

HOUSTON *SMART COMMUTER*

IVHS DEMONSTRATION PROJECT

Working Paper Number 1

Review of Existing Market Research Information

Prepared for

Metropolitan Transit Authority of Harris County  
Texas State Department of Highways and Public Transportation  
Urban Mass Transportation Administration

October 1990

Prepared by

The Texas Transportation Institute  
The Texas A&M University System  
College Station, TX 77843

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by

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## I. Executive Summary

This working paper provides an overview of relevant literature and research on mode choice selection, factors influencing the use of buses, carpools, and vanpools, and reactions to motorist information systems. As such it provides a preliminary assessment of the market potential for the *Smart Commuter* Demonstration Project, which focuses on the potential of increasing transit use through the provision of current information on traffic conditions and bus and rideshare options to commuters in the home and workplace. This could be accomplished through the use of different advanced technologies, such as touch-tone and cellular telephones, cable television, microcomputers, and videotex terminals.

The results of this review provide a preliminary indication that a potential market exists for these types of services and that some individuals may consider changing their commute mode if accurate and current information were made available on traffic conditions and transit alternatives. However, much of the available information provides only general indications of potential influences on ridership; little quantitative data exist on the exact impact of these different factors. Thus, additional testing of the *Smart Commuter* concept with Houston commuters is appropriate.

Results from the literature and research review identified a variety of information relevant to the *Smart Commuter* Demonstration Project. As detailed in the remainder of this report, the literature review included national, Houston, and other metropolitan area studies and experience. Reports from other metropolitan areas, such as a recent survey of commuters in the Seattle area on preferences toward motorist information systems, provided valuable insights into many aspects of the *Smart Commuter* Demonstration project. Some of the major findings from these studies relating to the provision of improved information, service improvements, and other factors influencing mode choice selection are as follows.

- Recent market research studies conducted for Metro identified a strong interest among users and non-users for improved bus information systems. The results suggest that making it easier to learn to use the bus system could lead to increased patronage among users and non-users. However, the extent of the potential increase was not quantified.
- Studies from other metropolitan areas and the national level have indicated that the provision of information on transit routes, fares, and schedules is important in attracting riders. Again, little quantifiable data is provided on the exact impact on ridership of different methods of providing this information.
- Experience in Houston and other cities has shown that reducing the travel time of transit vehicles and increasing travel time reliability has resulted in increases in ridership.
- The results of a recent survey and study of commuters in the Seattle area indicated that approximately 16% would consider changing their travel mode based on pre-trip traffic information. In addition, approximately 56% of the commuters surveyed were receptive to receiving traffic information at home. Almost all respondents, (98%), indicated that they have received motorist information from commercial radio either before driving, while driving, or both. Other sources of motorist information used by commuters included variable message signs (53%), highways advisory radio (44%), television reports (29%), telephone (8%), and CB radio (4%).

The results of this review indicate that a potential market may exist in the Houston area for providing current information on traffic conditions and transit alternatives to individuals in their home and work place. The provision of accurate information, in combination with bus and carpool alternatives that offer travel time savings and improved travel time reliability through use of the transitways, may lead to a mode shift. Additional testing of this concept in Houston,

through the use of focus groups, is appropriate to further refine the feasibility of the *Smart Commuter* Demonstration Project.

## II. Introduction

One of the major elements of the *Smart Commuter* work program focuses on assessing the potential market for increasing the use of buses, carpools, vanpools, and the transitways through the provision of current information on traffic conditions and bus and rideshare options to commuters in the home and workplace. This information could be provided through different advanced technologies, such as touch-tone and cellular telephones, cable television, microcomputers, videotex terminals, and other types of technologies. A preliminary step in conducting the market assessment involved a review of relevant literature and research on mode choice selection, factors influencing transit use, and reactions to motorist information systems. This information is of use in helping to identify the major elements that may encourage people to change from driving alone to using a higher-occupancy commute mode. Specifically, those aspects relating to commuter response to improved transit and traffic information, travel time savings, enhanced transit services, and supporting components are examined. The results of this review, which included information from national reports, studies from other metropolitan areas, and Houston studies, are presented in this working paper.

