropolitan planning organizations, regional transportation authorities, transit agencies, state governments (both congressmen and DOT officials), environmental groups, lobbyists, federal government officials, chamber of commerce officials, tourism officials, and private sector businessmen who depend on the nation's transportation infrastructure.

When asked which audiences to target for communicating benefits, many similar ideas were expressed. All the stakeholders agreed that the general public was an important audience with which to identify and communicate. Many stakeholders also commented on the importance of sub-selecting the public audience directly affected by the transportation investment, although comments were also made about this audience being the most difficult to influence. The stakeholders, when asked to define other important audiences, consistently mentioned the private sector (specifically trucking and construction companies), MPOs, Chambers of Commerce, and transportation agencies.

On the importance of economic impacts, stakeholders' opinions in the transportation investment process remained remarkably the same. Each of the stakeholders, to some degree, agreed that economic impacts were important to transportation programs and that communicating those impacts to stakeholders and/or the public was also important.

Opinions differed most among stakeholders on the public's perceived level of understanding. Some stakeholders believed that the public was not aware of economic impacts, while others believed the public was quite well versed. Also, many stakeholders believed the public did not consider issues beyond the local level while some believed the public had a more regional or even national outlook.

Additional insights from the stakeholder interviews included the following.

- With respect to rural and urban populations, differences in the level of importance attached to transportation were noted. In general, stakeholders believed that people living in rural areas placed more emphasis on highways and their quality than do urban residents.

- With respect to the importance of economic impacts in the investment discussion, several stakeholders commented that economic impacts are not the only factor that plays a role in gathering public support for transportation infrastructure investments. Although most agreed it was important, most also agreed that it was only a part of the discussion and that standing alone, economic impacts would not be enough to sway public opinion.

- Brief anecdotes on the usefulness of economic impacts were also shared:

    - In Seattle, MPO officials believe communicating economic benefits significantly influenced the recent passage of a mileage (tax) increase;
    - In Los Angeles, with the Alameda corridor project, economic impacts were used by both sides (for and against the project) to convey messages to the public; and
    - In Arkansas, legislators tried and failed to pass a gas tax using economic benefit arguments.

Stakeholders stressed the importance of the regional/local economy affecting the public's opinions. Stakeholders stated that if a region were doing well, economic impacts would not be as effective an argument as in a region with a poor economy.

The question that provoked the most interest among the stakeholders asked for examples of understandings or misunderstandings about the economic impacts of transportation investments. Each of the stakeholders shared a misunderstanding, and most shared misunderstandings relating to new projects. Some of the more prominent misunderstandings mentioned included the following:

- The idea that transit is good for others but not necessarily beneficial to the individual (people do not realize that improved transit will reduce congestion and allow *them* to get to work faster);
- The idea among transportation advocates that economic impact arguments will be effective with all groups that oppose transportation projects (historical commissions, environmental groups, and anti-growth groups are unlikely to be swayed with economic impact arguments);
- The idea that building highways will not really lead to economic benefits and/or development (many people believe that, "If they build it, they will not necessarily come"); and
- The idea that different factions with different viewpoints must use different tools to benefit their causes (in reality, different groups can work together using the same tools to benefit all their causes).

National Pilot Survey I: Understanding Transportation Issues

Twice a year, MORPACE International conducts a nationwide survey called the Omnibus. The survey is intended to tap into national opinions on a series of topics ranging from the Internet to pizza buying. In conjunction with the survey, a series of transportation-related questions were asked to gauge national opinions on relevant topics. These questions provided the research team with invaluable insights into general public attitudes toward current transportation topics.

These findings should thus be useful to planners as a compendium of insights on general public awareness of, and interest in, transportation issues. They provide the background for the more detailed findings presented in the preceding sections and suggest that transportation planners and communicators need to communicate economic impact messages with the awareness that many aspects of the linkages between transportation investments and the economy are not well understood, such as the purposes to which federal gas taxes are devoted. At the same time, these results confirm that the public at large is concerned about traffic congestion, and at least implicitly concerned with the costs of congestion. Furthermore, findings indicate that, generally, the public does not support the use of revenues generated by transportation system users (e.g., gas taxes) for non-transportation purposes.

The first set of questions asked respondents for their views on everyday traffic issues including congestion and the state of the roads. Around the country, people spend more time commuting in the Northeast, the south Atlantic, and the West Coast, as shown in Figure 34. Over one third of Americans reported spending over 20 minutes commuting one way, every day. One half of Northeast residents spend more than 20 minutes commuting.

As shown in Figure 35, women spend less time commuting than men do. Two thirds of the female population commute under 20 minutes each day, while only one half of the male population can make the same claim.

Figure 34: Commuting Times around the Country

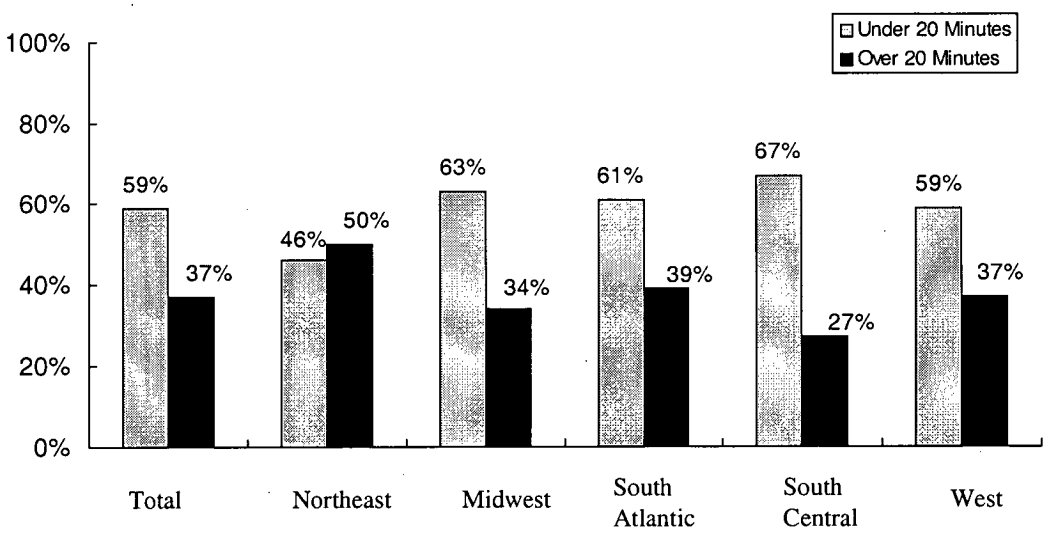
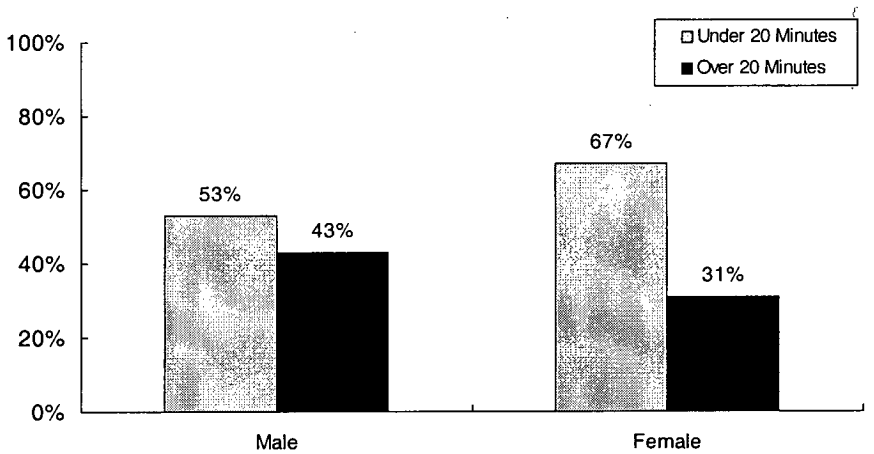
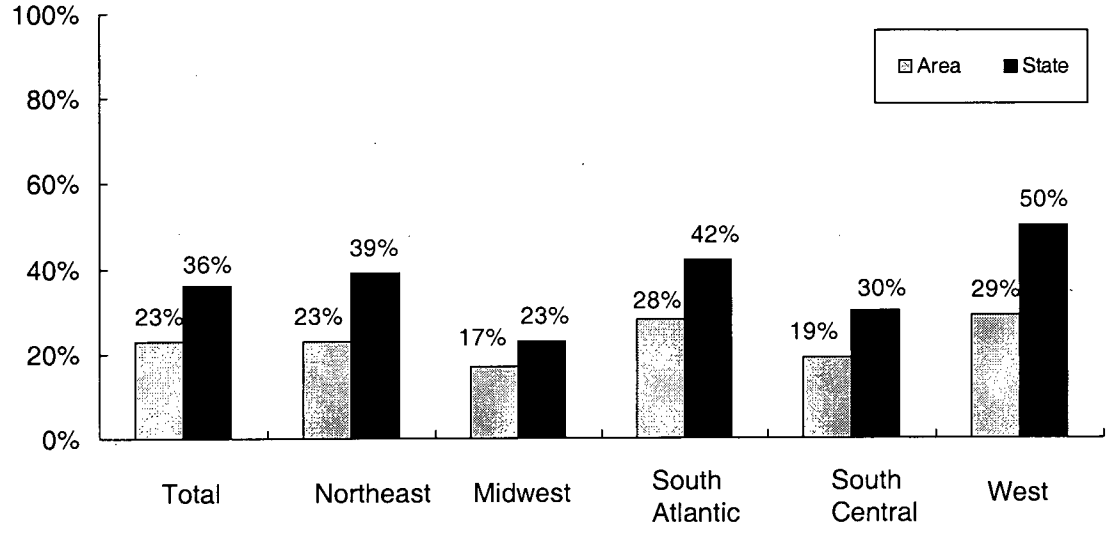


Figure 35: Commuting Times by Gender



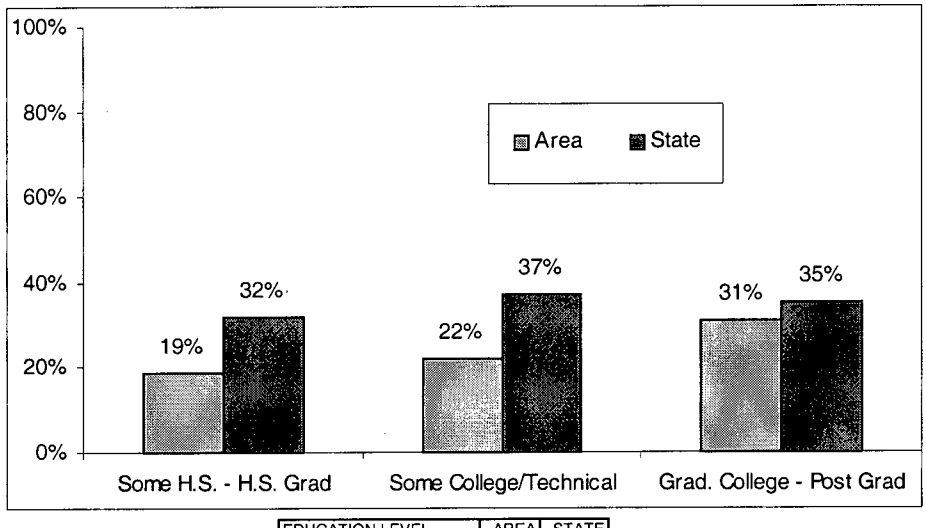
Consistent with past studies, the majority of Americans did not feel that their area has major traffic congestion problems (see Figure 36). Yet when probed, these same Americans admitted that congestion is a problem within their state. A typical example comes from the West Coast, where only 29 percent of respondents admitted to congestion being a major problem in their area, yet one half admitted to congestion being a major problem within their state.

Figure 36: Respondents Who Believe Traffic Congestion Is a Major Problem, by Region



As shown in Figure 37, education does play a role in perception of traffic congestion at the local level. Respondents with higher education were more likely to note that traffic congestion is a major problem within their area. State perceptions of traffic congestion, however, were unaffected by education level.

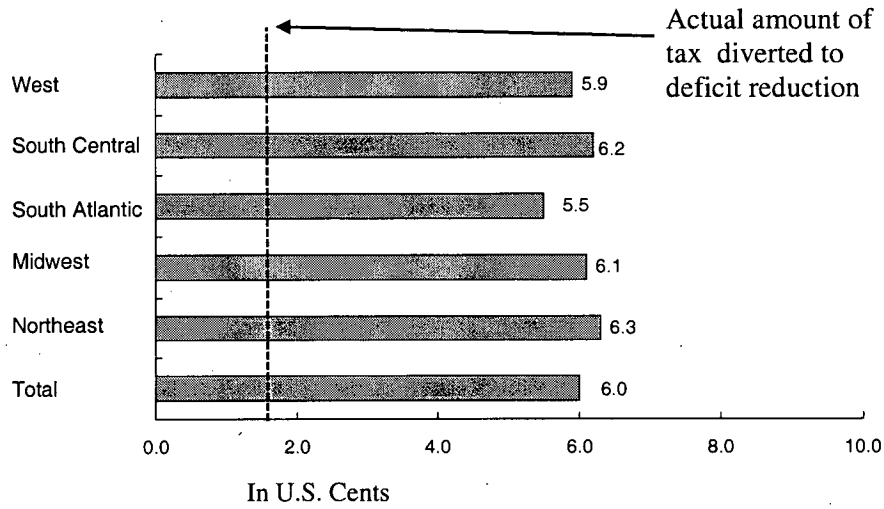
Figure 37: Respondents Who Believe Traffic Congestion Is a Major Problem, by Education Level



EDUCATION LEVEL	AREA	STATE
Some H.S. - H.S. Grad	19%	32%
Some College/Technical	22%	37%
Grad. College - Post Grad	31%	35%

Questions about the gas tax focused on the use of funds diverted to federal deficit reduction, which at the time of the survey, was 4.3 cents of the federal gas tax. Less than 4 percent of respondents knew the correct answer. Interestingly, most guessed a slightly higher amount, as shown in Figure 38.

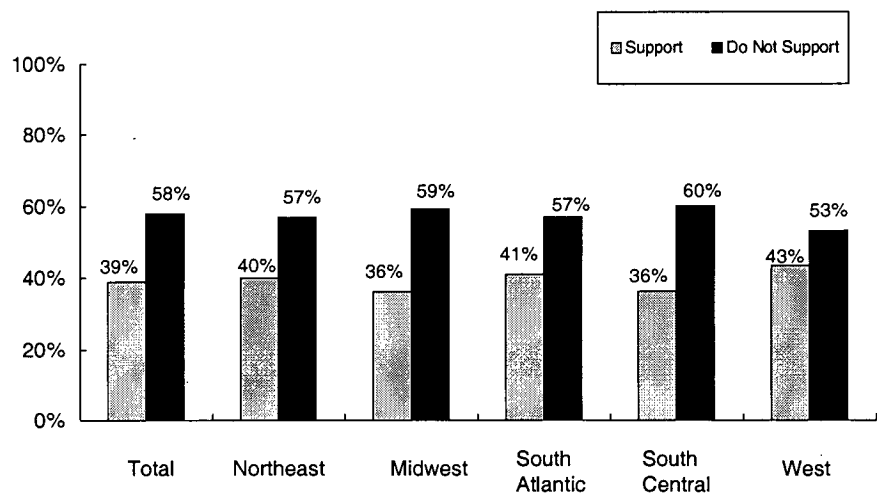
Figure 38: Guess on How Much of Federal Gas Tax Is Diverted to Deficit Reduction Mean Scores, by Region



After venturing an amount of the diverted funds, respondents were told the correct answer and then asked a further question: Would you prefer that the $0.04 was spent on deficit reduction or would you prefer that the government find another way to reduce the deficit? Stratifying the data produced several interesting results. The highlights of this analysis are presented below.

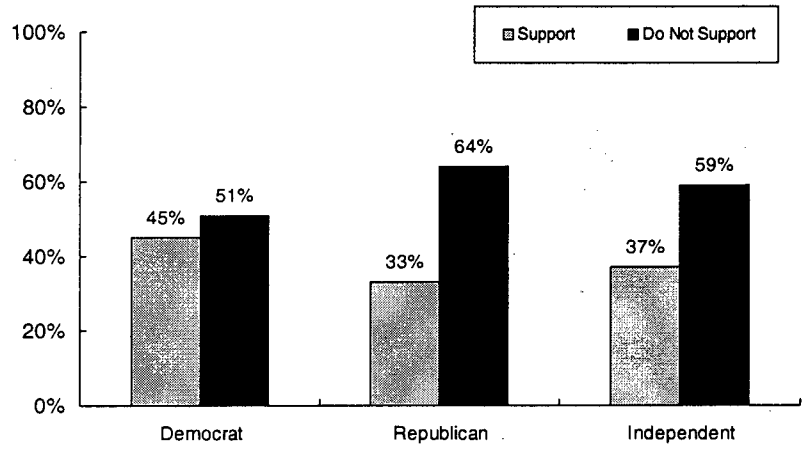
As shown in Figure 39, ***across the country, the majority of respondents did not support the government using gas tax monies to fund deficit reduction.***

Figure 39: Support for Use of the $0.04 for Deficit Reduction, by Region



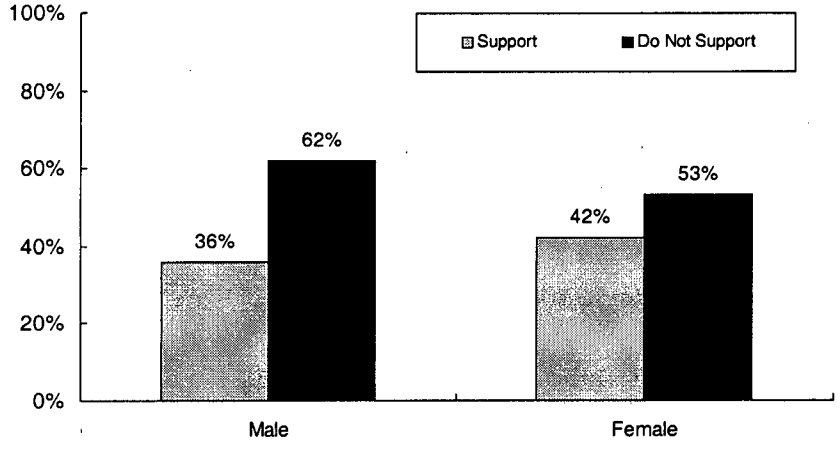
As shown in Figure 40, when answers are considered by political affiliation, republicans were the least supportive of the government using the gas tax to reduce the deficit.

Figure 40: Support for Use of the $0.04 for Deficit Reduction, by Political Affiliation



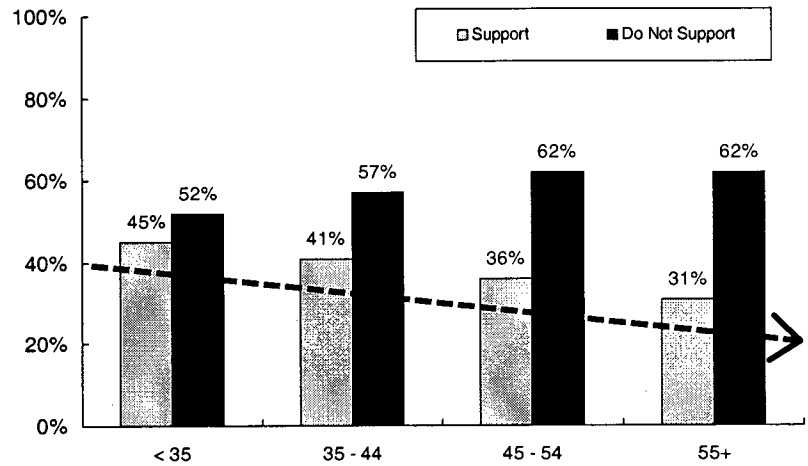
As shown in Figure 41, when answers are considered by gender, women were more supportive of using the gas tax for deficit reduction than were men.

Figure 41: Support for Use of the $0.04 for Deficit Reduction, by Gender



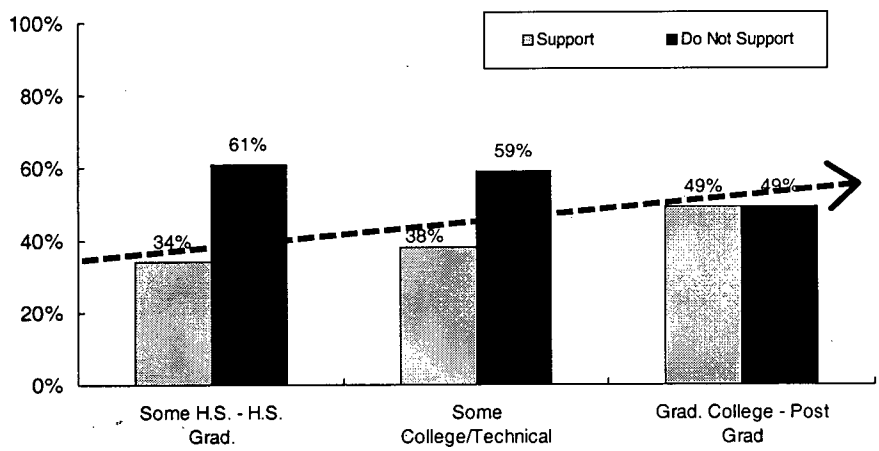
Interesting results were also found with comparisons by age. As shown in Figure 42, nationally, the younger public is more supportive of using the gas tax for deficit reduction than is the older public. A steady yet consistent decrease was seen in the acceptance of using the gas tax for deficit reduction as the age of the respondent increases.

Figure 42: Support for Use of the $0.04 for Deficit Reduction, by Age



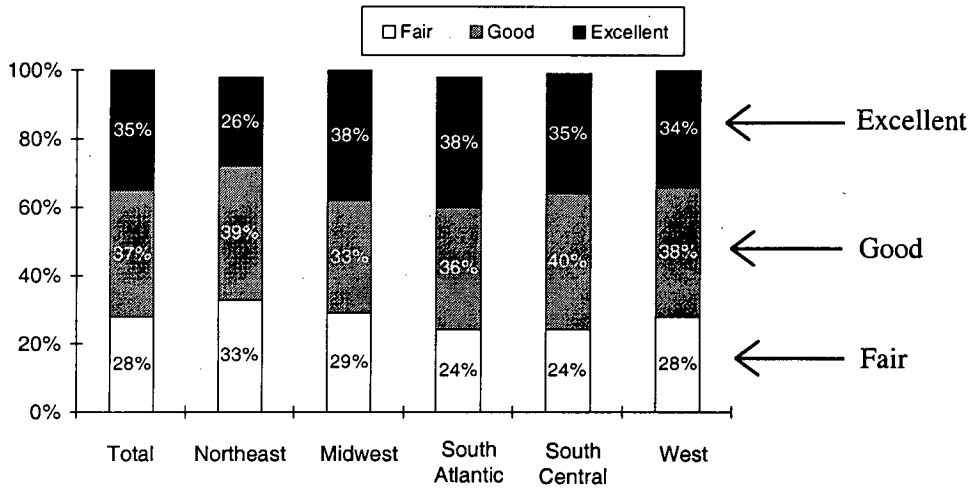
Finally, a direct correlation for supporting gas tax funds for deficit reduction occurs with level of education. Nationally, the more education respondents have, the more likely they are to support using gas tax money for deficit reduction. As Figure 43 shows, increased education means increased support for diverting gas tax funds.

Figure 43: Support for Use of the $0.04 for Deficit Reduction, by Education Level



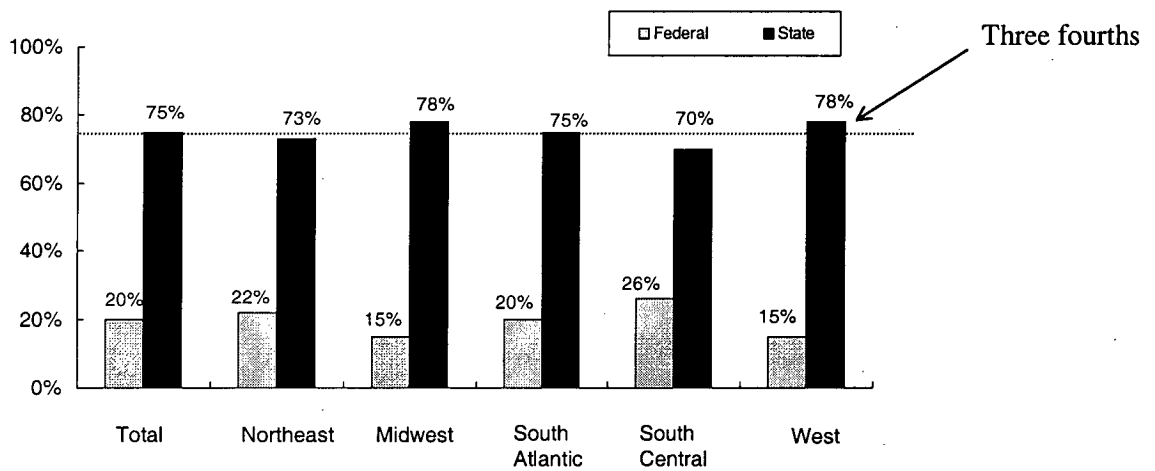
Highway conditions were also probed. Respondents first rated the roads in their area. Nationally, about three fourths of the population generally believed their roads to be in good to excellent condition. However, one third of Northeast residents noted their highways to be only fair (see Figure 44).

Figure 44: Rating Freeway and Road Systems Within Area, by Region



The public was then asked who should be responsible for fixing major highways and roads. Two options were given: federal or state governments. As shown in Figure 45, the resounding majority of the country believed state governments should be fixing roads. These figures did not change significantly for age, for gender, for political affiliation or for education level. In short, three fourths of the country believed the state should be fixing major highways and roads.

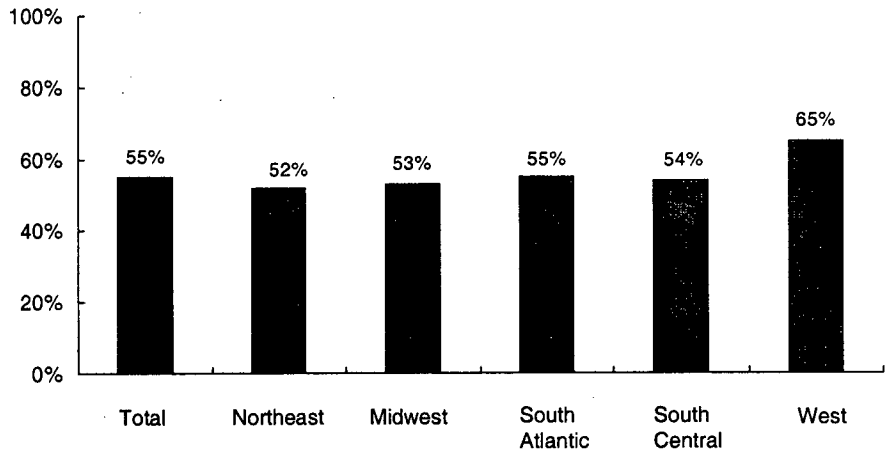
Figure 45: Who Should Be Responsible for Fixing Major Highways and Roads, by Region



A final set of questions asked the public for information about the economic impacts of transportation.

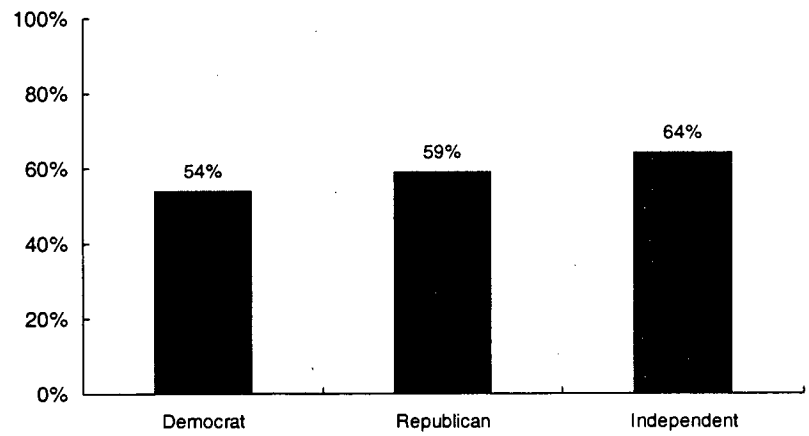
When asked how much of an impact people believed the condition of roads and their capacity for carrying vehicles has on the economic vitality of their region, the majority of the population believed roads have a major impact. The strongest beliefs were held on the west coast where two thirds of the respondents believed that roads have a major impact on the economic vitality of a region (see Figure 46).

Figure 46: Respondents Who Agree That Roads Have a Major Impact on the Economic Vitality of a Region



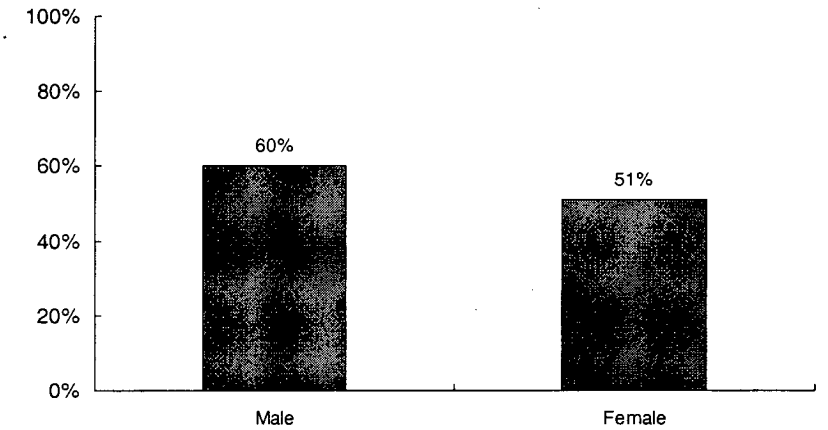
When the question was posed along political affiliation, democrats were the least likely to see a connection between economic vitality and road condition, as shown in Figure 47.

Figure 47: Respondents Who Agree That Roads Have a Major Impact on the Economic Vitality of a Region, by Political Affiliation



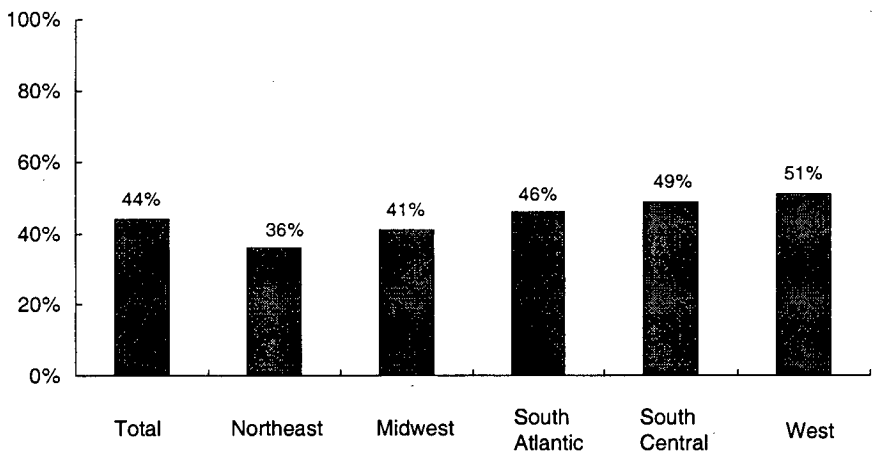
As shown in Figure 48, men saw a clearer connection between a region's economic vitality and its roads than did women. However, at least one half of each believed a strong connection exists.

Figure 48: Respondents Who Agree That Roads Have a Major Impact on the Economic Vitality of a Region, by Gender



A second question was asked about a connection between the quality of life and the quality of roads. As shown in Figure 49, less than 50 percent of the population believed this connection to be very strong. Again, people in the West Coast had the strongest belief that the quality of roads has a major impact on the quality of one's life. Responses did not differ significantly by gender, by age, by political affiliation or by education.

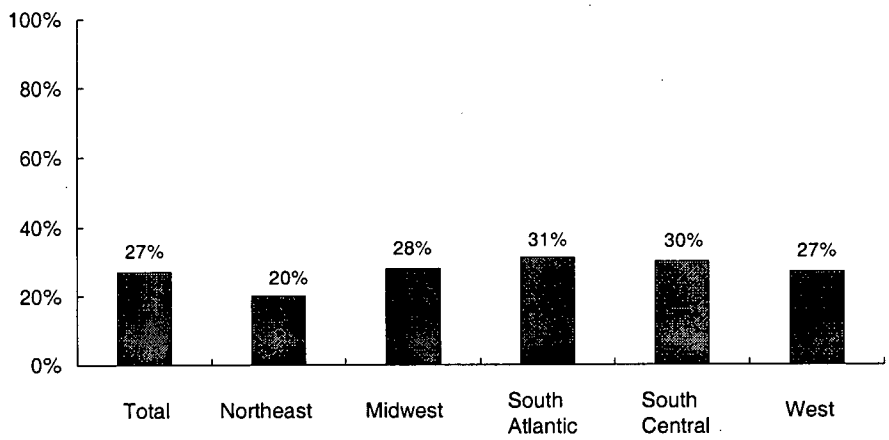
Figure 49: Respondents Who Agree That the Quality Of Roads Have a Major Impact on Quality of Life



Finally, respondents were questioned about how information would affect their willingness to pay a tax. The following example was given: if you knew that improving highways could lower a company's product distribution costs, allow it to reduce inventories, and have greater access to skilled labor while paying for itself within three years, would your willingness to pay a special tax for highway construction increase, decrease, or stay the same?

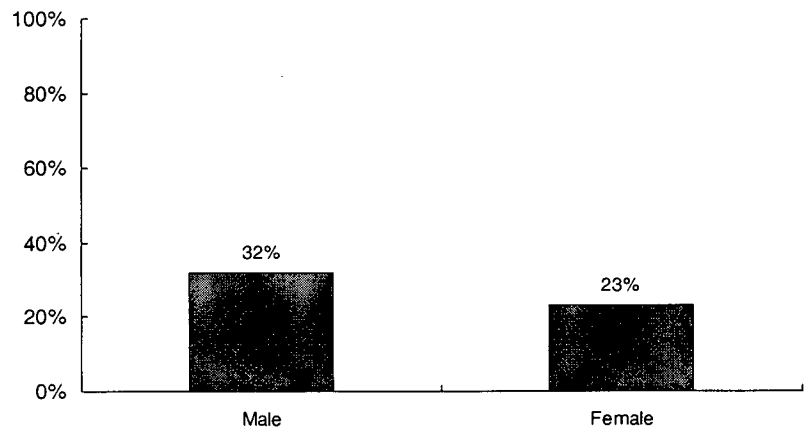
As shown in Figure 50, across the country, one quarter of the population was affected by the knowledge of increased economic benefits to companies such that their willingness to pay a tax would increase. Residents in the Northeast are the most likely to rate their road system as only fair (one third), but are the least inclined to pay an additional tax.

Figure 50: With Knowledge of the Economic Benefits of Highway Improvements for Companies, Willingness to Pay a Highway Tax Would Increase



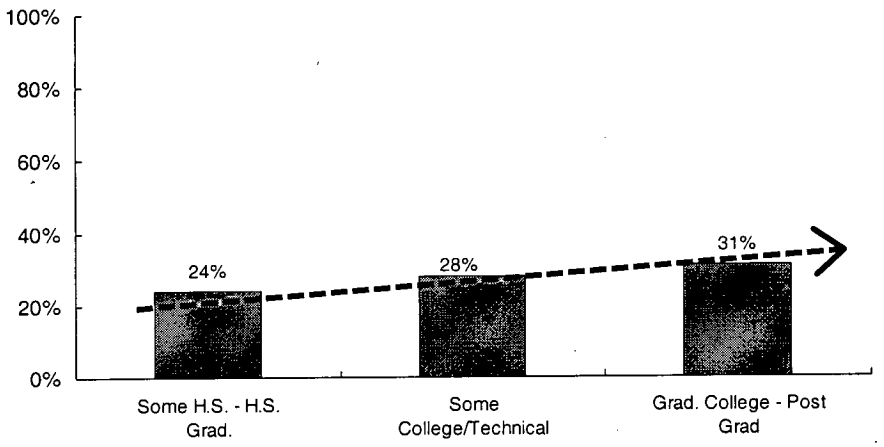
As shown in Figure 51, men also appear more inclined to pay a tax than are women given additional information about the tax.

Figure 51: With Knowledge of the Economic Benefits of Highway Improvements for Companies, Willingness to Pay a Highway Tax Would Increase, by Gender



Finally, higher education appears to be an advantage to those considering a tax hike (see Figure 52).

Figure 52: With Knowledge of the Economic Benefits of Highway Improvements for Companies, Willingness to Pay a Highway Tax Would Increase, by Education Level



CHAPTER 3: APPROACH TO MARKET RESEARCH

As noted at the outset of this report, the research team of Hagler Bailly and MORPACE developed a research approach for NCHRP Project 2-22 that tracked the substance and order of tasks identified in the Research Project Statement. As described in the Research Plan, the approach was divided into three distinct phases.

Phase I—Project Design—involved the development of a market research plan to assess the perceived linkages between transportation investments and economic performance, to determine current communications techniques being employed by transportation agencies, and to solicit stakeholder inputs for the development of a communications guide. This phase of the research included three distinct tasks.

- **Task 1**—Literature Review—consisted of two survey-style reports: first, an assessment of the best methodologies for determining the linkages between the economy and transportation investments (Task 1.1) and second, an investigation of the current "state of best practice" in communication programs being implemented by state DOTs and other transportation agencies (Task 1.2).
- **Task 2**—Identification of Key Elements—included an examination of the most significant linkages between transportation investments and economic performance based on the current and previous literature reviews.
- **Task 3**—Market Research Design—employed the results from Task 1 and 2 and the initial market surveys to support the development of an integrated market research plan to be executed under Phase II.
- **Task 4**—Phase I Interim Report, summarized the results of Tasks 1 through 3.

Phase II—Market Research and Analysis—involved the execution of the market research plan developed under Phase I, analysis of results, and identification of the most effective communication strategies for each pertinent group of stakeholders.

- **Task 5**—Execute Market Research—identified the levels of understanding across stakeholder groups regarding the relationships between transportation investments and economic vitality.

- **Task 6**—Analyze Results—involved an assessment of the types of economic issues that are most often linked with transportation investments (e.g., job creation) and an evaluation of current communication programs.
- **Task 7**—Identify Communications Strategies—employed the results from the implementation and analysis of the market research plan to identify the most viable communication strategies for outreach to the participant (or stakeholder) groups.
- **Task 8**—Phase II Interim Report—summarized the results of Tasks 5 through 7.

Phase III of the research plan—**Development of the Guide**—culminated with the development and preparation of a Communications Guide to assist transportation officials at state DOTs, MPOs, and other agencies with the development, organization, implementation, and evaluation of a communications program. The Communications Guide draws on the results of the market research designed under Phase I and conducted under Phase II to describe the steps that transportation agencies must follow to effectively communicate the economic benefits of investments to business groups, government decision makers, industry, citizen groups, and the general public. The underlying goal of the Guide is to show transportation agencies how a comprehensive, organized, and integrated communications program should be developed and implemented. Phase III has thus involved the execution of three tasks:

- **Task 9**—development of the Communications Guide;
- **Task 10**—submission of the Guide to the NCHRP for review and evaluation; and
- **Task 11**—preparation of this Preliminary Draft Final Report.

This chapter presents detailed descriptions of the technical approaches employed by the research team to achieve the objectives of the NCHRP Project 2-22 study. It discusses the relevant approaches used for the following elements of the study:

- National Pilot Survey III: Support for Transportation Investments" (a national pilot for the regional stated preference surveys/field tests);
- Regional Variations in Support for Transportation Investments (the regional field tests);
- National Pilot Survey II: Understanding Economic Impact Issues (a national follow-up to the regional focus group sessions);
- Regional Focus Group Sessions (Detroit, Tampa, and Seattle);
- Targeted Stakeholder Insights (the Executive Interviews);
- National Pilot Survey I: Understanding of Transportation Issues (the Omnibus Survey); and
- Literature Review on the Identification of Key Linkages Between Transportation Investments and the Economy and on Communication Practices.