### III. General Information

Factors influencing mode choice, including those affecting the decision to use public transit, have been the focus of numerous studies at both the national and local level<sup>1</sup>. However, even with this fairly extensive examination, many aspects of the factors influencing individual mode choice behavior are not well understood and continue to be explored. Given the complexity of human behavior and changing environmental conditions, this is not surprising. Factors that have been identified as affecting the selection of work trip commute modes, the major focus of the *Smart Commuter* Demonstration Project, include the following.

- Travel times of alternatives
- Travel time reliability of alternatives
- Cost of alternatives, including parking cost and availability
- Automobile availability
- Need for automobile for work or personal reasons
- Information on transit alternatives
- Service availability to desired destination
- Service frequency and coverage

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<sup>1</sup>Comprehensive reviews of national studies and state-of-the-art references to influences on mode choice and attitudes toward transit services are provided in: Martin Wachs. "Consumer Attitudes Toward Transit Service: An Interpretive Review." *Journal of American Institute of Planners* 42 (January 1976): 96-104; and R.J. Wallin and P.H. Wright. "Factors Which Influence Modal Choice." *Transportation Quarterly* 28 (April 1974): 271-289. Information on factors influencing the use of express and park-and-ride bus service in Houston is contained in Diane L. Bullard. *A Summary of Survey Data from the Katy, North, Northwest and Gulf Transitways*. Prepared for the Texas State Department of Highways and Public Transportation by the Texas Transportation Institute. July, 1990; and Houston Metro, *Park-and-Ride Lot Analysis*, October 1989. Studies examined from other areas include Laurie Elder, *Guaranteed Ride Home Evaluation*. Municipality of Metropolitan Seattle, May 1988; Washington State Department of Transportation. *Improving Motorist Information Systems: Toward a User-Based Motorist Information System for the Puget Sound Area April 1990*; Regional Transit Board. *Transit Service Needs Assessment, Technical Memorandum Number 3 - Market Research Focus Groups*. 1985.

- Service comfort and amenities
- Commute travel distances
- Characteristic of the population (age, income, etc)

In general, these factors focus on travel time and service reliability, characteristics of the transit services provided, the availability of information, the characteristics of the trip, cost factors, the needs and attitudes of individual commuters, and the socio-economic characteristics of the population. Except in those cases where an individual has no other alternative available, transit is competing with the automobile for riders. It is anticipated that an initial demonstration in Houston would focus on the transitways and attracting additional choice riders to park-and-ride service. Thus, in this case, buses and carpools are competing with driving alone for passengers.

Increases in the use of buses, carpools, and vanpools have resulted when many of the above factors have been addressed. For example, decreasing travel times for buses, carpools, and vanpools through the provision of priority treatments, improving service reliability, frequency, coverage, and vehicle comfort have all been noted as positively influencing transit ridership.<sup>2</sup> One of the best examples of this is the express and park-and-ride bus service implemented by Metro in conjunction with the transitways and the supporting rideshare programs. Surveys of bus, carpool, and vanpool users on the transitways indicate that decreases

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<sup>2</sup>In addition to the references listed previously other support for this can be found in James T. McQueen, David M. Levinshon, Robert Waksman, and Gerald K. Miller. *Evaluation of the Shirley Highway Express-Bus-On-Freeway Demonstration Project - Final Report*. Prepared for the U.S. Department of Transportation by the Technical Analysis Division, U.S. Department of Commerce. August 1975; Crain and Associates. *San Bernardino Freeway Busway Evaluation of Mixed-Mode Operations*. Prepared for the California Department of Transportation. July 1978; Dennis L. Christiansen and Daniel E. Morris. *The Status and Effectiveness of the Houston Transitway System*. Prepared for the Texas State Department of Highways and Public Transportation by the Texas Transportation Institute. March 1990.

in travel time, improvements in travel time reliability, and improved bus service are significant factors influencing their use.<sup>3</sup>

Many of the efforts that have been successful in attracting new riders have been the result of specific targeted marketing programs that have been part of a more comprehensive customer-oriented marketing and service approach encompassing the elements of product development, pricing, promotion, and evaluation.<sup>4</sup> However, even in these cases, extensive documentation and before-and-after evaluations have not always been conducted. Thus, the exact impact of different service improvements, marketing programs, and other elements on increasing ridership are still not thoroughly understood.