National Pilot Survey III: The Effect of Economic Messages on Support for Transportation Investments

Overview

Participants for the national pilot were recruited through the January, 1998, Omnibus Survey conducted by MORPACE. The Omnibus is a national survey conducted every six months by M.O.R. in which public opinion is queried on a diversity of subjects from politics to pizza. In January, 1998, an additional question was added asking participants if they would participate in a national transportation survey, and 50 percent of the 1,200 people interviewed agreed to participate. The national random sample drawn for the Omnibus is representative of census strata by density (urban, rural, and suburban populations), geography, gender, ethnicity, and age.

Part II: Market Research Results

For the pre-test, four callback attempts were made for each of the 600 respondents who agreed to participate. In total, 297 respondents were interviewed for a response rate of 50 percent. On a national basis, a completed sample size of 297 gives a sampling error margin of ±5.6 percent at the 95-percent confidence level. At the sub-sample level, these sampling errors change. For example, with density levels the urban sample has a sampling error of ±8.6 percent, suburban ±6.75 percent, and rural ±10.4 percent, all at the 90-percent confidence level. Sampling errors and the associated confidence levels will be noted throughout the report.

Differences by Economic Opinion Profiles

The focus group discussion at the three demonstration sites (Detroit, Tampa, and Seattle) suggests that differences in preferences for both economic benefit messages and messengers may exist based on the economic opinion or perception profiles of respondents. These opinions and perceptions in turn are dependent on the economic climate of various locales. To test segmentation of national opinion by meaningful clusters of economic opinion, MORPACE included the following questions about the respondent's area or region. All responses were based on a 10-point scale.

- How would you rate **the economic vitality** of your region: very weak to very strong (Q43)
- How important is it that your area **stay economically competitive** with other areas with which it is compared (Q44)
- How important is it that your region be competitive as a hub **for international trade** (Q45)
- To what extent is **a lack of good jobs** a problem within your region (Q46)
- To what degree is **traffic congestion** a problem within your area (Q47)
- How would you rate the **condition of the freeway and road system** within your area (Q48)

Using these questions, MORPACE was able to perform cluster analysis and determine three more or less equal clusters of economic opinion. These clusters later were validated and defined by simple cross-tabulation analysis. The definition of each group is as follows:

- Economic Profile1: Economy is Strong (7-10 on Q43) and Awareness of the Importance of Their Region Staying Economically Competitive is High (9-10 on Q44): *"The Economically Conscious."*

- Economic Profile 2: Economy is Strong (7-10 Q43) while Awareness of the Importance of Their Region Staying Economically Competitive is Weak (<9 on Q44): *"The Economically Indifferent."*

- Economic Profile 3: Economy is Relatively Weak (<7 on Q43): *"The Economically Affected."*

Regional Variations in Support for Transportation Investments

The field test at the three demonstration metropolitan area sites (Tampa, Detroit, and Seattle) was conducted in June and July of 1998. For the field test, 300 random-digit-dial (RDD) interviews were completed with a random sample of Detroit metropolitan (MSA) households; 293 interviews with a randomly selected sample of households within the Tampa, FL MSA; and 308 random interviews with households within the Seattle MSA. As with the pretest, the objective of the field test was to better understand differences in preferences in regard to alternative economic benefit messages, messengers, and methods of communication as these relate to transportation investments. Additionally, the objective was

to compare results at the three sites in terms of consistency in identifying distinct market segments of preferences and viewpoints, and to measure the relative market share of these segments at three sites with diverse economic climates and transportation investment histories.

For each MSA, the sampling margin of error is ±5.6 percent at the 95-percent confidence level. At the sub-sample level, these sampling errors change. For example, with household density levels, the urban sample has a sampling error of ± 6.2 percent, while the suburban sample has a ± 3.2 percent sampling error. Both samples are at the 95-percent confidence level. Sampling errors and the associated confidence levels will be noted throughout the report.

The Introduction of Economic Benefits

A series of potential improvements *(some of which are economic benefits to their region)* were next introduced to respondents. Respondents were again asked for their level of support for the same project, but this time to consider the project in light of a series of improvement, individually considered. In other words, respondents were asked for their level of support for the same transportation project but now on the basis of knowing that a certain improvement would result from the project. Improvements included

- Improved traffic congestion, reducing your travel time;
- Improve the quality of your driving experience (smoother roads, improved access);
- Reducing traffic accidents;
- Creating new jobs;
- Increasing tax revenues by bringing in new businesses;
- Retaining jobs and tax revenues by retaining businesses;
- Making your metropolitan region more economically competitive with other regions;
- Improving the physical appearance of the region;
- Reducing the cost of doing business within the region (improve productivity, lower travel related costs);
- Improving the image of the region;
- Conserving fuel and improving air quality; and
- Reducing your personal costs of traveling within the region.

Improvements were introduced one at a time; respondents revised their initial support rating for each one.

Does It Matter With Whom the Government Cooperates?

As with the national pilot survey, four types of activist groups were presented to respondents along with the question, "How likely is your support for the proposed project to increase if you know that the government has actively negotiated agreements with..." The groups included

- Neighborhood and community groups,
- Environmental groups,
- Anti-growth groups, and
- Property rights groups.

Differences by Economic Opinion Profiles

As with the national pilot, respondents in the regional field tests were segmented by level of economic awareness and perception of economic performance:

- *"The Economically Conscious"* view the economy as strong and exhibit a high awareness of the importance of their region staying economically competitive;
- *"The Economically Indifferent"* view the economy as strong but exhibit a weak awareness of the importance of their region staying economically competitive; and
- *"The Economically Affected"* perceive the economy as relatively weak.

Once identified, differences in preferences for economic benefit messages were explored among the three nationally profiled groups. Each region in the field test was analyzed by the economic conditions in its area, as measured in the national survey.

Focus Group Sessions

In December, 1997, and January, 1998, a series of three focus groups were conducted around the country. The groups included Detroit, Michigan, on December 2, 1997; Tampa Bay, Florida, on January 6, 1998; and Seattle, Washington, on January 29, 1998. All three groups were audio and video taped, had a duration of 1.5 hours, and were led by a professional Market Opinion Research (M.O.R.) moderator.

Participant Summary

Group participants at all three sites were carefully selected, and a mix of participants was sought to adequately address the project goals. Transportation stakeholders in the local and regional area, state DOT officials, community organizers, business leaders, local political leaders and environmental activists participated in the groups. The purpose of the groups was to better understand the opinions of these stakeholders with respect to communicating the economic impacts of transportation investments.

Group Structure

The groups were structured progressively so that each session built on the findings of the previous group(s). All three focus groups began with an introduction and overview. From there, the moderator solicited examples of local transportation projects where economics contributed to either an effective or an ineffective communications strategy. From that point, each of the sites had a slightly different focus. In Detroit, the concentration was on specific projects and how economics played a role in the communication of those projects. In Tampa, the group focus was on general communication techniques and the process with which economics should be interwoven into a communications strategy. And in Seattle, the group considered some overall approaches to how the communications of economics should be undertaken and what elements to include in a communications guide.

Although each group had a slightly different focus with a slightly different moderator's guide, common themes emerged in every group. These themes are highlighted in this report. Because the groups built on one another, findings were presented in combined form.

National Pilot Survey II: Understanding Economic Impact Issues

From the Executive Interviews conducted in Phase II, the research team confirmed that stakeholders in transportation policy differ in their view of how the public perceived the role of economic impacts in transportation. Many believed that the public did not consider transportation to be a national issue, but rather responded to local, and sometimes regional, issues alone. For this reason, a national pilot study was undertaken to further determine how the public viewed economic impacts relating to transportation investments.

To conduct a national survey, a recruitment and follow-up process were executed. Recruiting the participants occurred during a national study, the Omnibus, conducted by MORPACE twice a year (results from the 10 questions asked on the transportation recruit are summarized in the *Executive Summary-Omnibus Transportation Survey Report*, see Appendix C). The first Omnibus for 1997, conducted in April, included a final question asking participants if they would be willing to be part of a follow-up national study, on transportation. Fifty percent (or 499 people) of the 1,000 people interviewed agreed to be a part of the transportation study.

In May, 1997, the follow-up survey was sent. Four hundred and ninety-nine surveys were mailed to respondents, and 10 days later a phone call was made to gather responses over the phone. Attempts were made to contact all 499 initial respondents and 259 were reached for a 52-percent response rate. A copy of the questionnaire is attached as Appendix I.

Measuring How Economic Impacts Play a Role: An Overview

Three methods of analysis measured how the public views economic impacts playing a role in the transportation investment process. In the first analysis, the following two series of paired comparisons of the relative importance of various economic development tools were tested:

1. The first identifies along a continuum where transit and highway development lie in the public's opinion of what factors contribute most to a "better community;"
2. The second tests what economic development factors would most likely encourage support for transportation investments.

A second analysis tested the public's view of traditional areas of concern with and without the knowledge of economic impacts. A third analysis clarified whom the public looks to for implementing and communicating impacts of transportation investments.

Analysis One: Paired Comparisons

The first set of paired comparisons tested the public's perception of where, along a continuum of economic development tools or projects, the public views transit and highway development as affecting a region's economy. The tools or projects chosen included education, transportation, sports facilities, and social programs. The method of scaling attributes, Thurstone Scaling, determines preference orderings through trade-off analysis and is the preferred method of scaling by the M.O.R. research staff.

Experience has shown that when Likert scales (1 to 10) ratings are used to capture preference orderings across a set of critical attributes, there tends to be little dispersion in the orderings themselves (means of the ratings will be 7.85, 7.53, 7.42, and 7.39, etc.). On the other hand, Thurstone scaling, the method of paired comparisons, provides ample dispersion, even when preference orderings are consistent across

respondents and when all attributes are considered critical. Paired comparison data are thus analyzed using algorithms derived from Thurstone's Law of Comparative Judgment.

The analysis pairs each attribute or project type with every other attribute in response to the question: "Which project do you feel is more likely to have a positive affect on your area's economic condition and vitality?" The projects tested include the following:

- Improved highways,
- A new sports stadium,
- An improved education system,
- An improved transit system, and
- Improved job-training programs.

Results of the project trade-off were considered by density as shown in Table 3.

Analysis Two: Areas of Traditional Concern with Transportation Projects

The second analysis was an examination of traditional concerns often associated with transportation projects. The analysis considered the concerns two ways. First concerns were tested alone, gauging support levels for projects given specific concerns, and then combined with knowledge of economic benefits, to test support levels for projects with both concerns and economic benefits in place. As specified in the stakeholder interviews, the three most prominent concerns with transportation investments include environmental, historical preservation, and anti-growth or property rights.

An additional concern that may be considered important is a "changing community character" concern. Although changing character concerns may initially appear to affect rural sectors the most, urban and suburban sectors will also be affected to the extent that they form individual communities. In total, the traditional concerns tested include the following:

- Environmental impacts,
- Historical site impacts,
- Community character issues, and
- Private property rights.

Respondents were given the scenario that their region was investing in a transportation project. Researchers then asked them for their level of support (on a scale) for the project given the presence of one of the traditional areas of concern. The respondent was then told, using the same scenario, that there would be significant economic benefits to the region from the transportation investment and again asked for their level of support. Responses varied by region of the country and were considered by density levels. The countrywide analysis was completed at the 95-percent confidence level, while stratification at the region level was completed at the 90-percent confidence interval due to smaller sample sizes.

Analysis Three: Responsibilities of Transportation Investments

The final analysis undertaken was of a more general nature. A series of questions were designed to gauge how transportation stakeholders were communicating with the public. The first question asked the public at what geographic levels they believe economic benefits should be considered when undertaking a transportation investment.

Executive Interviews

To identify the types of target audiences with which transportation planning agencies must communicate, executives from a segment of the transportation industry were interviewed over a two-month period. These interviews were designed to provide insight into the perceptions of stakeholder who were unlikely to be captured through the other market research components, particularly the surveys. Subjects chosen represented a cross section of businesses, governments, and organizations affected both directly and indirectly by transportation policy and investment decisions. Interviews were conducted with representatives of metropolitan planning organizations, regional transportation authorities, transit agencies, state governments (both congressmen and DOT officials), environmental groups, lobbyists, federal government officials, chamber of commerce officials, tourism officials, and private sector businessmen who depend on the nation's transportation infrastructure.

National Pilot Survey I: Understanding Transportation Issues

Twice a year, MORPACE International conducts a nationwide survey called the Omnibus. The survey is intended to tap into national opinions on a series of topics ranging from the Internet to pizza buying. In conjunction with the survey, a series of transportation related questions were asked to gauge national opinions on relevant topics.

Literature Review

The objective of Task 1 was two-fold: (1) to "review and summarize relevant, recent research, literature, and methodologies which best evaluate and describe the relationships between the economy and transportation investment and (2) to "review and summarize the most significant recent advances in public sector communication applications." Task 1 findings were thus presented in two reports: Task 1.1 and Task 1.2. These reports, as well as the results of Task 2 (Identify Key Linkages) are presented in Appendix A.

The objectives of Task 1.1 are as follow:

1. Provide guidance in assessing the various impacts derived from transportation-related investments;
2. Describe those various impacts and how they can be measured; and
3. Collect and summarize information from a range of studies on the primary impacts and economic implications of transportation investments (in the form of a literature review).

The research conducted under Task 1.1 was not designed to measure the magnitude of transportation impacts nationally or regionally. Instead, it was intended to serve as a general guide to assist policy makers in identifying and communicating various impacts derived from transportation investments to the general public. Specifically, the research was designed to form the basis for identifying the most important impacts, which can be viewed as the key linkages between transportation investments and the economy (as required under Task 2). These key linkages are identified and discussed in Appendix A of this report.

The second focus of the literature review on recent advances in communications practices. Consequently, the objective of Task 1.2 was to conduct a review of the state-of-the-art in communication strategies, based upon existing literature and current practices adopted by transportation agencies to implement outreach efforts. Toward this end, an extensive literature review was conducted to identify current

communication tools and techniques. This review was supplemented by information gathered through telephone interviews held with representatives of public agencies to determine current communication techniques. Results of this phase of the research are also presented in Appendix A.

CHAPTER 4: SUGGESTED FURTHER RESEARCH

The underlying objective of NCHRP Project 2-22 has been to use market research to develop a Guide that state DOTs, MPOs, and other transportation agencies can use to more effectively and proactively communicate transportation's importance to the economy. Although the resulting Guide draws on brief examples of communications programs and strategies applied in the field, it does not use detailed case studies to demonstrate the range of practices in

- Identifying and understanding the target audience,
- Crafting messages,
- Designating messengers, and
- Selecting communication techniques.

Consequently, the objective of further research will be to investigate the effectiveness of specific communication strategies that have been implemented by transportation agencies, and to demonstrate how strategies have been designed, implemented, and evaluated. A case study approach will be used to demonstrate the range of practices and to assess the strengths and weaknesses of alternative communication strategies. Case studies will be selected to reflect both transportation programs and projects that have used economic benefits to obtain support from decision makers and the general public. The resulting product will be a best practices handbook that practitioners can draw on during the design and implementation of a communications program.

APPENDIX A: TASK 1–LITERATURE REVIEW

TASK 1.1: REVIEW OF ECONOMIC LITERATURE

The research team's objective in Task 1 was two-fold: first, to "review and summarize relevant, recent research, literature, and methodologies which best evaluate and describe the relationships between the economy and transportation investment;" and second, to "review and summarize the most significant recent advances in public sector communication applications." Task 1 findings were thus presented in two reports: Task 1.1 and Task 1.2.

Introduction

Task 1.1 Objectives

1. Provide guidance in assessing the various impacts derived from transportation-related investments,
2. Describe those various impacts and how they can be measured, and
3. Collect and summarize information from a range of studies on the impacts and economic implications of transportation investments (in the form of a literature review).

The research conducted under Task 1.1 is not designed to measure the magnitude of transportation impacts nationally or regionally; rather, it is intended to serve as a general guide to assist policy makers in identifying and communicating various impacts derived from transportation investments to the general public.

Organization of Task 1.1 Findings

Section 1 gives an overview of transportation-related benefits and impacts and focuses on identifying the two major types of transportation impacts: user benefits and economic impacts. Once these types of impacts are described, a description of the primary impact categories is offered next, in Section 2. Section 2 also provides an overview of economic terms and various types of economic impacts. Section 3 discusses impact evaluation, provides an overview of the three primary research approaches, and discusses several evaluation techniques. Section 4 summarizes the research conducted under Task 1.1 and discusses several key literature sources.

Overview of Transportation-Related Impacts

Background. America depends heavily on its transportation infrastructure, which includes the highways, airports, rail lines, and ports that help drive the economy. It is widely accepted that transportation is a key component in the nation's economic mix. Indeed, Americans spend more than $800 billion for transportation products and services annually (U.S. DOT, 1990). According to the U.S. Department of Labor, transportation-related expenditures account for nearly 20 percent of consumer spending in the U.S. It is further estimated that transportation and transportation-related businesses currently employ around 10 percent of the nation's workforce.

It is well understood that transportation affects people's daily lives in a profound manner—it determines how they get to work and where they live; it affects safety and the environment. Until recently, such

statements and the statistics above were the primary evidence of the impacts of transportation investments on the economy. Consequently, when decision makers discuss possible investment strategies for transportation and the impacts of those investments, the full range of impacts are sometimes overlooked (Keane, 1996). Recent research, however, has improved our understanding of how transportation investments affect the availability and cost of products and services and allow firms in the U.S. to compete both nationally and internationally.

To date, many questions regarding the relationship between transportation investments and the impacts derived from those investments have yet to be answered fully. Transportation planners and decision makers have long been concerned with how investments in transportation infrastructure influence economic development. Yet, while many studies provide valuable insight into the expected impacts associated with transportation infrastructure investments, they do not explicitly describe what those impacts are, examine the linkages between investments and potential impacts, or describe how these impacts might be measured or quantified.

Traditionally, there has been a much greater focus on evaluating the *user benefits* derived from transportation investments rather than evaluating the *economic impacts* derived from these investments. This can be attributed in part to the fact that user benefits tend to be short-term benefits that are more easily identified and measured. More recently, however, this focus has changed. Over the past decade, numerous articles have been published that attempt to identify and measure the economic impacts of transportation investments and transportation systems. There has also been considerable work addressing the impacts of transportation on regional economic growth and development.

Identifying potential impacts. The nation's transportation network serves thousands of population centers, industries, and markets by providing both mobility and access through variations of the four primary modes of transportation (Perera, 1990). Improving infrastructure leads to higher productivity and improves our standard of living. Well directed investment in infrastructure is an economic stimulus and can improve financial conditions (Grigg, 1993). Transportation infrastructure is not the only component of economic growth; markets, capital, and labor are also needed. But without transportation infrastructure, the other components of economic growth may not function efficiently. Subsequently, it may prove quite difficult to induce economic growth and development without an efficient transportation system.

There are many different types of transportation impacts. These impacts are measured in different ways and effect the economy in different ways. For example, there is a distinct difference between user benefits, such as travel time savings and safety improvements, and economic impacts, such as changes in employment or tax revenue. In some cases, however, user benefits are incorrectly categorized as economic impacts. In other cases, the economic impacts that measure the effect of capital expenditures on the economy are overlooked. Both types of impacts can be attributed to various types of transportation investments.

When people talk about transportation investments, they typically mean public sector infrastructure-based investments[1] rather than service-based investments by a specific firm or business. Transportation infrastructure investments are generally of three types:

1. Maintenance and preservation of existing transportation systems,
2. Expansion and improvements of existing transportation systems, and
3. Construction of new transportation systems (Talley, 1996).

Transportation-related services, such as the movement of freight and passengers, and the industries that support these services are also part of the transportation investment equation.

Although private investments in transportation services certainly have an impact on the economy, for the purpose of this report, the researchers are primarily interested in evaluating the cause and effect relationship between transportation infrastructure-based investments and economic impacts. Transportation-related service investments may yield similar economic impacts to investments in infrastructure; however, the impacts associated with private, service-based investments can be difficult to identify and measure. Private-sector investments are generally not made to benefit society as a whole, or to induce user benefits. They are made purely to promote economic gains within the firm or business. On the other hand, public-sector investments are not typically made based on the potential for economic gain. Public investments in transportation infrastructure are made to serve the general public.