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<sup>3</sup>Diane L. Bullard. *A Summary of Survey Data from the Katy, North, Northwest and Gulf Transitways*. Prepared for the Texas State Department of Highways and Public Transportation by the Texas Transportation Institute. July, 1990.

<sup>4</sup>John W. Bates and J. Dewel Lawrence. "Transit Marketing: A Strategic Approach." *Transportation Quarterly* 40 (October 1986): 549-558.

#### IV. Information Related to the *Smart Commuter* Demonstration

Information and examples relating to the basic elements of the *Smart Commuter* demonstration project do exist. This section outlines the results of recent marketing research studies conducted for Metro and information from other systems around the country relating to the provision of transit and traffic information, improvements in bus services, and recent rideshare experiences on increasing ridership and influencing mode shifts.

##### **Availability of Transit Information**

Providing information on transit services has been identified as an important element influencing ridership.<sup>5</sup> Individuals must have access to information on routes, schedules, fares, and carpool and vanpool matching programs to be able to use these services. Many transit systems have expanded and enhanced both the type of information and the methods of providing this information. These include telephone information systems, cable television, information terminals and kiosks, maps, schedules, and other methods. These will be described in more detail in Working Paper Number 2.

Within the Houston area two relatively recent marketing research efforts offer insight into the potential impact providing expanded information on transit services may have on increasing transit ridership. These two market research efforts were conducted in 1986 and 1987 for Metro.<sup>6</sup> The first of these focused on improved downtown transit information systems, while

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<sup>5</sup>Eugene Wilson, John F. Holtquist, Stanley J. Peterson, and Kenneth W. Kendall. "Marketing Conventional Transit: Information Provision and Introductory Rewards." *Transportation Research Record 519: Public Transportation Planning Issues*. Transportation Research Board, National Research Council, 1974. 46-55; John J. Fruin. *Synthesis of Transit Practices Number 7: Passenger Information Systems for Transit Transfer Facilities*. Transportation Research Board. 1985.

<sup>6</sup>Gelb Consulting Group, Inc. *Interest of Riders and Non-Riders in Downtown Houston Transit Information Systems*. Prepared for the Metropolitan Transit Authority of Harris County. August, 1987. Gelb Consulting Group, Inc. *Increasing Ridership in Metro's Park-and-Ride*:

the second examined possible methods of increasing ridership on park-and-ride services. Both studies used focus groups to test different concepts and obtain reactions to different information and service improvements. In addition, the park-and-ride study included the use of one-on-one surveys with non-riders to obtain more detailed information on reactions to specific changes in fares, service frequency, and comfort and convenience features.

A brief explanation of the two marketing research approaches used in these studies is appropriate to identify their use, advantages, and limitations. Focus groups are a marketing research technique that provides qualitative information on individual attitudes and perceptions about specific items. Thus, focus groups provide a subjective understanding of consumer behavior and attitudes. Focus groups usually consist of 10 to 15 people who are brought together to discuss their feelings and reactions to particular topics, issues, or products. A trained facilitator, or individual knowledgeable in the subject area, usually moderates the group.

The one-on-one surveys were part of a conjoint analysis. In this survey, a specific questionnaire was used to obtain lifestyle and demographic information, and individuals were asked to perform a card-sort exercise, ranking alternative scenarios on fare levels, service frequency, vehicle type, and bus amenity features in order of preference. The results of this effort provide a more quantitative assessment of the relative importance of these factors to prospective transit users.