Private investments include the addition of a new airliner by a specific airline or the routine maintenance of a trucking fleet. Although these investments may result in both user benefits and economic gains to the nation as a whole, the investment is made to benefit the firm itself. Therefore, the gains realized through these investments generally accrue to the private firm. It is extremely unusual to talk about the user benefits derived from the addition of an airliner to a private fleet. Although the addition of a new airplane might improve service, if customers are not pleased with the current level of service, they will go to another carrier. The benefits realized by adding an additional airliner therefore accrue to the private airliner as additional revenue. The benefits are generally not viewed as user benefits.

It is important to remember the distinction between infrastructure-based investments and service-based investments when evaluating various transportation impacts in order to avoid double-counting particular impacts. In a benefit-cost framework, it is incorrect to count the same impact more than once, even though it may be realized by more than one sector of the economy. Likewise, user benefits should not be double-counted as economic impacts and vice versa. Although service investments by individual private sector firms or businesses may impact transportation in some way, the focus of most transportation-based investment literature is based on impacts derived from infrastructure investments.

Survey of transportation-related impacts. Public investment in infrastructure contributes to economic development and is a complement to private-sector investment (Conrad and Seitz, 1994). For this overview, we are concerned with the full range of impacts—economic, social, and environmental—that may result from investment in transportation infrastructure in particular. A key underlying assumption is

[1] Infrastructure-based investments also include private sector toll roads, rail facilities, air facilities, and ports. Traditionally, private sector investment in roadways and highways accounts for a very small proportion of the overall surface roadway system. Private sector investment in rail, air, and water-based infrastructure is typically more common.

that investment in the nation's transportation infrastructure system will stimulate additional private-sector investment in transportation-related services.

Consideration of economic, social, and environmental impacts is not new; it has traditionally been a part of the transportation planning process (Perera, 1990). The key to evaluating the total costs and benefits of transportation investments is to correctly identify all the costs and benefits associated with those investments. The addition of a new highway segment (or improvement) to an existing highway network, for example, generates transportation user benefits (and drawbacks) from the day the improvement is first used (Perera, 1990). Economic impacts, however, can occur as early as the first day planning for the project begins. The total stream of benefits or impacts realized through an improvement is rarely recognized immediately.

As is the case with any assessment of impacts, methods of categorizing impacts and the actual measurement techniques can vary from one study to another. The purpose of this overview is not to identify the "best" impact evaluation technique or to develop a framework for evaluating the impacts of transportation investment. The purpose of this overview is to describe several terms used in impact evaluation, and to identify several key considerations for evaluating transportation-related impacts.[2]

There is no one systematic process used to identify impacts associated with transportation investments. Researchers do not necessarily agree on how specific impacts should be measured, nor are all impact measures easily quantified in monetary terms. Before the impacts associated with a specific project or improvement can be measured, the individuals conducting the analysis must fully understand the wide range of benefits and drawbacks that may result from various transportation investments. It is important in any impact evaluation framework to accurately present all benefits and costs without double-counting or over/undervaluing them.

Various studies classify transportation-related impacts, consider various types of impacts, and link these impacts to transportation investments in different ways. For the purposes of this research (both Task 1.1 and NCHRP Project 2-22), impacts will be broadly defined to encompass all categories: direct vs. indirect, qualitative vs. quantitative, and short-term vs. long-term. While some studies approach distinctions such as long-run vs. short-run impacts in detail, others fail to recognize these distinctions and tend to report only a portion of the total impacts. Thus, an important step in evaluating impacts is to clearly distinguish between the types of impacts. The focus of this section, however, will be to analyze the two broad types of transportation impacts that affect economic vitality: user benefits and economic impacts.

User Benefits and Economic Impacts

As noted above, for the purpose of this report, transportation-related impacts are divided into two broad categories: **user benefits** and **economic impacts**. Both types of impacts are discussed in detail in the following sections. It should be noted that user benefits and economic impacts can include any and all of the previously mentioned general impacts: direct, indirect, and induced impacts; quantitative and qualitative impacts; and long-run and short-run impacts.

[2] For the purpose of this report, benefits are assumed to be the same as positive impacts. Negative impacts are categorized as costs or externalities.

User benefits. The primary purpose of infrastructure-based transportation capital expenditures is to provide new or improved transportation services in order to maintain or improve the quality of service (Perera, 1990). **User benefits** accrue to an individual or individuals as the result of a particular investment. Transportation user benefits are measured in terms of travel time savings, operating cost savings, or personal convenience or safety.

Travel time savings are measured by assigning a particular dollar value to a given period of time (typically one hour) and determining the amount of money saved by reducing the time spent on a particular trip by a specific amount of time.[3] Travel time savings can be measured by direct observation or through the use of a travel demand forecasting model or transportation planning model.[4] In the case of direct observation, average speed, throughput, and traffic volume data can be collected for a particular road segment for a pre-improvement and post-improvement scenario. The average time required for a vehicle to travel a quarter of a mile after the improvement can then be compared to the average time spent traveling the same distance before the improvement. Once the value of time is established, determining the dollar value of the time savings is a simple calculation.

Operating cost savings are associated with changes either in travel speeds or in operating conditions (Seskin, 1990). Several different methods are typically used to assess how changes in travel speeds or operating conditions may affect operating costs. In the first method, operating costs are a function of average travel speed. Higher vehicle operating speeds above a certain speed threshold result in increased vehicle operating costs.[5] The second method involves evaluating operating cost savings resulting from a reduction in acceleration and deceleration at signalized intersections and congested road segments. Pavement quality and the operating environment can also affect operating costs. For example, a roadway with a low pavement quality rating (a two, for example)[6] adds to the daily wear and tear on a vehicle.

Safety benefits are a key component in the evaluation of user benefits. Safety benefits are particularly important because everyone, regardless of professional background or educational level, understands what a reduction in the number of accidents means. In other words, safety benefits are easy to understand and conceptualize. The most common variables included in safety estimates are reduction in fatalities, reduction in the number and severity of injuries, and property damage.[7] Other variables include medical

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[3] Travel time savings can accrue to any of the four primary modes, although the time spent traveling by roadway may be affected more directly by infrastructure investments than may the other three modes.

[4] Travel demand forecasting models predict future demand for individual road segments, for new construction or improvements, and for all other links in a particular highway network (Seskin, 1990). Transportation network or planning models can forecast trip distribution, trip generation, mode split, and traffic assignment. Examples of travel demand forecasting models or traffic planning models include SYSTEM II, MinUTP, Micro Transplan, EMME-II, MicroTRIPS, Quick Response System II, TMODEL-2, and TRANSCAD (Little, Liu, Rosenberg, Skinner and Vance). These models generally assign each trip to a route that minimizes travel time and can produce estimates of both vehicle hours and vehicle miles traveled on each road segment. The output can then be used to calculate the value of travel time savings for highway improvements.

[5] See Seskin, page 26.

[6] See U.S. DOT, FHWA, Highway Performance Monitoring System Field Manual, Washington, D.C., December 1987, p. IV-28.

[7] For detailed examples of safety benefits, see *Preliminary Assessment of Crash Avoidance Systems Benefits.* NHTSA Benefits Working Group, October 1996.

care, legal services, work place costs, rehabilitation, and pain and suffering. Safety benefits can be calculated in a variety of ways, and different methodologies can be used to calculate the same variable. For example, property damage may include only vehicles, or it may include vehicles and all other private and public property.[8]

User benefits are important when considering transportation infrastructure improvements, as the vast majority of the benefits realized through transportation investment are user-related. For example, investments in improvements such as widening and resurfacing projects have traditionally been made to facilitate user benefits, not to generate economic gains. User benefits focus on linking benefits such as travel time savings and safety improvements to actual dollar values. User benefits are often easier to measure than economic impacts, as they can often be measured directly through simple observation or data collection. Therefore, it is typically much easier to determine a cause and effect relationship between a specific improvement and user benefits than between a specific improvement and economic impacts. The remainder of this section focuses on economic impacts.

Economic impacts. Economic impacts measure the secondary effects of capital expenditures on the economy (Perera, 1990). Economic impacts can affect employment, income, tax revenues, and consumer resources. *Direct economic impacts* result from on-site construction activities. *Indirect economic impacts* are derived, for example, from off-site economic activities associated with the production of intermediate goods and services such as asphalt, steel, aggregate, and concrete suppliers.

Efforts to explore the economic benefits associated with investments in transportation infrastructure have been stepped up in recent years. Multiple studies and reports have shown that economic impacts can encompass a wide variety of concepts or variables. Investments also have varying effects at different levels. For example, investments in projects of disparate sizes have different impacts on local, state, and regional economies and different impacts on the national economy.

The increased interest in the impacts attributed to investments in transportation infrastructure stem from evidence that improvements to transportation infrastructure have wide-ranging impacts that go well beyond the highway (or rail, air, or water facility) user (Seskin, 1990). The construction of a particular improvement directly and indirectly impacts employment, the demand for goods and services, and tax revenue. Changes in the transportation infrastructure affect the cost of doing business in a particular locality or region. In the absolute sense, these impacts can be measured in terms of dollar benefits to businesses resulting from reduced travel time, reduced vehicle operating expense, and increased safety benefits (Seskin, 1990).

Changes in the transportation infrastructure not only affect the infrastructure itself, but consumer and business decisions, as well. For example, the construction of a new commuter rail line may alter property values and the accessibility of property sites along the rail corridor. Numerous reports, moreover, provide

[8] Safety benefits can be calculated by either adding up the avoided costs—adding up the cost savings from reductions in fatalities, the number and severity of injuries, and property damage—or through willingness-to-pay (WTP) evaluation techniques. In the case of WTP, researchers estimate the public's willingness to pay for a reduction in the number of accidents, injuries, and fatalities. WTP may be the most accurate measure of the true social benefits associated with safety because estimates are based on actual dollar values society places on safety. For more information, see *Economics of Natural Resources and the Environment* (Pearce and Turner, 1990) or *Monetary Measurement of Environmental Goods and Services: Framework and Summary of Techniques for Corps Planners* (U.S. ACE Institute for Water Resources, 1996).

substantial evidence supporting the conclusion that the location and condition of the transportation system influences both consumer and business location decisions.

Economic terminology. Part of the confusion relating to impact evaluation involves the definition of terms. Economists, engineers, and planners often use the same terminology to refer to different things. Before we classify the various types of economic impacts, it is important to define several commonly used economic terms.

Efficiency. Engineers use the term efficiency to describe the quantity of output per unit of input. For example, fuel efficiency is increased when the number of miles per gallon is increased. Economists use the term efficiency to describe the state of maximizing total net benefits from an investment: "An input combination is said to be economically efficient if it is not possible to produce that combination at a lower cost, given the prevailing input prices" (Binger and Hoffman, 1988, p. 235). Transportation efficiency is typically measured by the relationship between capacity and throughput, vehicle hours of delay, and other similar "measures of effectiveness" (MOEs).

Productivity. Production theory examines the use of observable inputs to produce measurable outputs. The process of production can be described by precise engineering formulas which specify exactly how inputs are combined with one another at each stage of the production process (Binger and Hoffman, 1988). The end product, or output, can then be expressed as a function of the inputs used to produce it. An increase in productivity refers to lower costs for the same level of output. Productivity focuses on the types, quantities, and various combinations of inputs used to produce a given type or quantity of output. The level and types of outputs produced, in turn, impact the economy.[9] Transportation-related productivity typically refers to cost savings attributed to transportation improvements.

Economic Multiplier. The economic multiplier or multiplier effect is a measurement of how much economic activity can be generated at the national level through various combinations of purchasing and investment. The economic multiplier provides an indication of how investment impacts economic activity. That is, for every dollar invested, the multiplier provides a quantified measure of the economic return on that dollar. For example, an investment of one dollar results in a return of 1 + x dollars, where x represents some positive percentage of return. Technically speaking, the multiplier effect refers to the ratio of the rise in total output to the increase in government investment (Barro, 1993). A higher economic multiplier leads to greater economic growth.

Competition. Economic competitiveness is a measurement of the ability of a firm or group of firms to sustain its presence in the market for selling a particular good or service. Market share and profitability are two primary indicators of competitiveness.

[9] Productivity at the national level is slightly more complex than the scenario described here. For example, examining the productivity growth effects associated with investment in transportation infrastructure does not focus on the exclusive input of primary materials into the infrastructure. The process is comprised of several tiers. Various secondary materials (asphalt and steel) are combined with labor and capital to produce a roadway. The roadway itself, which is an output, creates further productivity effects by impacting transportation, which in turn can impact the cost of production for manufacturing firms.

Classification of economic impacts. Economic development and growth depends on an efficient transportation network. It is imperative that businesses and industry be connected with markets and suppliers (Perera, 1990). Improvements to the transportation infrastructure network help existing firms, improve productivity by lowering transportation costs to become more competitive, and make the region more attractive for new firms.

Improvement of transport infrastructure influences both production and household consumption. It leads to a reduction of transportation costs and of travel times. This may give rise to substantial redistribution effects among economic groups and also among regions (Rietveld, 1989, p. 256).

It can be difficult to make a direct cause and effect linkage between various improvements and economic impacts. The difficulty is due to the nature of economics. Indeed, "economics is not a clearly defined discipline. Its frontiers are constantly changing, and their definition is frequently a subject of controversy" (Henderson and Quandt, 1980, p. 1). This is particularly true of macroeconomic studies. Since macroeconomics deals with aggregate effects, many of the details associated with individual prices and incomes are assumed away (Henderson and Quandt, 1980). Improvements may yield a wide variety of economic impacts, some of which may have indirect links with the improvement that are difficult to identify. Furthermore, economists themselves may disagree about the magnitude or direction of certain impacts.

The most important step in evaluating the economic impacts of a particular investment is to ensure that all the issues have been properly identified (Perera, 1990). For the purpose of this report, we have divided economic impacts into five categories:[10]

1. **Business and industry**
2. **Residential development**
3. **Tax revenues**
4. **Regional and community activity**
5. **Resources**

Each is discussed in some detail below.

Business and Industry

Economic activity in a particular corridor is the sum of all activity occurring within each sector of the economy along that corridor (Perera, 1990). Investments in transportation improvements may affect all the business activity in a particular region. The magnitude of the impact on each individual firm depends directly on the firm's reliance on transportation.

Effects of a Facility Construction on Businesses. Improvements in a particular corridor yield three types of economic impacts (these are corridor-specific impacts, not regional impacts):

- Direct expenditures on labor and materials used on site for construction of the improvement. Recurring expenditures are for maintenance.

[10] The categories and descriptions of the impacts within each category are based on the classification of economic impacts presented by Perera, 1990.

- Secondary effects induced by the direct expenditures. These are the indirect economic impacts discussed earlier in this section. For example, employment, production, and resource consumption off site (or out of the region).
- Possible temporary impacts to businesses in the vicinity of the construction. For example, a temporary loss of business due to decreased accessibility.

Effects of Right-of-Way Acquisition. Expansion of the right-of-way along a specific corridor could lead to the displacement of business establishments in the corridor and to the following impacts:

- Net permanent loss of jobs and services should the affected businesses choose to relocate outside of the region or go out of business.
- Redistribution of jobs and services within the corridor or region.[11]
- Loss of land required for the right-of-way.

Effects on Business Growth. Transportation-related investments can stimulate business growth in any sector of the economy (manufacturing, service, wholesale, or retail). Impacts may include the following:

- Expansion of existing businesses within the corridor.
- The attraction of new businesses to the corridor.
- The reduction of the costs of moving goods and materials. This impact may enhance the competitive position of some existing businesses and further promote regional economic development and growth.
- Growth in interregional traffic, which may serve to promote additional economic development.
- The redistribution of traffic patterns or flows that may have both positive and negative impacts, depending on where the development is located. For example, economic development may be depressed in areas where traffic is reduced.

Impacts on Tourism and Recreation. Transportation improvements can have either a positive or negative impact on tourism and recreational activities.

Improved accessibility may stimulate demand for particular tourist or recreational attractions in a manner similar to business growth. The construction of a new highway or airport can reduce travel times, reduce safety hazards, and make travel much more comfortable for the user. "Industry experts believe that the stimulus is proportional to the degree of change in accessibility that the improvement creates" (Perera, 1990, p. 45).

Transportation improvements may also have negative impacts on tourism and recreation, particularly if the area is renown for its remoteness or for being undeveloped. Increased accessibility can also have a negative impact if the improvement increases demand for a particular recreational area beyond the supply of sufficient facilities within the area. This can result in increased pollution or overcrowding.[12]

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[11] From a regional standpoint, the redistribution of jobs within a region is not considered to be a negative or positive impact in itself. The redistribution of resources within a particular region is referred to as a zero-sum loss or gain. The resources are still there; they have simply moved to another corridor. If, however, the resources were to leave the region, the impact would be viewed as a negative impact on the regional economy.

[12] Examples of increased accessibility resulting in negative impacts in recreational and tourist facilities include the Grand Canyon and Yellowstone national parks. Over the past few years, user demand at these facilities has become so high that the government must restrict access to the parks. Increased visitation to these parks beyond normal operating capacity has resulting in environmental degradation and has negatively impacted the wildlife in the region.

Increased tourism resulting from an improvement can also lead to additional indirect economic impacts. Tourist spending also affects the service and retail industries to a large degree. Increased spending in hotels, restaurants, gas stations, and grocery stores stimulate demand for petroleum products, agricultural products, etc. The retail and service industries usually experience the greatest increase in sales and employment due to increased tourist activities (Perera, 1990). Additional economic impacts will also be experienced by firms supporting the service and retail industries such as the manufacturing industry.

Evaluating these types of impacts typically involves estimating the use patterns for various transport modes and the seasonal spending patterns by trip category.[13] Interviews with owners and managers of tourism, recreation, and hospitality businesses will help the planner assess the potential impacts that may result from increased tourism.

Effects on Agriculture. Agriculture is the dominant economic activity in many rural or suburban areas. Improvements or new construction can affect accessibility and mobility. Agricultural activity may be impacted in the following ways:

- Improved accessibility to markets. Improving accessibility may result in lower transportation costs, thus increasing profitability and/or lowering product prices. Transportation improvements may also affect the types of crops farmers choose to produce or even harvesting or production practices. For example, construction of a new rail line in a particular region may enable farmers to plant a more valuable crop that they may not have planted before because of the high probability of spoilage.[14] Farmers may also choose to use fewer chemicals and preservatives on crops if they can get them to market more quickly.[15]
- Encouraged conversion of agricultural land to other uses. Transportation improvements may result in pressures to convert agricultural land to other uses, such as residential, commercial, or industrial uses. The impact of transportation improvements on land use varies depending on the region of the country. In some areas, this conversion may be viewed as a positive impact; in other areas, it may be viewed as a negative impact.
- Change in agricultural productivity. Agricultural productivity of a particular region is estimated in terms of the output produced within the region. Output can be based on the quantity of commodities produced (e.g., bushels of corn), or by the income generated from sale of those commodities. It is unlikely that transportation improvements will directly improve the average yield per acre; in fact, they quite possibly will result in the opposite: a negative impact on average yield. Construction can alter drainage patterns, pollute water supplies and reduce farmland from right-of-way acquisition. On the other hand, improvements may increase the income generated from commodity sales.

[13] Examples of factors to consider include hotels, motels, camping, day trips, and seasonal vacations.

[14] Some perishable agricultural products have extremely short shelf lives. Farmers must base production decisions in part on how quickly they can get particular products to market. If the product spoils before it reaches market, the farmer will not be able to sell the product.

[15] Farmers often use artificial preservatives in order to lengthen the shelf life of fruits and vegetables. If the farmer can get his/her product to market more quickly, the demand for certain chemical preservatives may decrease. This impact will be viewed as a negative impact to the chemical products industry, but it may also be viewed as a positive impact to consumers or environmental groups. Furthermore, farmers may alter production and harvesting decisions based on market accessibility.

Effects on Mining and Forestry. Transportation improvements can also provide access to mineral and timber resources. Improvements may reduce transportation or acquisition costs, enabling producers or harvesters to reduce prices and/or increase profit margins.