The results of these two studies provide a general indication of the value riders and non-riders place on information and other service improvements. However, neither identified the specific impact these changes might have on increasing ridership levels. General findings from the two studies relating to the impact the provision of improved transit information could have on ridership include the following.

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*An Exploratory Study.* Prepared for the Metropolitan Transit Authority of Harris County. September, 1986.

- "A strong interest exists in improved information systems, holding out the possibility that making it easy to learn to use the bus system could lead to increased patronage among riders and non-riders alike."
- "The use of video monitors, providing clear route and system maps, fare information, and the Metro telephone number were identified as important elements for downtown bus information systems."
- "This study demonstrates a clear and unambiguous need for a significant investment in methods of communicating transit information to present and prospective riders."
- "Improved communications with riders about delays or problems will increase rider satisfaction. Dissatisfaction with peak period service occurs more due to unexpected problems than because of infrequent departures. One way to improve communications would be to install direct-line telephones to Metro for scheduling and delay information."
- "Some riders indicated apprehension about using the service for the first time. Communicating about how easy it is to use and the basic steps involved should be valuable in converting prospects to use the bus."

### **Transit Service Improvements**

The impact of improvements in service frequency, hours of operation, vehicle comfort, and other amenities have also been explored.<sup>7</sup> In general, improvements of this type have often

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<sup>7</sup>Martin Wachs. "Consumer Attitudes Toward Transit Service: An Interpretive Review." *Journal of American Institute of Planners* 42 (January 1976): 96-104; and R.J. Wallin and P.H. Wright. "Factors Which Influence Modal Choice." *Transportation Quarterly* 28 (April 1974): 271-289.

been noted as improving passenger satisfaction and increasing ridership levels. However, few quantifiable examples exist of the impact these types of changes have on increasing ridership levels. The best local example is the increased ridership resulting from Metro's implementation of park-and-ride lot service using the transitways. A recent Metro study<sup>8</sup> of park-and-ride lot use identified four major factors and four supporting factors contributing to the success of park-and-ride lot service. These are shown in Figure 1.

### **Major Factors**

- Competitive auto/bus travel times
- Visibility of the lot from nearby freeway/major streets
- Accessibility to residential areas
- Lot location prior to critical congestion point

### **Supporting Factors**

- Frequency of bus headways
- No competing Metro service
- Transitway utilization (the longer the service operates via the transitway the better)
- Direct ramp to a transitway

**Figure 1. Factors Contributing to Successful Park-and-Ride Lots**

In addition, a few transit systems have utilized "guaranteed ride home programs" to increase bus and carpool ridership. These programs provide a guaranteed ride home for individuals who for whatever reason need to return home at a time their normal ride is not available. The actual service is usually provided by taxis or other services on a pay-as-needed

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<sup>8</sup>Metropolitan Transit Authority of Harris County. *Park-and-Ride Lot Analysis*. October, 1989.

basis. The limited results currently available on these programs<sup>9</sup> indicate modest success in attracting new riders.

The market study noted previously on Metro's park-and-ride service tested user and non-user responses to a number of service improvements. The following service improvements were identified as important for increasing the likelihood of additional transit use.

- "Frequent, flexible scheduling is the most important variable in deciding to use park-and-ride. Changing departure schedules will have the greatest impact on ridership of any of the variables tested."
- The frequency of departures during the peak traffic periods to and from downtown was identified as one of the most important criteria. Midday and evening service was also significant to groups within the total sample.
- The ability to purchase a ticket at the lot or from the driver was also identified as an important element to increasing transit use. This was noted as a limiting factor to part time and new users.
- Providing more flexible payment methods, in response to concerns raised relating to passes that expire before they are used was noted as important to a number of respondents.

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<sup>9</sup>Laurie Elder. *Guaranteed Ride Home Evaluation*. Municipality of Metropolitan Seattle. May 1988.

## Recent Experiences in Carpooling

There appears to be a growing use of both part-time and instant carpooling among commuters in many metropolitan areas. These two trends seem to relate to the need to maintain flexibility in the commute trip and the desire to take advantage of the travel time savings offered by high-occupancy vehicle (HOV) and other preferential facilities whenever possible. These two approaches overcome the often voiced objection to carpooling by solo drivers; the lack of flexibility.