Residential Development

Residential development (i.e., the construction of new dwelling units) is a function of economic growth and housing market variables (Perera, 1990). These variables included immigration, employment, population growth, income changes, and the rate of change in the housing inventory. Transportation improvements may impact residential development in the following ways:

- Replacement and relocation housing needs. Reduced housing stock from right-of-way acquisition may result in relocation or replacement housing needs. Right-of-way requirements and the implications of residential relocation's can be evaluated on a project by project basis. Information on housing, socio-economic conditions, and demographics is key to assessing the impacts of residential replacement and relocation.
- Secondary effects on residential construction. Improvements may affect residential development by inducing the construction of new housing units. At the local level, residential development is affected by accessibility to low-cost land and from the buyers' perspective through increased accessibility to new residential units. At the regional level, residential development is impacted by increased demand for housing stemming from increased business activity and employment in the area. Induced employment growth within the region may attract additional workers and families to the region, thus creating additional demand for housing.

It is important to distinguish between induced residential development resulting from improved accessibility in specific areas and induced development resulting from economic growth in the region (Perera, 1990). The former is simply a redistribution of resources within the region, while the latter results in a net increase in residential development, which is not necessarily limited to the specific impact corridor.

Tax Revenues

Expenditures generate tax revenues at various levels of the government (Perera, 1990). Investments in different transportation improvements generate tax revenues through personal taxes, indirect business taxes, tariffs, and local property taxes collected by the government. The percentage of tax recovered by the government differs at the various levels of government. For example, for a particular improvement, the federal government may recover 15 percent of the total construction cost through taxes, the state government may recover 20 percent of the total construction cost, and the local government may recover five percent.[16]

It is important to note that the impacts of the federal and state tax revenues may not be felt at the local level. Although the magnitude of taxes recovered by both the federal and state governments may be much larger than the taxes recovered at the local level, the revenues collected from federal and state taxes may be spent in a different state or region. The local taxes, however, will affect the level of public service and the quality and quantity of facilities provided in the locality.

[16] This is just an example. There is no empirical evidence that suggests that tax revenue recovery averages 15 percent of the total construction costs at the federal level (the same holds for the state and local levels).

Property Taxes. Property taxes are the primary source of revenue for local governments (Perera, 1990). Property tax impacts can be divided as follows:

- Loss of tax revenues from acquisition of private property. The assessed value and annual tax for each parcel of land affected by acquisition can be determined through the use of local tax records.
- Changes in property values and tax revenues. A transportation improvement may improve accessibility to a particular area, increasing the premium commercial, industrial, and residential users are willing to pay for the property, which subsequently boosts the property values. Improvements that result in externalities such as the degradation of water quality or increased safety hazards can effectively decrease property values.

Public Service Changes. Public service impacts can be attributed to either changes in net public expenditures or public expenditures for replacement of displaced public facilities. Public service requirements can be estimated by using existing service-to-population (or service-to-housing) ratios to calculate the need for additional services due to new housing or business development. The capacity of existing facilities should be reviewed in order to determine exactly how much new capacity is needed.[17] Public service requirements should be compared to existing and planned facilities in order to determine whether the current and planned supply of facilities will meet projected demand for these facilities.

Regional and Community Activity

"Transportation facilities, together with water, sewer, and other public utilities, are major determinants of urban development and economic growth" (Perera, 1990, p. 47). Transportation improvements can affect communities in very different ways in terms of growth, revenues, income, and environmental quality. Planners should consider how specific improvements are related to adjacent land uses and how the improvement might induce development within the community before a final decision is made to go ahead with the improvement in question.

Infrastructure may be subject to decreasing returns to scale (Rietveld, 1989). Not all investments in infrastructure improvements make sense. If a region already has sufficient infrastructure, adding infrastructure of the same type will have little (if any) value.

Resources

The construction and operation of a transportation improvement results in the consumption of resources. The direct consumption of resources creates four broad categories of economic impacts: energy, land, labor, and materials (Perera, 1990). The assessment of the impact on resources depends on the consumption of energy associated with direct, indirect, and induced effects of a particular investment. Direct economic impacts can be estimated through the use of input/output (I/O) models.

Sample of Existing Research

This section presents a detailed summary of several research papers or articles that contributed to this report. It is not an annotated bibliography of all literature relating to impact evaluation of transportation investments. The section provides a detailed summary of several key articles that may assist decision

[17] There may be existing capacity available at some of the existing facilities. The issue may be infrastructure management rather than the need to construct additional infrastructure.

makers in understanding issues pertaining to transportation impacts and economic development. This section does not include a critique of the content or of the methodology of various studies.

The articles reviewed in this section are not (for the most part) analytically rigorous, nor are they necessarily the most commonly cited articles in the report. They do provide excellent guidance in identifying potential impacts and in outlining various strategies for impact evaluation. The six articles reviewed in this section are listed below.[18]

1. Florida Transportation Commission, June 1996. *Transportation: An Investment in Florida's Future.*

2. J. L. Buffington and M. T. Wildenthal, 1994. "Estimated Impact of Widening U.S. Highway 80 (Marshall Avenue) in Longview, Texas," *Transportation Research Record*, No. 1450. Pricing, Economic Development, Cost Analysis, Transportation Impacts, and Transportation Management Processes. Transportation Research Board, National Research Council. National Academy Press. Washington, D.C. 1994.

3. M. H. Perera, 1990. "Framework for Classifying and Evaluating Economic Impacts Caused by a Transportation Improvement," *Transportation Research Record*, No. 1274. Transportation and Economic Development. Proceedings of a Conference. Transportation Research Board, National Research Council. National Academy Press. Washington, D.C. 1990.

4. T. J. Rephann, 1993. "Highway Investment and Regional Economic Development: Decision Methods and Empirical Foundations," *Urban Studies*, Vol. 30, No. 2, 1993. 437-450.

5. S. N. Seskin, 1990. "Comprehensive Framework for Highway Economic Impact Assessment: Methods and Results," *Transportation Research Record*, No. 1274. Transportation and Economic Development. Proceedings of a Conference. Transportation Research Board, National Research Council. National Academy Press. Washington, D.C. 1990.

6. Wisconsin Department of Transportation Economic Development Team, 1994. *A Summary of Key Issues Being Explored on Transportation Options and Economic Development - Wisconsin TransLinks 21.* Transportation and Economic Development. http://www.bts.gov/smart/cat/ted.html.

The content of each of the studies is summarized below.

1. *Transportation: An Investment in Florida's Future.*

This report provides an overview of Florida's transportation system. It describes all four major transportation modes in detail. The study provides a brief overview of both user benefits and macroeconomic impacts that may result from transportation-related investments. The study then provides 13 case study examples of transportation investments and how those investments impacted the economy.

The study provides an excellent, qualitative, and easy-to-read overview of several macroeconomic, microeconomic, and system-wide research approach examples. The report does not present an evaluation framework, but rather communicates the importance of transportation to both transportation users and the economy in a clear manner.

[18] The articles are not listed in any particular order.

2. "Estimated Impact of Widening U.S. Highway 80 (Marshall Avenue) in Longview, Texas"

Buffington and Wildenthal examine the effects of widening a 6.7-mile section of U.S. Highway 80, known as Marshall Avenue, in Longview, Texas. Data were collected before, during, and after the construction. The data include information on the affected businesses, assessments of the impact of construction, estimates of parking availability, and the impacts of construction expenditures on the local area.

The results of the study indicate that most businesses experienced no change in the number of useable parking spaces, customers per day, number of employees, gross sales, or net profits during or after the construction. An input/output model estimated the impacts of the improvement expenditures to be around $30 million in additional output and around 500 new jobs for the state economy.

The article illustrates the importance of political and social factors in assessing the impacts associated with transportation improvements. There were impacts that were not adequately explained by the I/O model used by the Texas Department of Transportation. The article provides some interesting insight into issues local planners and decision makers might encounter in similar scenarios.

3. "Framework for Classifying and Evaluating Economic Impacts Caused by a Transportation Improvement"

Perera provides a synthesis of the economic principles involved in conducting benefit-cost analysis and impact evaluation. The article distinguishes between the two primary categories of transportation-related impacts: user benefits and economic impacts. Perera argues that transportation evaluation is often incomplete because all potential impacts are not properly identified or completely recognized. A system for classifying and measuring these impacts is discussed.

The article also provides a detailed evaluation framework for assessing improvement costs, user benefits, and economic impacts associated with transportation improvements. This framework serves as the basis for the discussion of economic impacts presented in this report.

4. "Highway Investment and Regional Economic Development: Decision Methods and Empirical Foundations"

Rephann reviews criteria used in U.S. development highway corridor selection and examines various regional development theories. The article provides a comprehensive review of transportation-related impacts and discusses several impact evaluation techniques, considering B/C analysis and multi-attribute evaluation criteria.

Federal and state highway programs have been established to stimulate regional economic development in some regions of the country. Many of these programs use a regional development framework for assessing various transportation-related impacts. Rephann critiques the highway development framework and discusses the need for additional research relating to the assessment of the relationship between various measures of economic development and future growth and development. Rephann also discusses regional triggering forces such as socio-economic, spatial, and institutional indicators.

5. "Comprehensive Framework for Highway Economic Impact Assessment: Methods and Results"

Seskin presents a framework for assessing the economic impacts of highway improvements. The framework is designed to be comprehensive in scope and easy to understand. The article expands current user benefit assessment techniques to include the assessment of regional economic benefits. The economic benefits are measured in terms of changes in business costs and in relation to costs experienced by areas or regions not directly affected by the improvement. Regional economic benefits include opportunities for business expansion, business attraction, and tourism development. The assessment includes the development of several scenarios that vary by level of effort and initiative by local developers.

The article also presents three case study examples that illustrate the application of the framework to inter- and intra-urban highway projects in Wisconsin, Massachusetts, and Indiana. Based on the case study findings, the framework captures regional benefits that range in value from 50 to 150 percent of user benefits. The article concludes that regional benefits are sensitive to the level of improvement of the affected transportation network and to the implementation of related public policies.

6. *A Summary of Key Issues Being Explored on Transportation Options and Economic Development - Wisconsin TransLinks 21.*

This report describes the Wisconsin DOT's approach to evaluating the economic impacts associated with transportation investments. The report discusses the cause and effect relationships between development and transportation improvements. The report examines various modes of transportation in detail, breaking down the potential economic impacts by sector (agricultural, manufacturing, service, etc.). The report provides an excellent starting point to help decision makers organize and categorize potential economic impacts.

Identification of Key Linkages

The objective of Task 2—Identify Key Linkages—was to "identify key elements of economic vitality that can be related to transportation investments and plans." For this study, then, the research team sought to identify the key linkages between transportation investments and economic performance. Through the literature review conducted in Task 1 and additional exploration by the research team, several key linkages between transportation investment and economic vitality were identified:

- Economic productivity
- International competitiveness
- Industry restructuring and economic stability
- Job creation and economic development
- Transportation investment and other broad national goals
- Quality-of-life issues

Each linkage is discussed below, highlighted with key issues that transportation planners and communicators should consider when crafting strategies to communicate the economic impacts of transportation investments.

Appendix A

1. Economic Productivity

Growth in productivity is essential to maintaining national prosperity and competitiveness and to supporting a continuing increase in the standard of living. Productivity has become more critical, because economic growth can no longer be expected to be the consequence of expansion in either the labor force or our stock of raw materials, as increases in these factors of production have slowed significantly. Likewise, private capital stocks are relatively small, as national savings remain low. Instead of these traditional drivers of growth, U.S. economic strength now depends increasingly on productivity gains, which are now estimated to account for approximately 80 percent of U.S. economic growth.

Yet while the U.S. remains the world's most productive economy, the rate of productivity growth has slowed in recent years: it was 2.8 percent per year in the 1960s but only 1.4 percent at the beginning of the 1990s. Some industrialized nations, notably Japan and West Germany, have had considerably higher growth rates for productivity, spurring efforts to enhance the rate of increase in U.S. productivity.

Recent studies of the economic effects of highway investment, particularly those conducted by Professor Ishaq Nadiri of New York University, indicate that investments in highways have a strong effect on productivity. Transportation improvements lower distribution costs, allow the shrinking of inventory (saving firms money), improve firms' access to labor, and lower production costs. Professor Nadiri's study shows a 28 percent return per year between 1950-1989 for total highway capital. This represents an impressive three year payback on infrastructure investment. Significantly, even when returns where lowest, in the 1980s, the return on highway investment exceeded the average return on private capital. Nadiri's work shows the highest returns when examining non-local roads, essentially a proxy for the National Highway System. In short, his results indicate a strong relationship between transportation investments and overall productivity and thus between transportation investment and economic growth.

Nadiri's work buttresses the evidence compiled in case study form by organizations like AASHTO and the FHWA, which also illustrates transportation's strong positive effect on productivity. General Motors, for example, has enhanced its productivity by moving to "just in time" delivery for its large network of distribution centers, which allows it to lower inventory costs. The system's success is directly dependent upon a reliable national network of roads

2. International Competitiveness

Policy makers at all levels in the United States have come to recognize that fundamental changes are taking place in the U.S. economy. Expanding international trade means that for the economy to continue to expand, U.S. firms must be competitive on a global scale. This expansion of the marketplace is creating unprecedented demands on the existing transportation infrastructure. So, too, are the competitive strategies of firms, as they increasingly rely on rapid product or service delivery to international markets. For the economy to continue to grow under these new economic conditions, the transportation system must be able to handle increased volume at improved service levels, or congestion and bottlenecks will grow, undermining the performance of U.S. businesses.

Economic forces and free trade policies are generating increased worldwide trade. These economic forces tend to generate transportation demand, as products move longer distances and regions specialize in products that can be distributed competitively to a large hinterland. Foreign trade, in fact, increased as a share of GDP increased from 12.4 percent in 1970 to 24.8 percent in 1993. This increased dependence on international markets means that competition based on reducing the time necessary for producing or distributing goods is as real as price or style competition. Products that do not move quickly through the

distribution system can become obsolete due to technology, cost, or style. Private businesses then will continue to generate an increased number of smaller and more frequent shipments to farther destinations.

These facts and the economic forces behind them are real, as are the implications for transportation policy. Investments in enhanced transportation infrastructure will pay off directly for the U.S. by strengthening the ability of U.S. firms to successfully compete in the international arena.

3. Industry Restructuring and Economic Stability

The growing importance of international trade is just one of the significant economic forces shaping the U.S. economy. Restructuring and the rise of the service sector are also major trends. In fact, using the broad definition of services to include all economic activity not classified as goods producing, most of the nation's jobs created since 1970 have been in the service sector. Moreover,

- The percent of employment in services has risen from 56.5 percent in 1947 to 76 percent in 1987.
- Over the half century since WWII, employers in service-producing companies have accounted for about 90 percent of the 60 million new private-sector jobs.

In manufacturing, changes are also taking place as firms modernize their processes and modify production and delivery systems. All of these changes are geared toward enhancing productivity, and many of the changes—updated delivery systems like "just in time" delivery, for example—depend on a high-quality transportation infrastructure.

Manufacturing firms have moved production facilities to low-cost foreign locations, adopted techniques to allow rapid adjustment of products to changes in demand, and moved away from single-purpose, large-scale production at one location to flexible, low-volume, decentralized manufacturing at multiple locations, often in several countries. These structural changes, too, require a dependable, extensive network of transportation facilities.

The increased emphasis by American companies on just-in-time delivery, quality, and quick response means that the transportation system must function with sufficient reliability so that businesses can count on their deliveries being on time, regardless of congestion or delays at airports, highways, ports, or intermodal terminals. Moreover, companies are able to reduce their inventory costs through improved transportation and information systems, which then allows firms to quickly replace inventory. There is thus a relationship between improved transportation, logistics, and distribution systems and the economic business cycle. Improved transportation reliability contributes not only to U.S. competitiveness and business profitability, but also to overall economic stability.

4. Job Creation and Economic Development

As noted above, the U.S. economy is increasingly dependent on foreign trade, transportation, and distribution—sectors that employ over 20 million jobs, or about 15 percent of the nation's labor force. According to the 1995 Economic Report of the President, 10 million American jobs now depend on exports. In addition, the transportation sector alone supports more than 4.3 million jobs, or more than 3 percent of the total nation's employment. Transportation investment also generates construction jobs near-term, an industry that represents about 5 percent of total national employment. The travel services and tourism industry represents more than 6 million jobs—or about 4 percent of total national employment—

and travel and tourism as an industry is now the nation's second largest employer after health care services.

Transportation demand and the corresponding need for investment are directly related to economic activity. The total capital invested in transportation affects the total capacity of the system to move people and goods. Without additional investment for expansion, increased transportation demand generated by economic growth can only be met through efficiency improvements, or else it must be controlled (limited in use). Investments that improve efficiency and add capacity are continually necessary to meet the increased demand associated with a growing population and economy. Increased transportation efficiency, productivity and reliability widens the geographic reach of a company's products and services, which leads to increased competitiveness and the creation of jobs. Transportation investment and deregulation have in fact made possible the "distribution revolution" that is currently underway in the American business community.

In summary, transportation investment not only generates jobs in the transportation and related industries. More importantly, transportation investments increase the efficiency and productivity of private-sector industry output and distribution processes. Transportation investments enable private companies to produce their products or provide their services faster and/or at a lower cost, thereby increasing their competitiveness in the global marketplace.

5. Transportation Investment and Other Broad National Goals

In addition to its contributions to economic growth, productivity, and competitiveness, transportation plays a significant role in achieving society's broad goals, such as national security, health, education, and environmental quality. Mobility and access are key factors that influence living standards and the achievement of society's broad goals. In a developed economy, most human activity is substantially dependent on transportation. Whether it is access to jobs, health care, schools, or recreation, individuals rely on transportation for most of their essential needs. Similarly, most companies rely on transportation to carry on their business but also need access to educational facilities, amenities, and other services. In addition to its central role in economic activity, then, transportation investment also contributes to achieving goals in other broad areas, such as defense, health, education, and environmental quality.

Defense. The military readiness of the U.S. is dependent on the capability to transport people, materials, and equipment to far-away locations rapidly and efficiently. One of the major objectives of the Interstate System program was to serve the nation's military transportation needs. The importance of transportation to the nation's defense capability is best exemplified by the significant movement of troops, equipment, and supplies in a very short time frame that needed to be deployed to the Middle East during the 1990-1991 Iraq conflict. With the end of the Cold War, military needs are more likely to involve regional conflicts that require quick response and simultaneous deployment to multiple locations. Continued investment in transport infrastructure is essential to be able to respond to unforeseen military requirements around the world.

Public health. Recent estimates of the U.S. population anticipate that by the year 2000, the 65-plus group will make up 13 percent of the total population, increasing to 21 percent by the year 2030. The need for health care services will increase with the aging population. At the same time, concerns about health care costs, which until recently have been increasing at a faster rate than the overall economy, will continue to affect the nation's effort to improve health care service delivery. Transportation improvements can help achieve the nation's health goals through (1) increases in delivery reliability and speed that make possible reduced inventory costs for pharmaceuticals, medical supplies, and surgical and other medical equipment;

(2) improved public transportation services to hospitals and HMOs for disabled, elderly and other patients unable to drive; and (3) reduced congestion near hospitals and other health care facilities, both for patient/emergency services and supplies/equipment delivery.

Education. In today's global economy and competitive job market place, the U.S. has set as a goal improving the quality of education. In general, with the growth of technology-based businesses and the increasing importance of foreign trade, technical and language skills are more important to individuals and businesses. Businesses are therefore interested in access to a large adequately trained workforce with the necessary language and technical skills. In some of the faster growing, high knowledge, technology-based industries, businesses need access to higher education facilities both to supplement their own research and to maintain and update the skills of their workforce. At the same time, individuals also are looking for opportunities to obtain the additional training necessary to upgrade their skills. Both companies and individuals increasingly participate in conferences, seminars, and regional and national meetings for discussing technical advancements or for training purposes. Transportation investment can support national education goals through (1) improved public transportation services to educational resources and (2) reduced highway and airport congestion for travel to schools, universities, conferences, and other forms of ongoing training.

Environmental quality. The U.S. has set ambitious goals to improve environmental quality. Efforts are underway by the public and private sectors to increase the quality of our air, water, and land resources. Regulations have been promulgated to assure that new development efforts do not result in significant negative impacts and that if they do, adequate mitigation measures are implemented. Transportation investments can play a significant role in achieving the nation's environmental goals through (1) reductions in congestion that reduce air pollution emissions, (2) improved vehicle technology (e.g., airplanes, autos, and trucks) that can result in reduced air pollutant emissions, (3) improved public transportation that attracts increased use and at the same time reduces highway congestion, (4) improvements in airport capacity that reduce noise impacts from air traffic, and (5) dredging of harbor channels that helps clean up contaminated sediments and pollution.

6. Quality of Life in the United States

The U.S. has achieved a level of mobility unequaled anywhere else in the world. This high level of mobility has improved how people live, the amenities they can access, their ability to change jobs, and the nation's overall standard of living. Indeed, mobility and affordability to travel can be viewed in and of itself as a measure of the wealth of the nation.

The extensive highway system we have constructed in the United States makes commuting possible from distant low density suburban and rural areas to job centers. Highways and public transportation services open up job opportunities for individuals and increase the labor pool for employers. This improved access to jobs, shopping, leisure, and vacation opportunities increases personal choice and enhances the overall quality of life.

Furthermore, important demographic trends indicate that the role of transportation in supporting a high quality of life will only expand in the coming decades. The growing number of empty nesters and double-income households increases the demand for leisure time activities, including travel and vacations. The dual-income character of the typical household makes it difficult to coordinate long vacations, so the number of short, one-week and weekend vacations continues to grow, increasing the demand for transportation services.

The aging U.S. population will also increase demand for transportation services. By the year 2000, 13 percent of the U.S. population will be over 65, and by 2030, it is estimated that 21 percent of the population will be over 65 (estimates from Louis Berger International, Inc.). Older Americans have more leisure time and spend more time traveling, a fact that will not only affect the growth of the travel and tourism industry, but increase demand for transportation overall. Only by enhancing the quality of the nation's existing surface transportation infrastructure can the amenities Americans have come to expect be maintained.

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TASK 1.2: REVIEW OF COMMUNICATIONS PRACTICES

The Task 1.2 Findings Report that follows was included in the Phase I Interim Report. Some of these findings have been explicitly or implicitly updated and/or modified based on the execution of the market research conducted under NCHRP and subsequent to completion of Phase I. In particular, the Communications Guide included in this Preliminary Draft Final Report represents more fully the research team's conclusions regarding communication practices than do the Task 1.2 findings.

Organization of Task 1.2 Report

The Task 1.2 report is organized in five sections. Section 1 provides an overview of the relationship or nexus between transportation and communication. Section 2 provides a broad overview of the communications process. Section 3 provides a survey of the tools and techniques of communication, based on the literature review. Section 4 provides an overview of current practice in communication techniques and strategies, based on interviews conducted with a sample of public-sector agencies involved in efforts to communicate the economic impacts of transportation investment.

1. The Communication & Transportation Nexus

Transportation agencies face enormous challenges in generating public support for their transportation programs, policies and projects. Most transportation agencies are concerned that the public does not understand how transportation facilities and services are provided and funded, how such facilities function, and, generally, how important an effective transportation system is to the economy. This lack of understanding complicates the process of consensus-building in the provision of transportation services and facilities.

Agencies need to find out what the public thinks about transportation and how it is provided, how adequate the system is and how can it be improved. Communication is a two-way mechanism that allows information to be relayed to the public and incorporates feedback from the public. "Communication" refers to the methods and activities used to establish such a dialogue with the public. It includes research and analysis, policy formation, programming, implementation, and feedback from the public.

The public often does not have sufficient information to judge a project, program or policy. Communication can fill this information gap. Effective communication can help transportation decision makers understand public needs and concerns and provide information to agencies so they can prioritize goals, allocate resources more effectively, and formulate policies more effectively. Communication, then, is necessary for transportation agencies for a number of reasons:

- Communication can be used to alter behavior to achieve policy objectives
- Communication can market transportation projects and services
- Communication can help achieve consensus in support of transportation policies
- Communication helps agencies assess public attitudes and anticipate public response to projects
- Communication is necessary for transportation agencies to perform their services and conduct their day-to-day business with the public
- Communication is necessary to incorporate public involvement in the transportation planning process
- Communication is necessary for project implementation

- Communications is necessary in evaluating the performance and progress made by transportation agencies.

2. *The Communication Process*

The communication process includes more than the delivery of a message to an audience. The functions of communication include anticipating, analyzing, and interpreting public opinion, attitudes, and issues that might impact the operations and plans of the agency. Communication also involves researching, conducting and evaluating the programs necessary to get public support for an agency and its programs.

Broadly speaking, transportation agencies need to plan a communications strategy by identifying their target audience, the appropriate medium, the message, and the resources required to implement a communications program. The following is a brief sketch of one potential process through which transportation planning agencies can communicate and promote the economic impacts of transportation programs and initiatives.

Define the problem. The first step in formulating a communications program is to determine the problem or task at hand. At the broadest level, the problem facing many transportation agencies is a lack of understanding—among stakeholders and the public—about the relationship between transportation investments and the economy. For a given agency, this problem can take various forms. A communications program, for example, can be designed to help implement a project whose impacts have not been well communicated or to build support for a continuing program. Problem or task definition is closely linked to Step 2, identification of the objective.

Identify objective. To conduct a successful communication program, it is essential to have an objective that justifies the communication program as a viable activity on the part of the agency. In general, an objective can either be *informational*, designed to tell the public about a program or introduce a policy; or *motivational*, designed to prompt the public to adopt a certain behavior. A clearly defined objective will help the planning agency make subsequent decisions in the crafting of its communications strategy.

Identify audience. Once the agency has defined the problem and determined its objective, the next step is to define the audience or audiences at whom the communications program will be aimed. The question that the agency needs to answer is 'whom is the program meant to inform or motivate?' Specifying an audience helps avoid wasted time and/or funds. Furthermore, for a communications program to be productive, it should be targeted toward an audience that has a stake in the problem or task at hand.

The communications program can be targeted at three general categories of audiences: First, the program can be aimed at the entire public to send a message to as many people as possible. Second, the program can be aimed at an external target audience who will be interested in the specific issues being communicated. Third, the program may be aimed at an internal group, such as the employees of an agency, to address issues of concern to the agency itself.

Construct message. The message at the heart of a communication plan is meant to create understanding and/or to create a positive attitude toward the communicator of the message. Toward that end, a message should incorporate at least these key elements:

- The end goal of the program
- Consequences to society
- Functional benefits to the individual

Develop timetable. It may seem obvious that some communications efforts will need to be completed within a short period of time, while others will be designed for a longer time frame. Nonetheless, awareness of the relevant time frame should inform several steps in the development of a program to communicate the economic impacts of a program or project. The time factor should be considered when setting an objective and choosing communications tools; it will also influence an agency's decision on the amount of money needed for a communications effort. When the objective of a program is informational to increase awareness, for example, the time budgeted for the program may be relatively shorter than the time spent on a program whose objective is to change public perception.

It is therefore important to have a timetable, perhaps in the form of a chart, which shows the beginning and end of each element within the communication plan. Such a timetable will help the agency ensure that milestone targets are achieved within the time frame of the program.

Determine budget. Budget considerations will inevitably play an important role in the achievement of the agency's objective. As a rule, public-sector agencies do not have large sums of money to spend on communications programs. Agencies must consider carefully how and where their communications budget is to be spent to achieve their objectives. Constraints should therefore be determined before a strategy is finalized.

Develop evaluation criteria. Realistic, specific, and credible evaluation criteria should be developed to determine the success of the communication program. These criteria will be more meaningful and useful to the agency if they are developed prior to the execution of the communications strategy.

Deliver message. Delivery of an agency's message to its selected audience entails the appropriate selection and subsequent use of communication tools. There are numerous communication tools available through which messages can be delivered, including written, spoken, and visual methods. Selection among these tools depends on several factors, including the nature of the target audience, the level of understanding of that audience regarding the problem, and the time and budget constraints facing the agency. A detailed description of these tools is provided in Appendix C.

Implement program. This "step" in the process does not in reality represent an individual step; rather, it represents the implementation of the above steps as a coherent program. In addition to the steps outlined here, an effective program to communicate the economic impacts of transportation investment will require preparation time, efficient administration, and sufficiently trained personnel. An agency may need additional staff along with the services of professionals and specialists.

3. Communication Tools

Communication tools are the medium through which messages are being conveyed. In order to build public understanding of transportation and its economic impacts, agencies and decision makers need to adopt tools and implement techniques appropriate for filling current gaps in public understanding. There

are various tools and techniques of interest to public transportation agencies and officers, especially those who are involved with the transportation development process, the provision of transportation facilities and services and the performance of the transportation system. These tools can help transportation agencies develop and implement successful strategies for communicating the economic impacts of transportation investment.

Most currently used communications tools fall into one of the following groups:

- Public input techniques (e.g., town meetings),
- Market research methods (polls, audits),
- Graphic tools (logos),
- Audio-visual tools,
- Media tools (radio, television),
- Public information materials (public service announcements), and
- Information services and technology (the World Wide Web).[19]

Within these groups, transportation agencies have a wide range of communication tools available to them. During Phases II and III of the NCHRP Project 2-22 effort, the research team will employ a market research plan to explore which of these tools are most effective for communicating the economic impacts of transportation to key target audiences.

Communication in Practice: Case Studies

Transportation investments increasingly require the broad-based support of public and business interests, within an environment of competing projects for dwindling resources. Public agencies have adopted strategies to ensure that public and business stakeholders/decision makers understand the economic benefits of proposed transportation investments through outreach efforts and communication programs.

This section consists of case studies of public-sector agencies that have effectively used communication to help public and business stakeholders and decision makers understand the costs, benefits and impacts of transportation investments.

Puget Sound Regional Council

The Puget Sound Regional Council (PSRC) is the membership association of local governments and state agencies in the Puget Sound region of the state of Washington. The Council serves as the forum for developing policies and making decisions on important issues related to regional growth and transportation. The Council is the designated Metropolitan Planning Organization (MPO) for four counties, and its members include 60 cities in the region, three ports, the Washington State Department of Transportation, and the state Transportation Commission.

The Central Puget Sound transportation system includes 16,000 miles of roadway, over 2,000 public transit buses serving 90 park-and-ride lots and 27 transit centers, 15 auto and passenger ferry boats operating from 13 ferry terminals, two major container handling ports, and a growing system of trails, bike paths, and sidewalks. The highway, transit, and marine systems components of the regional transportation system interact to meet the demand for travel in the central Puget Sound region.

[19] For the non-communications professional, a brief description of these tools is provided in Appendix D.

The region has been experiencing a spurt in demand for vehicle travel, a fact documented in the region's 1995 long-range transportation plan, the Metropolitan Transportation Plan (MTP). Increasing population, employment growth, a growing number of two-worker households, and dispersed land use patterns have contributed to an increasing dependence on vehicle travel in the region. According to the MTP, the cost of trying to meet this escalated demand far outweighs the existing financial resources.

The MTP estimates that the current rate of revenues available for public expenditure for transportation between 1996 and 2020 will yield $36.9 billion (in 1994 dollars). In this period, the cost of meeting the transportation demand is estimated at $58.3 billion, leaving a shortfall of more than $21 billion. The region's response to this problem has been a proposal that emphasizes strategies that influence the demand for travel. The MTP recommended that the region adopt Transportation Demand Management (TDM) strategies, specifically "market-based" pricing, as a potential mechanism for influencing travel demand.

The market-based pricing approach is similar to the pricing structure used for consumer products and utilities in that it is designed to establish a relationship between how much people use the transportation system and how they pay for it. When a consensus emerged within the PSRC that, in general, most people do not see or understand how we pay for transportation, the MTP recommended that the PSRC initiate a public dialogue to show how much is being spent on the transportation system throughout the region and what the source of those revenues are.

The public dialogue was meant not only to stress the absolute significance of transportation, but also to disseminate the reasons for change and options for pricing the transportation system. The rationale behind the public dialogue was to create awareness of the costs of meeting transportation needs in terms of investment and financing required.

The PSRC thus formulated a strategy to stimulate this public dialogue. A key step consisted of compiling a comprehensive report documenting the full "Costs of Transportation" in the Puget Sound region. This report would lay the groundwork for future efforts to understand and evaluate where the money comes from to cover transportation costs, the relationship between how those costs are paid and how travel choices are made, and the benefits and impacts associated with those choices.

The "Costs of Transportation" report was released in 1996, and it highlighted the fact that both public and private dollars were being spent on transportation. The report established that in 1995, the citizens of Puget Sound spent over $21 billion on surface transportation—more than 25 percent of the region's total personal income. Of the $21 billion, the government spent about $1.7 billion (2 percent of personal income). The report established that the costs of transportation are largely private and that the public has largely supported the bulk of transportation costs in the region.

The report aimed at laying the foundation for the argument that the public "writes the checks" and that the taxes that pave roads, build airports, buy buses, and pay highway patrol officers are neatly folded into gas prices, property taxes, sales taxes, federal income tax, and other sources of public revenue. These constitute the existing transportation pricing mechanisms. The report brings home the fact that the region and its citizens are already involved in transportation pricing, and market-based pricing would only build on the existing foundation. The media in the region paid particular attention to the report, with the *Seattle Times* covering the report and highlighting its significance for the region.

PSRC followed up the release of the report with a significant public information and outreach effort. In January, 1997, PSRC released a brochure highlighting "The Costs of Transportation." The brochure

included a quiz for readers, consisting of questions on how much citizens pay for transportation in the region, who pays, and how the dollars are spent. The quiz format of the brochure served to draw the reader's interest into the subject. The brochure also included an offer from PSRC to send readers a copy of the executive summary of the full report. Interested readers could use a tear-way card in the brochure to request more information about PSRC and join the agency's mailing list to receive a summary of the next report on the costs of transportation.

Even though most public agencies feel a disconnect between the amount of public outreach desired and the amount they are able to provide due to resource constraints, the PSRC has achieved relative success in being able to fund the brochure in part by member jurisdictions of PSRC and by grants from U.S. DOT, FTA, FHWA and the state DOT. It also helps that the agency has an annual budget set aside for public outreach efforts, estimated at between $300,000 and $400,000. PSRC also employs two full-time staff for public outreach and marketing efforts. As the metropolitan planning organization for the region, PSRC works hand-in-hand with the Washington DOT. Having a mutually cooperative relationship with Washington DOT has helped PSRC in its outreach efforts, as has cooperation with the Washington Transportation Policy Institute (WTPI). The WTPI works on behalf of the legislative transportation committee and targets environmental, community, and business groups, transit operators, etc.

Currently, PSRC is working on a second follow-up report to the full "Costs of Transportation." This forthcoming report (scheduled for completion in 1997) will document where the $21 billion was spent. In 1998, PSRC will explore a communication effort to bring these facts and figures into every home in the region. PSRC anticipates that the private sector will lead this communication effort. It recognizes that first, private groups need to be convinced to lead the effort. PSRC anticipates cementing a partnership with a private group to match its 50 percent of the funding required for the communication effort. Media support is expected to play a critical role in this effort.

PSRC's extensive outreach efforts also had an impact on the recent regional transit initiative. When first proposed in 1995, the initiative failed to because it was seen as a government effort instead of a public-private cooperation. PSRC's outreach effort played a role in the success of this initiative in the following year by publicizing the initiative as a joint public-private initiative. All of these factors played a role in the success of the transit initiative in 1996.

Other tools that PSRC employs to communicate with the public and its members include the monthly newsletter, "Regional View," which is sent to 8,000 organizations. The agency is currently developing its home page on the World Wide Web. PSRC has also hired an outside agency to produce two videos on communicating transportation and growth management problems and strategies. Both videos are shown on the region's Public Access Television channel. In an attempt to bring the workings of PSRC's Transportation Policy Board into the homes of citizens, meeting proceedings have been televised on Public Access TV during the last two years.

Appendix A

San Diego Association of Governments

The San Diego Association of Governments (SANDAG) is a cooperative regional organization comprised of elected officials from the region's 18 cities and the San Diego county government. The Association is responsible for region-wide planning and decision making on public policy issues related to growth management, economic development, transportation, and environment.

SANDAG is the technical and informational source for the area's 18 cities and the county government. SANDAG reaches residents primarily through local media coverage of its activities. SANDAG staff members participate in an extensive outreach process by making numerous presentations throughout the year to local civic, community and business organizations. (Public presentations can be requested through SANDAG's Public Information Office). SANDAG builds consensus, makes strategic plans, obtains and allocates resources, and provides information on topics that affect the region's quality of life, including transportation.

SANDAG has recently been involved in an extensive outreach effort to introduce the Interstate 15 (I-15) "ExpressPass" program. ExpressPass is a three-year pilot program funded by FHWA and developed by SANDAG in cooperation with CalTrans, the state transportation department. The goal of the program is to reduce rush hour congestion on I-15 by making the maximum use of all traffic lanes. ExpressPass will allow a limited number of single-occupancy vehicle drivers to use the two reversible lanes normally reserved for carpools, buses, and motorcycles. These lanes stretch eight miles down the middle of I-15 between state routes 56 and 52. Under ExpressPass, solo commuters participating in the program will be allowed to use the 8-mile stretch of carpool lanes for a fee that will go to new transit services. Revenues from ExpressPass will be used to improve bus services and car pool services in the area. However, car poolers (HOV occupants) will still have top priority and can use the lanes for free.

SANDAG designed and mass distributed a brochure aimed at informing the public, specifically drivers, about the ExpressPass program. Aided by a catchy slogan—"ExpressPass – Your ticket to the carpool lane"—the brochure described the program and benefits to participants. Solo drivers were invited to invest in ExpressPass and establish an Express-Pass customer account. The brochure served multiple purposes: it introduced a new concept to drivers, described how drivers could participate in the program, provided a hotline number established for drivers to call and sign up for the program, and provided information on future developments related to ExpressPass.

The ExpressPass program was also publicized heavily through display advertisements, paid advertisement spots, and the SANDAG newsletters. SANDAG solicited comments on the program from the public through its home page and via E-mail. Currently, an in-house survey group is conducting focus groups on the I-15 pricing project. As part of the pilot program, SANDAG will also commission a survey of ExpressPass program participants to determine what works well and what can be improved about the program.

Phase II of the program consists of variable pricing based on congestion rather than time of day. During this phase, SANDAG will design brochures ahead of time, before the project starts, to customers, describing new developments in the program and how the program works.

SANDAG's other communication efforts are targeted toward the Border Transportation Infrastructure program, where the agency is seeking earmarked funding for commercial vehicle traffic management. The agency will distribute fact sheets and newsletters to targeted audiences to increase public awareness of the importance of transportation infrastructure in the border areas.

Public communication and citizen involvement are integral parts of SANDAG's planning activities. The agency regularly distributes an information pamphlet explaining how individuals can become familiar with and participate in regional planning activities. SANDAG proactively encourages news media coverage of agency activities and regional issues. Assigned beat reporters from local newspapers cover monthly SANDAG board meetings. SANDAG also has a home page on the World Wide Web.

SANDAG's communications budget of approximately $275,000 (out of its $11 million annual budget) is devoted to public involvement, information, and outreach. Though SANDAG sometimes hires outside help, the agency's in-house staff spearheads almost all of the communication efforts.

Virginia Department of Transportation

Many transportation agencies today are employing non-traditional technology approaches to ease their traffic problems. The Virginia Department of Transportation (VDOT), for example, views Intelligent Transportation Systems (ITS) as an important part of its traffic management strategy. VDOT has adopted an innovative ITS program, called *Smart Travel,* to empower travelers with the knowledge to make better travel choices by providing them with real-time travel information. VDOT officials believe that the success of the Smart Travel program depends on how it will be received by the public. But to generate public support for the program, VDOT is aware that it needs to communicate the benefits of ITS to the taxpayer.

VDOT is moving toward implementing a statewide public outreach program aimed to capture the attention of the public and to relate the benefits of Smart Travel. As part of the communication campaign, VDOT is placing a large advertisement and editorial in *Virginia Business* magazine. VDOT will also identify key audiences and major economic developments that will be affected by the Smart Travel program in order to publicize the economic benefits and opportunities that the program represents. Copies of the *Virginia Business* article will ultimately serve as VDOT's "corporate brochure" on ITS and the Smart Travel program.