A demonstration program in El Segundo, California in 1983 and 1984<sup>10</sup> attempted to overcome the concerns with flexibility by testing the use of part-time carpooling. A part-time carpool was defined as operating 2 days a week for a 3-month trial period. Although the actual carpool formations resulting from the demonstration were relatively low, due in part to the small base from which matches were available, the study concluded that providing additional flexibility to commutes through part-time carpool appears to be a viable means of reaching a new segment of the solo driver market. Providing this type of flexibility is evident in many travel demand management (TDM) programs today. For example, some programs provide one or two days of free parking a month for individuals who normally take the bus or carpool, but who on occasion need to drive alone.

The use of instant carpooling has been identified in both the Shirley Highway corridor in the northern Virginia/Washington D.C. area<sup>11</sup> and on the Oakland Bay Bridge in the San

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<sup>10</sup>A complete discussion of this demonstration is provided in Jesse Glazer, Ann Koval, and Carol Gerard. "Part-Time Carpooling: A New Marketing Concept for Ridesharing." *Transportation Research Record 10821-Innovations in Ridesharing*. Transportation Research Board. 1986.

<sup>11</sup>Arlee T. Reno. *Evaluation of Springfield Carpooling*. Prepared for the Fairfax County Office of Transportation. December 1987.

Francisco area.<sup>12</sup> In both cases, the same phenomenon is occurring; individuals are forming informal instant carpools on a daily basis to take advantage of the travel time savings afforded by the HOV facilities. The characteristics of the use of instant carpools in both locations are very similar.

Both were started and continue to operate without any formal planning or sanctions by any agency or organization. Thus, they were started by commuters themselves. In both cases, individuals wanting rides gather at certain locations and are picked up by drivers going to the same destination. The vehicle occupancy requirement on the HOV facilities is 3+, although the Shirley Highway HOV lanes used to have a 4+ occupancy requirement. Instant carpooling tends to be used more on the inbound trip in the morning and conventional transit service is often used for the afternoon return trip. No major problems or incidents have been reported in either area.

The impact of these instant carpooling arrangements appears to be significant. Some 2,500 instant carpools have been estimated in the morning peak-period on the Shirley Highway<sup>13</sup>. Approximately 8,000 commuters have been estimated to use causal carpools on the Bay Bridge in the San Francisco area.<sup>14</sup>

The results of these recent carpooling trends seem to indicate that some commuters are flexible about their daily commute mode. They also indicate that the potential may exist in Houston for the use of part-time or instant carpooling.

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<sup>12</sup>Steve Beroldo. "Casual Carpooling in the San Francisco Bay Area." *Transportation Quarterly* 44 (January 1990): 133-150.

<sup>13</sup>Arlee Reno. "Instant Carpooling in the Washington, D.C. Area." *1988 National HOV Facilities Conference Proceedings*. 1989.

<sup>14</sup>Steve Beroldo. "Casual Carpooling in the San Francisco Bay Area." *Transportation Quarterly*. 44 (January 1990): 133-150.

## Seattle Motorist Information System Survey

A recent study<sup>15</sup> of motorists in the Seattle area provides a good deal of information relevant to the *Smart Commuter* demonstration project. In 1989, the Washington State Department of Transportation conducted a survey of commuters in the I-5 corridor to obtain data on commuter's behavior and information needs. The survey was conducted to assist in the design and development of a motorist information system for the Seattle area. Out of 10,000 commuters surveyed, 3,893, or approximately 40% responded to the questionnaire. 100 of these respondents took part in follow-up in-depth interviews which further explored commuting behavior, current use of motorist information, and future preferences on information system design.

The survey attempted to obtain information on commuter's reactions to different types of motorist information systems, potential changes in behavior as a result of this information, and other characteristics associated with the commute trip. Utilizing the survey results, the researchers identified four types of commuters; pre-trip changers, route and time changers, route changers, and non-changers. Individuals within each of these groups would respond differently to travel information in terms of the potential for changing modes, departure time, and travel route. The characteristics and percent of commuters within each group are outlined in Figure 2.

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<sup>15</sup>Washington State Department of Transportation. *Improving Motorist Information Systems: Toward a User-Based Motorist Information System for the Puget Sound Area*. April 1990

**Pre-Trip Changers (16%)**

- Will change departure time
- Will change route before departure but not during commute
- Will change travel mode before departure

**Route & Time Changers (40%)**

- Will change departure time
- Will change route before or during commute
- Will not change travel mode

**Route Changers (21%)**

- Will not change departure time
- Will change route before or during commute
- Will not change travel mode

**Non-changers (23%)**

- Will not change departure time
- Will not change route before or during commute.
- Will not change travel mode

Source: Washington State Department of Transportation, *Commuter Information Systems Newsletter*, October 1980.

**Figure 2. Seattle Commuter Characteristics**

The survey results provide useful insight into the influence different types of motorist information may have on these different commuter groups. First, the results indicate that approximately 16 percent of those surveyed would change their travel mode in response to information about travel conditions. Second, a larger group, some 40%, indicated that they would change their travel time. Other survey findings relevant to the *Smart Commuter* demonstration project included the following.

- o The goal of a motorist information system is to improve traffic flow, not to be equally useful to all drivers at all times. Improvements can be achieved by affecting a targeted subset of commuters.
- o Commuters are receptive to traffic information delivered at home. A slight majority, 56%, of those interviewed preferred receiving motorist information at home.

Commuters have the time and inclination to seek motorist information an average of three times before leaving the house.

- o Commuters question the credibility of current motorist information and when they do modify their behavior, they are unsure if they have made the correct decision.
- o Almost all respondents, (98%), indicated that they have received motorist information from commercial radio either before driving, while driving, or both. Other sources of motorist information used included variable message signs (53%), highway advisory radio (44%), television reports (29%), telephone (8%), and CB radio (4%).
- o Commercial radio was identified as the preferred medium for delivery of on-road traffic information. Variable message signs (VMS) and highway advisory radio (HAR) were perceived as less helpful. Reasons given for the low response to VMS included poor locations, insufficient warning prior to actual congestion, and irrelevant or not up-to-date messages. Problems identified with the use of HAR included not knowing about it, never trying to use it, difficulty receiving it, and better information available on the commercial radio.
- o A majority of those surveyed, approximately 67%, believed that saving time is important. Travel time savings were ranked as a more important attribute in commuting than increasing safety, increasing commute enjoyment, and reducing commute distances.
- o A majority of motorists surveyed, approximately 62%, believe they are very familiar with alternative routes. Males claim to be more familiar with alternative routes than females (71% to 53%). Routes from work to home were more often noted as being modified than routes from home to work.

Based on these results, the report presents a number of conclusions and recommendations. The most relevant of these to the *Smart Commuter* program are summarized below.

- o Use the identification of driver groups to tailor motorist information to those groups most likely to be impacted. Significant improvements in freeway through-put can be achieved by impacting a relatively small percentage of drivers. The Washington State Department of Transportation estimated that if one of every ten single-occupant vehicles were removed from the traffic stream on urban freeways during peak periods, delays would be reduced by 48%.
  
- o Place a high priority on home delivery of motorist information. Target home delivered motorist information for specific types of commuters, based on the driving decision to be impacted.

## V. Conclusion

This working paper provides an overview of current market research relating to factors influencing commuter's mode choice selection and motorist information needs. Available information from both a national perspective and recent studies sponsored by Metro indicate that providing increased information on transit services and improvements in certain aspects of service delivery can have a positive influence on ridership. However, little information is available on the exact increases in ridership resulting from these changes.