Denver Regional Council of Governments

Public information, community relations, public involvement, and public affairs are terms widely used by agencies to describe their communication efforts. In 1994, the Denver Regional Council of Governments (DRCOG) adopted a resolution for incorporating public involvement in transportation activities. The agency viewed public involvement as the key for disseminating information and receiving feedback from the public regarding its policies and plans. The resolution to adopt public involvement made public communication and outreach a part of the agency's overall transportation planning activities. DRCOG also developed a framework for identifying appropriate mechanisms and agencies responsible for adopting those mechanisms to implement specific transportation planning activities.

Formalizing the public involvement process helped DRCOG achieve the following objectives:

- Identify needs, concerns, and wishes of public;
- Take public concerns into account when making key transportation-related decisions;
- Treat public involvement as a continuous process;
- Seek public involvement on issues and actions under immediate consideration;
- Scale public involvement activities for the appropriate level of planning (regional, local, etc.); and
- Facilitate the flow of information between public groups and decision makers.

Table 19: Public Involvement Framework Proposed by DRCOG

Transportation Planning Activity	Responsible Agency	Primary Mechanism
Regional Transportation Plan	DRCOG	Forums, Hearings, Meetings
Plan Elements	DRCOG	Forum, Workshop, Hearing
Transportation Improvement Program	Local govts. DRCOG	Meeting, Forum, Hearing
Corridor Management	Local govts. DRCOG	Meeting
Project	Local jurisdiction	Meeting, Hearing
Regional Issues	DRCOG	Public interest forum Public opinion poll Regional survey
Conformity	DRCOG	Forum, Hearing

Source: Public Involvement in Regional Transportation Planning, DRCOG, November, 1994.

References

"A Six-Year Action Strategy," Puget Sound Regional Council, December 1996.

"Public Involvement in Regional Transportation Planning," Denver Regional Council of Governments, November 1994.

"Public Outreach handbook for Departments of Transportation," National Cooperative Highway Research Program, Report 364, Transportation Research Board, 1994.

"Smart Travel: Keep Virginia Moving," Virginia Department of Transportation, June 1997.

"TransNet Works," A San Diego Association of Governments Publication, Summer, 1996.

"TransNet: Moving onto the Fast Lane," San Diego Association of Governments, 1996.

"Using Market Research to Improve Management of Transportation Systems," National Cooperative Highway Research Program, Report 329, Transportation Research Board, 1990.

APPENDIX B: FURTHER READING

The following list is not intended to be comprehensive, but illustrative of the types of resources available to transportation officials, planners, and communications professionals interested in communicating more effectively messages about the economic benefits of transportation investments.

Public Involvement Techniques for Transportation Decision Making

This Federal Highway Administration handbook is an excellent primer on communications, focusing on outreach techniques. Geared toward the non-communications professional, this is a simple, straightforward explanation of traditional public outreach approaches. It is not, however, based on market research.

To obtain a copy of *Public Involvement Techniques for Transportation Decision Making,* visit the FHWA web site (www.fhwa.dot/gov) and navigate to the "Publications and Statistics" section.

NCHRP Report 364: Public Outreach Handbook for Departments of Transportation. National Academy Press, 1994.

NCHRP Report 329: Using Market Research to Improve Management of Transportation Systems. National Academy Press, 1994.

NCHRP Report 436: Guidance for Communicating the Economic Impacts of Transportation Investments. Final Report.

The final report on NCHRP Project 2-22 contains a detailed description of both the approach employed for the study and the market research findings. The report also includes a review of recent research into the nature of the economic impacts of transportation, and a description of such impacts. Overlap between the Final Report and this Communications Guide is minimal.

Copies can be obtained by contacting the Transportation Research Board (TRB).

APPENDIX C: SAMPLE SURVEY INSTRUMENTS

C.1 OMNIBUS QUESTIONNAIRE

TRANSPORTATION QUESTIONS – OMNIBUS, April, 1997

Let's now turn our attention to transportation issues...

T1. How long is your daily commute in the morning? On average, would you say your commute is...?

1 Less than 10 minutes
2 10 to 20 minutes
3 20 to 30 minutes
4 30 to 45 minutes
5 45 minutes to 1 hour
6 1 to 2 hours
7 More than 2 hours
8 Does not commute/does not apply (SKIP TO T3)

T2. Considering only changes in traffic congestion, has your commute time increased, decreased, or stayed about the same since last year at this time (April '96)?

1 Increased
2 Decreased
3 Stayed the same
4 Does not apply

T3. To what degree is traffic congestion a problem in your AREA? Please assign a rating using a 5-point scale, where a '5' means congestion is a major problem, and a '1' means congestion is not a problem in your area. Of course, you may use any number between 1 and 5.

ENTER RATING _____

T4. To what degree is traffic congestion a problem in your STATE? Please assign a rating using the same 5-point scale, where a '5' means congestion is a major problem, and a '1' means congestion is not a problem in your state. Of course, you may use any number between 1 and 5.

ENTER RATING _____

T5. Overall, on a scale of 1 to 5, where 1=very poor and 5=excellent, how would you rate the freeway and road system within your region?

ENTER NUMBER _____

T6. Who do you think should be responsible for fixing major highways and roads, the federal government or your state government?

1 Federal government
2 State government

T7A. Each gallon of gasoline you buy currently has an $0.18 federal gas tax built into the price. This tax is intended for spending on road and highway maintenance. However, a portion of that tax is also dedicated towards reducing the federal deficit. How much of the $0.18 gas tax would you estimate goes toward reducing the federal deficit?

ENTER CENTS (MUST BE LOWER THAN $0.18) _____

T7B. Actually, $0.04 of the gas tax goes towards reducing the federal deficit. If you had to choose, would you prefer the $0.04 be contributed toward deficit reduction or would you prefer Congress find other ways to reduce the deficit?

1 Prefer $0.04 of gas tax contribute to deficit reduction
2 Prefer Congress find other way to reduce deficit

T8. How much of an impact do you believe the condition of roads and their capacity for carrying vehicles has on the economic vitality of your region? Please use the same 5-point scale, where a '5' means the roads have a major impact on your area's economic vitality, and a '1' means the condition of the roads has no impact at all.

ENTER NUMBER _____

T9. I will now read to you a series of paired comparisons. After I read each one, please tell me which of the two you feel is more likely to have a positive effect on your region's economic condition. I'll start with... (RANDOMIZE ORDER OF T9M1 – T9M6)

T9M1. (1) Improved highway and transportation system OR (2) a new sports stadium?
T9M2. (1) Improved highway and transportation system OR (2) an improved education system?
T9M3. (1) Improved highway and transportation system OR (2) tax credits for businesses that locate within the region?
T9M4. (1) A new sports stadium OR (2) improved education system?
T9M5. (1) A new sports stadium OR (2) tax credits for businesses that locate within a region?

T9M6. (1) An improved education system OR (2) tax credits for businesses that locate within a region?

T10. To what degree do you think the quality of the roads impacts our quality of life? Please assign a rating using the same 5-point scale, where a '5' means the roads have a major impact on quality of life, and a '1' means the quality of the roads has no impact at all.

ENTER NUMBER _____

T11. Improved highways can lower product distribution costs for companies, allow them to reduce inventories, and have greater access to skilled labor. One study showed that a major new highway would pay for itself in such economic benefits to a region within three years. If you knew this ahead of time, would your willingness to pay a special tax for a highway construction project increase, decrease, or stay about the same?

1 Increase
2 Decrease
3 Stay about the same

QD6. What is your age? (RECORD NUMBER) _____

QD7. What is the last grade or level of school you had the opportunity to complete?

01 Grade school or less (Grade 1-8)
02 Some high school (Grade 9-11)
03 Graduated high school
04 Vocational school/Technical school
05 Some college -- 2 years or less
06 Some college -- more than 2 years
07 Graduated college
08 Post-graduate work

F2 Refused/NA

QD8. What is your marital status?

1 Single
2 Married
3 Separated/Divorced
4 Widowed
5 Other

QD9. Are there any children under the age of 18 currently living in your household?

1 Yes

2 No

QD13. Which of the following income groups includes your TOTAL FAMILY INCOME in 1996 before taxes. Just stop me when I read the correct category.

01 Under $10,000
02 $10,000 to $15,000
03 $15,000 to $20,000
04 $20,000 to $25,000
05 $25,000 to $30,000
06 $30,000 to $40,000
07 $40,000 to $50,000
08 $50,000 to $75,000
09 $75,000 to $100,000
10 $100,000 and over

QD15. Since we are interested in the opinions of many groups, please tell me your race or ethnic background?

1 Black/African American
2 Asian American
3 White/Caucasian
4 Hispanic
5 Other (VOL.)

T15. Finally, would you be willing to be part of a national study being conducted by the National Transportation Research Board? The government would like to gather opinions on transportation from around the country. Your opinions are highly valued and I assure you your identity will be kept confidential. If you agree to participate, a survey will be mailed to you and a follow-up phone call will be made to collect your answers.

1 Yes
2 No

8 Don't know
9 Refused

T15A. Could I please confirm your name and address so that we may mail you the survey? Again, I assure you your name will be kept confidential.

(NAME) _____
(ADDRESS) _____
(CITY, STATE, ZIP)_____

C.2 FOLLOW-UP SURVEY QUESTIONNAIRE

1998 NCHRP
NATIONAL TRANSPORTATION BENEFITS SURVEY- 97195

INTRODUCTION:

Hello! My name is _____, and I'm with Market Opinion Research, a national research firm. We are conducting a survey for the National Transportation Research Board in Washington, D.C. This interview will only take a few minutes of your time.

May I please speak with someone 18 years or older?

We are interested in your opinions about transportation projects such as improvements in roads, bridges, public transit, and port improvements.

First let me ask. . .

Q1. If a major transportation improvement project were proposed for your metropolitan area, generally, how likely is it that you would support this project? Please tell me how likely you are to support it on a 10-point scale, where 1 is you are not at all likely to support it and 10 is you are very likely to support it.

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

BENEFIT MESSAGES

Now I'm going to read a list of possible benefits of the proposed transportation project for your area. As I read each one, please tell me on a 10-point scale, where 1 is not at all likely to support and 10 is very likely to support, how likely you are to support the transportation project if you knew it would . . .

(Rotate Q2—Q14)
Read Each

Q2. Improve traffic congestion?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q3. Improve the quality of your driving experience (smoother roads, improved access).

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q4. Reduce traffic accidents?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q5. Create new jobs?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q6. Increase tax revenues by bringing in new businesses?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q7. Retain jobs and tax revenues by retaining businesses?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q8. Make your metropolitan region more economically competitive with other regions?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q9. Improve the physical appearance of the region?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q10. Reduce the cost of doing business within the region (improved productivity, lower travel-related costs)?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q11. Improve the image of the region?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q12. Improve air quality?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q13. Reduce your personal costs of traveling within the region?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q14. Now, if you were told that a moderate tax increase, such as a 4 cents per gallon increase in the gas tax, would be required to pay for the transportation project proposed for your metropolitan area, how likely would you be in general to support this project? Please tell me your support on a 10-point scale, where 1 is not at all likely to support and 10 is very likely to support.

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

With a moderate tax increase required, how willing would you be to support a proposed transportation project for your area if you knew it would . . .

(ROTATE Q15—Q26)
READ EACH

Q15. Improve traffic congestion?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q16. Improve the quality of your driving experience (smoother roads, improved access).

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q17. Reduce traffic accidents?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q18. Create new jobs?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q19. Increase tax revenues by bringing in new businesses?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q20. Retain jobs and tax revenues by retaining businesses?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q21. Make your metropolitan region more economically competitive with other regions?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q22. Improve the physical appearance of the region?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q23. Reduce the cost of doing business within the region (improved productivity and lower travel-related costs)?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Support								Very Likely To Support	

Q24. Improve the image of the region?

1 2 3 4 5 6 7 8 9 10
Not At All Likely To Support — Very Likely To Support

Q25. Improve air quality?

1 2 3 4 5 6 7 8 9 10
Not At All Likely To Support — Very Likely To Support

Q26. Reduce your personal costs of traveling within the region?

1 2 3 4 5 6 7 8 9 10
Not At All Likely To Support — Very Likely To Support

DELIVERY METHODS

The next questions are about the type of cost information you would most like to have about the proposed transportation project. In a series of questions, I'm going to ask you to make a choice between two options. For each option, please tell me which type of cost information would be most likely to convince you to support the project. Please try to make a choice between each option, even when it is difficult.

(ROTATE Q27—Q32)

Q27. 1 Overall information about the costs and benefits of the project, OR
2 The costs to the region if the project is not implemented

Q28. 1 Overall information about the costs and benefits of the project, OR
2 This project's cost as a part of all transportation expenditures for your region

Q29. 1 Overall information about the costs and benefits of the project, OR
2 Specific information about how much each area within the region will pay for the project and how much benefit each area will get

Q30. 1 The costs to the region if the project is not implemented, OR
2 This project's cost as a part of all transportation expenditures for your region

Q31. 1 The costs to the region if the project is not implemented, OR
2 Specific information about how much each area within the region will pay for the project and how much benefit each area will get

Q32. 1 This project's cost as a part of all transportation expenditures for your region
2 Specific information about how much each area within the region will pay for the project and how much benefit each area will get

On a 10-point scale, where 1 is not likely at all and 10 is very likely, how likely is it that your support for the proposed transportation project **will increase** if you know the government has actively negotiated agreements on the project with . . .

(ROTATE Q33—Q36)
READ EACH

Q33. Neighborhood and community groups?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support								Very Likely To Increase Support	

Q34. Environmental groups?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support								Very Likely To Increase Support	

Q35. Anti-growth groups?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support								Very Likely To Increase Support	

Q36. Property rights groups?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support								Very Likely To Increase Support	

Again on a 10-point scale, how likely is it that your support for the proposed transportation project **will increase** if you hear that the project is being promoted by...

(ROTATE Q37—Q41)
READ EACH

Q37. Local business groups and leaders?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support								Very Likely To Increase Support	

Q38. Local transportation officials?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support								Very Likely To Increase Support	

Q39. Prominent civic leaders?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support									Very Likely To Increase Support

Q40. State officials?

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support									Very Likely To Increase Support

Q41. Local or state politicians such as the Mayor, Governor, or State Representatives

1	2	3	4	5	6	7	8	9	10
Not At All Likely To Increase Support									Very Likely To Increase Support

Of the following, what are the top two ways in which you would prefer to receive information about the proposed transportation project?

(ROTATE Q42A—Q42F)

Q42A ___Local newspaper articles
Q42B ___Talk radio programs
Q42C ___Public meeting held in the evenings near your home
Q42D ___Shopping mall displays
Q42E. ___Direct information mailed to your home
Q42F. ___Local TV News and commentary programs

ECONOMIC PROFILE

Now I'd like to ask you a series of questions about your metropolitan area.

Q43. On a 10-point scale, where 1 is very weak and 10 is very strong, how would you rate the **economic vitality of your metropolitan area**?

1	2	3	4	5	6	7	8	9	10
Very Weak									Very Strong

Q44. On a 10-point scale, where 1 is not at all important and 10 is very important, how important is it that your area stay **economically competitive** with other metropolitan areas with which it can be compared?

1	2	3	4	5	6	7	8	9	10
Not at All Important									Very Important

Q45. Again on a 10-point scale, how important is it that your metropolitan area be competitive as a hub for **international trade**? 1 would mean it is not important at all, 10 would be it is very important.

1	2	3	4	5	6	7	8	9	10
Not at all Important									Very Important

Q46. To what extent is a **lack of good jobs** a problem within your metropolitan area? 1 is not at all a problem, and 10 means it is a very significant problem.

1	2	3	4	5	6	7	8	9	10
Not at all A Problem									A Very Significant Problem

Q47. To what degree is **traffic congestion** a problem within your metropolitan area? 1 means congestion is not at all a problem, and 10 means it is a very significant problem.

1	2	3	4	5	6	7	8	9	10
Not at all A Problem									A Very Significant Problem

Q48. Overall, on a 10-point scale where 1 is very poor and 10 is excellent, how would you rate the **condition of the freeway and road system** within your metropolitan area?

1	2	3	4	5	6	7	8	9	10
Very Poor									Excellent

Q49. To what extent has your government **involved the public** in your area in major decision making in the past five years? Please assign a rating using a 10-point scale where and 1 means the government has not involved the public at all and 10 means the government has heavily involved the public.

1	2	3	4	5	6	7	8	9	10
Not Involved The Public At All									Heavily Involved The Public

Q50. During the past five years, to what extent has your government **used economic benefit arguments** to explain the need for transportation projects? 1 means the government has not used economic benefit arguments at all and a 10 means government has used economic benefit arguments a lot.

1	2	3	4	5	6	7	8	9	10
Has Not Used At All									Used A Lot

Q51. To what extent should communications about major transportation projects be based on **information about their economic benefit** to the region? 1 is not at all, 10 is to a very great extent.

1 2 3 4 5 6 7 8 9 10
Not At All — To a Very Great Extent

Q52. During the past five years, in your opinion, at what point in the process are general citizens in your area made aware of potential transportation projects? **READ LIST, RECORD ONE RESPONSE**

1 At the conceptual stage of the project
2 When the project is being finalized
3 After the project has been finalized but before it is built
4 Right before the project is going to be built

DEMOGRAPHICS

QD1. What is your age? **(RECORD NUMBER)** _____

F2 Refused/NA

QD2. What is the last grade or level of school you had the opportunity to complete?

01 Grade school or less (Grade 1-8)
02 Some high school (Grade 9-11)
03 Graduated high school
04 Vocational school/Technical school
05 Some college -- 2 years or less
06 Some college -- more than 2 years
07 Graduated college
08 Post-graduate work

F2 Refused/NA

QD3. Are there any children under the age of 18 currently living in your household?

1 Yes
2 No

QD4. Which of the following income groups includes your TOTAL FAMILY INCOME in 1997 before taxes. Just stop me when I read the correct category.

01 Under $10,000
02 $10,000 to $15,000
03 $15,000 to $20,000
04 $20,000 to $25,000
05 $25,000 to $30,000
06 $30,000 to $40,000
07 $40,000 to $50,000
08 $50,000 to $75,000
09 $75,000 to $100,000
10 $100,000 and over

QD5. Since we are interested in the opinions of many groups, please tell me your race or ethnic background?

1 Black/African American
2 Asian American
3 White/Caucasian
4 Hispanic
5 Other **(VOL.)**

QD7. GENDER: **(OBSERVATION)** 1 Male 2 Female

That concludes our survey. Thank you very much for your time!

C.3 EXECUTIVE INTERVIEW PROTOCOL

DRAFT COPY #3 4/8/97

My name is _____ and I am with Market Opinion Research. Our firm is working with the Transportation Research Board and we are conducting interviews with transportation executives around the country. The purpose of these interviews is to ask executives, as stakeholders, for their perceptions of the economic impacts of transportation investments. We are also interested in finding out your impressions of how the public views the issue. Any examples you can share with us would be appreciated. The interview should take no longer than 20 minutes and your views will be kept strictly confidential.

Here are some general questions about highways and their perceived and actual economic impacts. I would like you to consider first your own views and then the views of the public:

1a. As a stakeholder, how much of an impact do you believe the condition of roads and their capacity for carrying vehicles have on the economic vitality of a given region?

	Scale	1	2	3	4	5	6	7	8	9	10	Comment?
Condition of roads is:		not important									very important	

1b. In your opinion, how much of an impact does the public perceive road conditions and carrying capacity have on the economic vitality of a region?

	Scale	1	2	3	4	5	6	7	8	9	10	Comment?
Condition of roads is:		not important									very important	

2a. As a stakeholder, to what degree do you think the quality of roads affects our quality of life?

	Scale	1	2	3	4	5	6	7	8	9	10	Comment?
Quality of roads is:		not important									very important	

2b. To what degree do you think the public perceives the quality of roads affects people's lives?

	Scale	1	2	3	4	5	6	7	8	9	10	Comment?
Quality of roads is:		not important									very important	

3a. As a stakeholder, how much of am impact do you believe the condition of roads and their capacity for carrying vehicles have on the United States' international trade competitiveness?