The results of an extensive survey of motorists in Seattle indicates that some commuters, approximately 16% of those sampled, would change their commute mode based on pre-trip traffic information. Receiving this information at home, either through commercial radio or cable television, was identified as the most promising methods of providing this information. The results of these studies support the basic premise of the *Smart Commuter* Demonstration Project. However, it is suggested that further market research activities be conducted in Houston to better define commuter's reactions, preference, and potential use of specific elements of a possible demonstration project.

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## **HOUSTON *SMART COMMUTER* IVHS DEMONSTRATION PROJECT**

### **PROPOSED MARKET RESEARCH**

- REVIEW OF MARKET RESEARCH STUDIES AND OTHER INFORMATION
- ADDITIONAL QUESTIONS ON TRANSITWAY NON-USER SURVEYS
- FOCUS GROUPS OF EMPLOYEES IN DOWNTOWN HOUSTON AND THE POST OAK/GALLERIA AREA

## **MARKET RESEARCH LITERATURE REVIEW**

- Results provide general indication of influences on ridership and mode change. Quantitative data on the exact impact of improvements in information, services, and amenities are less prevalent.
- Results of a recent market research study in Houston identified a strong interest among users and non-users in improved bus information systems, suggesting that making it easier to learn to use the bus system could lead to increased patronage. However, the extent of the potential increase was not identified.
- Other studies have identified that the provision of information on transit routes, fares, and schedules is important in attracting riders. However, little quantifiable data is provided on the exact impact.
- Service improvements, such as reducing travel times of transit vehicles and improving travel time reliability, have been shown to increase ridership levels. These appear to be especially important in attracting "choice" riders to transit.

- Results of a recent survey and study of commuters in Seattle provides a variety of relevant information, including the following:
  - 16% would consider changing their travel mode based on pre-trip traffic information.
  - Commuters are receptive to receiving traffic information at home. Commuters indicated that they have the time and inclination to seek motorist information before they leave home.
  - Almost all respondents (98%) indicated that they have received motorist information from commercial radio either before driving, while driving, or both.
  - Other sources of motorist information used included variable message signs (53%), highway advisory radio (44%), television reports (29%), telephone (8%), and CB radio (4%).
  - Travel time savings was ranked as the most important attribute in improving the commute trip by 67% of the respondents.
  - The goal of motorist information systems is to improve traffic flow, not be useful to all drivers at all times. Improvements can be achieved by affecting a targeted subset of commuters.

## ADDITIONAL QUESTIONS ON TRANSITWAY NON-USER SURVEYS

- Do you normally listen to traffic reports on the radio at home, at work, or in your car?  yes  no  
If "yes", have you ever changed your original travel plans (taken an alternate route, altered your travel times, or used a bus or carpool) because of information obtained from these reports?  yes  no
- Do you know the location of the park-and-ride lot nearest your home?  yes  no  not Sure
- Do you know enough about the park-and-ride service provided by Metro to confidently begin using it tomorrow?  yes  no  not Sure

## FOCUS GROUPS

- Conduct 6 Focus Groups of Employees (non-users)
  - 3 oriented to CBD employees
  - 3 oriented to Post Oak/Galleria area employees
  
- Test different concepts of *Smart Commuter* Demonstration
  - Reasons for current mode selection
  - Knowledge and perception of buses and carpooling
  - Would they like to receive information on traffic conditions and transit alternatives at home and/or at work
  - How would they like to receive this information
  - Would they change their commute mode based on this information

## CURRENT PRACTICES

- Telephone Information Systems
  - Teleride Systems
    - Toronto
    - Hamilton
    - Kitchener
  
- Cable Television Access
  - Miami Valley Regional Transit Authority, Dayton
  - Suburban Detroit
  - Metropolitan Transit Commission, Minneapolis-St. Paul
  
- Video Monitors
  - Port Authority of New York and New Jersey
  - Metropolitan Transit Commission, Minneapolis-St. Paul
  - Greenway Plaza

## **TECHNOLOGY ASSESSMENT**

- o **Advanced Telephone Information Systems**
- o **Videotex/Computer terminal**
- o **Teletext**
- o **Local Access Cable Television**
- o **Automated Vehicle Location/Monitoring Systems**