	Scale	1	2	3	4	5	6	7	8	9	10	Comment?
Road conditions are:		not important									very important	

3b. Do you believe the public considers that the condition of roads affects the United States' international trade competitiveness, and, if so, how much?

	Scale	1	2	3	4	5	6	7	8	9	10	Comment?
Road conditions are:		not important									very important	

4. As you know, improved highways can lower product distribution costs for companies, allowing them to reduce inventories and have greater access to skilled labor. One study showed that a major new highway would pay for itself in economic benefits within three years. Do you have any examples of this happening in your area?

5. Studies have also shown that governments can affect a state's attractiveness by affecting resource productivity or the condition of transportation infrastructure. Do you know of examples of this happening in your area?

Now I'd like to ask some questions about your agency's direct interaction with the issue of economic impacts of transportation investments:

1. The following example gives one scenario of possible public interaction. If there was a new infrastructure project undertaken locally that you knew would affect the economy, would your organization:

Take a position publicly on the project? Yes No Not sure

Sit on a committee that would work toward enhanced public awareness?
Yes No Not sure

Contribute funds toward a public awareness campaign?
Yes No Not sure

Comments:

2. Can you share any examples of an understanding or a misunderstanding about the economic impacts of transportation investments among other stakeholders or the public?

3a. What kinds of methods or strategies do you think would best communicate the importance of transportation investments to other stakeholders, and do you have any examples you can share?

3b. We are also interested in what type of outreach programs you think would best work with the general public. Again, if you know of any examples or have been the recipient of any examples, we would be interested in hearing them.

4. In your opinion, how important is it to inform the public about the economic impacts of transprotation investments?

Scale	1 2 3 4 5 6 7 8 9 10	Comment?
Informing the public is:	not important very important	

5. Can you think of other stakeholders who are concerned or participate in the issue of economic impacts of transportation investments who would be beneficial for us to speak with?

Finally, some general questions about your position:

1. Your official title is _____

2. Your organization is _____

3. The market area (region of the country) you serve includes _____

4. The public (or the constituents you serve) you interact with includes _____

C.4 FOCUS GROUP MODERATOR'S GUIDE

NCHRP MODERATOR'S GUIDE-DETROIT
Leadership Group 12/2/97: Detroit, Michigan

A. Introduction

This is a discussion group for a study sponsored by the Transportation Research Board of the National Academy of Science (specifically, National Cooperative Research Board [NCHRP] Project 2-22). The study's objective is to explore EFFECTIVE MEANS OF COMMUNICATING THE ECONOMIC BENEFITS OF TRANSPORTATION INVESTMENTS. Detroit is one of the three selected demonstration sites, along with Tampa and Seattle.

On confidentiality, we didn't invite you to lunch to quote you individually or on behalf of your agency. Only a summary of the discussion findings will be available in our report. We have asked you here to draw on your combined years of expertise and experience. We greatly appreciate your contribution to this research.

Let's start by having each of you introduce yourself and the agency or interest you represent.

One of our key questions is whether you think the public perceives transportation investments to have a strong or weak link with the economic performance of the region? What impact do differing public opinion segments have on formation of transportation communication strategies, including methods and messages? Finally, looking at a few specific transportation initiatives within the region, what have been the recent successes and failures in communicating economic benefits to businesses and the public?

B. The Implications of Public Opinion

Let's start our discussion by considering some findings from a national public opinion poll on transportation issues. This survey was conducted six months ago. You have a packet in front of you with the charted results and findings.

For each finding, let's first discuss the degree to which you think this is true of public opinion within the Detroit region. Then I want to know what implications it has, if any, for the development of strategies for communicating the economic benefits of transportation investments.

Finding # 1:The public tends to view the economic benefits of transportation as primarily regionally- or locally-based. Half do not see transportation investments as a national economic benefit.

Finding # 2: Highway maintenance and expansion is considered a state responsibility, not a federal one. Furthermore, more than half of the population believes that state governments have sufficient funds for road maintenance.

Finding # 3:Public views and support for transportation investments differ by urban, suburban, and rural locations. Urban areas are less likely to consider highways an economic benefit; rural areas are less likely to support funding highways; and traffic congestion is considered an urban/suburban issue.

Finding # 4:Communicating economic benefits can increase support for transportation investments over certain objections, but not others. In the Midwest, concerns regarding historical preservation and "changing the character of a community" can be overcome to some degree by emphasizing economic benefits. Concerns regarding environmental impact and private property rights, however, cannot be overcome by emphasizing economic benefits.

C. Developing a Communications Strategy

Our next exercise is to assume that you, as a group, have just been charged with ensuring that the region's transportation infrastructure and system will fully support the economic viability of the region starting now until the year 2020. Given this charge,

1. With respect to public opinion, what would be the key features of an effective communications program for supporting transportation investments?

2. With respect to business opinion leader support, what would be the key features of an effective communications program for supporting transportation investments?

3. In summary, what would be the key features of an effective communication program for supporting transportation investments?

D. Recent Case Studies

Now let's consider some specific recent transportation investment projects within the region and their outcomes.

Case Study One: The State Gas Tax Passed by the Legislature and Signed by the Governor Last Summer

1. To what degree did the public see the benefit of improving roads in the region as more than improving their personal convenience, but also important to the economic competitiveness and image of the region?

2. Why was the legislative effort to increase the gas tax ultimately successful?

3. Has the experience with the Michigan gas tax passage changed the way MDOT communicates with the public or business groups?

4. How has the Michigan experience impacted the communication strategies of other transportation agencies?

5. What communication methods were successful? Which were failures?

Appendix C

Case Study Two: **Successful Passage of Voter-Approved Mileages for SMART in significant parts of Wayne and Oakland Counties**

1. How did this effort differ from former efforts to convince suburban communities of the need for public transit?

2. Why were the efforts successful this time?

3. What communication methods were successful? Which were failures?

Case Study Three: **The Ambassador Bridge "International Gateway Project," improving access to the bridge. A $100 million plan was submitted to the federal government for approval last August.**

1. To what degree does the public consider an international trade route through Detroit-Windsor to be economically important to the region? (Would people consider the money better spent if it went to pothole repair and road maintenance within the region?)

2. How did MDOT handle communications with the Mexican Village association, community groups, and other historic, environmental and land use groups when planning for the Gateway Project?

3. What communication methods were successful? Which were failures?

APPENDIX D: COMMUNICATIONS TOOLS SURVEY

This appendix is designed to provide—for the non-communications professional—a simplified but thorough survey of the communications tools available to transportation planning agencies.

Market Research Methods

Market research offers a range of tools that can be applied by transportation agencies to areas, including transportation planning, testing and design of transportation improvements, evaluation of progress being made by the agency, and public communication. This section highlights several market research tools available to transportation planning agencies.

Polls

Polling helps determine public attitudes by simply asking people what they think about various issues. Polls can be designed to ask very general or specific questions. Polling can be done in several ways: in person, on the telephone, or at specific locations. These choices are dictated by a number of factors, including cost, the number of responses needed, and the need for the answers to be statistically credible.

Surveys

Surveys help pull opinions into the public forum as a path to resolution. *Panel surveys* help pull in information collected from a group of participants selected to record data over a period of time in a set format. Panel surveys are generally used to track personal response to changes in the participants' environment to identify patterns over a longer period of time. *Personal interview surveys* help pull in information collected by interviewers who discuss each question with the survey participant. Personal interviews allow interviewers to use visual aids and permit the interviewer to probe further. *Intercept surveys* pull in information from survey participants who are pulled in or intercepted by interviewers at select locations. *Mail surveys* collect information from participants through questionnaires distributed to a large group who then mail back the completed questionnaire. *Telephone surveys* consist of telephone interviews conducted by trained interviewers, often using computerized questionnaires.

Focus Groups

Focus groups consist of small groups of individuals selected from the target market. Through group discussion, focus groups allow the researcher to quickly identify the needs, motivations, and perceptions of the larger population that this smaller group was chosen to represent. Focus groups permit a full interactive discussion and are thus more in-depth than polls. While polls reveal how people think about issues, focus groups reveal how they feel about them, highlighting subtleties in a way polls cannot. When public agencies develop information campaigns, focus groups can help them determine which messages are the most forceful.

The Delphi Technique

The Delphi technique is a means for structuring group discussion through the use of either a written or a computerized form. The Delphi Technique allows for several rounds of group discussions by quantifying individual ratings, thereby removing any overemphasis on the opinions of more vocal members in a group discussion.

Appendix D

Public Input Techniques

Public support is key to the success of any transportation program, plan, or project. To "buy" into proposed transport programs and projects, the public needs to understand how transportation can improve quality of life, increase transportation efficiency, and ultimately benefit the economy. It is also important to give the public opportunities to provide input on occasions, such as city or town council meetings. Likewise, public-sector officials should target local groups such as chambers of commerce or business associations as sources of input. More than news stories or communications campaigns, public support depends on people being able to relate to a problem on a personal basis and support a solution that works for them. The following techniques can help determine the public stand or attitudes about the issues under consideration.

Public Meetings

Public meetings can be used to get the agency's message out to a cross-section or to a targeted group of people by inviting direct public comment. Agencies who want to bring the public into the decision-making process need to develop a meeting format that allows the public to question and comment in person upon the plans of the agency. Public meetings are a traditional source of public input because they help agencies gauge the feelings of the community about potentially controversial issues.

Open Forums

Open forums are meetings that are open to the general public and are most often used at three key stages during a project: the start of the planning process, after a draft plan has been formulated, and at the start of construction. Open forums can be viewed as massive in-person polling and can be useful for ascertaining what concerns the public has about traffic and transportation in the area. The range and degree of emotions encountered during the meeting will most likely give a good indication of the overall public response the agency will receive as the planning and development process continues. As planning advances, open forums can give an agency an accurate picture of what the public thinks about a project or program. If there is opposition at an open forum, the agency may stop to consider whether the objections are reasonable enough to change the plan before construction begins.

Briefings

Public agencies may find it useful from time to time to hold discussions for certain groups or members of the public. For example, if a proposed road repair makes access difficult for businesses in the area, it might be useful to invite those business owners to a briefing. Such a meeting would provide an opportunity for the business owners to voice their concerns and for the transportation agency to fulfill its function of keeping the affected parties fully informed of its activities. Since part of effective communication is being receptive to input, briefings and other public meetings should be linked to substantive decision-making channels.

Organizational Outreach

Sometimes the actions of a transportation agency will affect a community for a long period of time. If the agency has planned a highway construction project lasting two or three years, it will be useful to hold meetings with the community on a regular basis, both for disseminating information and for receiving feedback. Regular communication is especially important when the goal is enhanced understanding of the economic benefits of a long-term project, as temporary inconveniences will be a concern among affected parties. Again, agencies should be aware that the public and stakeholders will be sensitive to signs that their input is being factored into the decisions that affect them.

Communication Audits

Communication audits are a good technique to use when the aim is to seek anecdotal comments through the informal polling of organizations or groups. Groups often audited include political and government agencies, community and service organizations, businesses, and major employers. *Government agency audits* can be applied to counties, intergovernmental agencies, and the offices of elected and appointed officials. These audits can tell a department where its supporters and opponents are within the government structure. For example, if there is an interstate highway project being considered, an audit of the various state and local transport and planning agencies will reveal what these agencies think of the project in advance. *Organization audits* are useful when the group opinion of certain organizations can influence the outcome of a project by virtue of the size or political power of the organization. *Employer audits* can help determine where major employers within the project area stand on issues related to a project. *Media audits* can tell what the key issue will be in the press long before they are published.

Employer Outreach

Particularly when a public agency is engaged in projects that impact access and mobility for commuters, such as mass transit improvements and car pool lanes, major employers can be mobilized to assist in outreach efforts.

Helpline

A telephone helpline (1-800 toll free service) can serve multiple purposes for an agency: it can provide information, answer questions, and receive complaints.

Graphic/Media Tools

A transportation agency should present itself as a cohesive entity that is working as a team to solve problems. The important factors to keep in mind are continuity and consistency in promoting a visible image of the agency in the public eye. A slogan, a logo, a motto, or even a jingle can help create a recurring image of the agency, even though the message may be for different projects or different audiences. This helps the public view the agency as an umbrella sheltering various projects. These projects may entail new construction, reconstruction, operation, maintenance, or funding alternatives to support new projects or technology. But by providing a common theme, the agency can maximize visibility for itself and unify these projects.

Transportation also needs to be mainstreamed into everyday life. The mass media—newspapers, radio, and TV—provide an excellent forum for getting the word out. The media can assist in promoting transportation as essential to the public quality of life. Individual agencies should document transportation success stories for dissemination to local media. Inviting media personnel to tour transport facilities to experience how the system works opens new channels for communicating the benefits of transportation to the public. Briefing the media on transport developments in the region and inviting media personnel to "ribbon-cuttings" can give transportation projects the visibility they need. Transport agencies can send articles on local initiatives to selected publications in their jurisdictions. Individual agency members can contribute stories on new transport developments to newspapers and magazines.

Name/Logos

An attractive, short name for the agency, project, or service being offered is often an effective way for an agency to initiate communication. A logo can also improve an agency's public image and give a visual identity to a specific project or program. Indeed, a powerful logo by itself is a tool by which an agency can stay in the public eye and be thought of as a vital part of the state's services.

Signs

Signs can be used to tie projects with the agency. For example, it would be to the advantage of a state DOT to attach a sign carrying its logo or name to a highway beautification project. This helps to build an image of the agency in the minds of the driving public, providing instant recognition for the projects that the DOT sponsors.

Clip Art

Public agencies can send photostats to newspapers and magazines who can clip the art from photostats sent to them and use the artwork with any story they write about the agency or its projects.

News (Press) Releases

News releases can be used to inform reporters of upcoming events, recent developments, or any newsworthy item.

Press Kits

Press kits are used to provide background information to the press on an agency, project, or event. Press kits give reporters all the information they need to write a detailed story. Press kits can be distributed at events such as conferences and openings/ribbon cuttings or on request to reporters on a regular basis.

Media Alerts

Media alerts are short, urgent news releases that are usually faxed to reporters. Alerts inform the media about events that are taking place that day or on the following day that will impact the general public.

Closure Lists

Closure lists provide the media with up-to-date information on freeway, arterial, bridge, street, and ramp closures.

Public Information Materials

Public information materials such as brochures, posters, and fliers provide an agency with the means to tell the public what the agency is doing or preparing to do. These materials get the agency's message into the hands of the people who need to understand what is happening and how they can benefit from it.

Brochures, Flyers

Brochures provide an overview of a project or projects for the general public. Though not comprehensive, a brochure in its entirety can give the public all the information it needs about a project or an issue at hand. Flyers, on the other hand, are single-purpose, time-sensitive materials used to inform the public about an imminent event.

Posters

Posters serve as a tool to get the message across in public places such as bulletin boards in offices, shopping centers, malls, and transit stops.

Newsletters

Newsletters get the information out there and help shape perceptions about a project or issue. Newsletters are published on an ongoing basis over a period of time. They provide updated information about a project.

Information Technology/Audio-Visual Tools

Transport agencies can implement technology-based services and devices that serve a dual purpose: they not only provide information, but also *visibly* highlight the agency's program and projects and promote its image.

Public Service Announcements

PSAs are short television or radio commercials that "advertise" a transport agency's programs or services. All television and radio stations are required to broadcast a certain number of PSAs as part of a licensing requirement.

Videos

Videos are an effective prepackaged, easy-to-present version of a story that a public agency wants to present to its audience.

Slide shows

Slide presentations are effective in helping the audience understand the details of a project, its progress, and its financial aspects.

Multimedia Programs

Multimedia programs combine all available media in a way that best communicates the intended message.

3-D Animation

This tool brings a project to life before construction is complete.

The Internet/World Wide Web

The World Wide Web can reach large audiences and allows agencies to make use of the Internet's most powerful communications network. The Georgia Department of Transportation launched the Atlanta Traveler Information Showcase on the eve of the 1996 Summer Olympics. One of the travel-information–based systems showcased was the use of the World Wide Web to help users receive traffic and transit conditions and plan commutes. The Atlanta area had an estimated 250,000 who had Internet access. These users were able to receive up-to-date traffic and transit information and ask questions about alternative routes and travel conditions on specific sections of the road network. The World Wide Web not only provided a timely and efficient source of travel information for the public to plan their travel, but also facilitated communication between the transport agency and the public.

Web Sites

A number of state DOTs have developed home pages on the World Wide Web, in an attempt to bring their agencies and activities into the "information super highway."

E-Mail

Electronic Mail allows transportation agency officers to receive and respond to correspondence from the public in a timely manner.

Displays at Public Telephones

In Phoenix, AZ, selected public telephones at bus shelters display real-time bus schedules and the location of buses, communicating travel information to the public.

Highway Advisory Radio

Highway Advisory Radio provides road and weather information, broadcasting essential traffic conditions and up-to-date highway conditions.

Variable Message Signs

One of the most effective ways of getting information out to the traveling public is to provide the information on the highways themselves. Variable message signs are used by state transportation agencies to provide information on construction, incident-related congestion, road closures, etc. that affect drivers.

Public Access Television

Public access television is a device for providing information to the public. The Texas Department of Transportation purchased a television station in 1995 to televise travel information, such as statewide road closures, that could come in handy for personal and commercial business travelers, travel information centers and emergency service providers.

Kiosks

Various cities across the U.S. have installed kiosks at strategic locations to provide the public with travel and weather information.

Audio & Video Bus Stop Annunciators

In San Antonio, TX, audio and video devices are scheduled to be installed on board public transit buses by the end of 1997 to provide passengers with information on scheduled stops on fixed-service routes.

The **Transportation Research Board** is a unit of the National Research Council, which serves the National Academy of Sciences and the National Academy of Engineering. The Board's mission is to promote innovation and progress in transportation by stimulating and conducting research, facilitating the dissemination of information, and encouraging the implementation of research results. The Board's varied activities annually draw on approximately 4,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

The National Academy of Sciences is a private, nonprofit, self-perpetuating society of distinguished scholars engaged in scientific and engineering research, dedicated to the furtherance of science and technology and to their use for the general welfare. Upon the authority of the charter granted to it by the Congress in 1863, the Academy has a mandate that requires it to advise the federal government on scientific and technical matters. Dr. Bruce M. Alberts is president of the National Academy of Sciences.

The National Academy of Engineering was established in 1964, under the charter of the National Academy of Sciences, as a parallel organization of outstanding engineers. It is autonomous in its administration and in the selection of its members, sharing with the National Academy of Sciences the responsibility for advising the federal government. The National Academy of Engineering also sponsors engineering programs aimed at meeting national needs, encourages education and research, and recognizes the superior achievements of engineers. Dr. William A. Wulf is president of the National Academy of Engineering.

The Institute of Medicine was established in 1970 by the National Academy of Sciences to secure the services of eminent members of appropriate professions in the examination of policy matters pertaining to the health of the public. The Institute acts under the responsibility given to the National Academy of Sciences by its congressional charter to be an adviser to the federal government and, upon its own initiative, to identify issues of medical care, research, and education. Dr. Kenneth I. Shine is president of the Institute of Medicine.

The National Research Council was organized by the National Academy of Sciences in 1916 to associate the broad community of science and technology with the Academy's purpose of furthering knowledge and advising the federal government. Functioning in accordance with general policies determined by the Academy, the Council has become the principal operating agency of both the National Academy of Sciences and the National Academy of Engineering in providing services to the government, the public, and the scientific and engineering communities. The Council is administered jointly by both the Academies and the Institute of Medicine. Dr. Bruce M. Alberts and Dr. William A. Wulf are chairman and vice chairman, respectively, of the National Research Council.

Abbreviations used without definitions in TRB publications:

AASHO	American Association of State Highway Officials
AASHTO	American Association of State Highway and Transportation Officials
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
IEEE	Institute of Electrical and Electronics Engineers
ITE	Institute of Transportation Engineers
NCHRP	National Cooperative Highway Research Program
NCTRP	National Cooperative Transit Research and Development Program
NHTSA	National Highway Traffic Safety Administration
SAE	Society of Automotive Engineers
TCRP	Transit Cooperative Research Program
TRB	Transportation Research Board
U.S.DOT	United States Department of Transportation

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