TRANSIT MARKETING MANAGEMENT

MARKET RESEARCH

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16. Abstract

This report offers a broad overview of consumer research as it applies to the specific problems of transit marketers. Some of the information included is based upon data gathered as part of a Transit Marketing Demonstration Project conducted in Baltimore,Maryland and Nashville, Tennessee by UMTA. This document is designed to provide transit marketers with a better understanding of consumer research, its functions and limitations so that research could be used effectively in a marketing program. The report emphasizes basic marketing principles rather than detailed techniques; it is problem-oriented not technique-oriented. The purpose of this particular report is to describe the kind of research most useful in making marketing decisions so that managers and researchers can work together effectively. The report is divided into four parts. Part 1 outlines the role of consumer research in the marketing decisionmaking process--what to research and when to do it. Part 2 describes the types of strategic research used at different stages in the marketing program. Part 3 discusses some of the research techniques--the tools and methods used in different types of studies. Part 4 discusses professional research services--how to select them and work with them. A bibliography of marketing research material is included in this report along with 4 technical appendices and 4 exhibits that chart out survey sample size, full questionnaire, focus groups and other marketing elements.

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Preface

This report was prepared under contract to the U. S. Department of Transportation, Urban Mass Transportation Administration, Office of Transportation Management. The original work was performed by Grey Advertising, Inc., New York, New York. Final re-write and editing was done by the Office of Statewide Transportation Programs, University of Wisconsin–Milwaukee, under the direction of the Marketing Steering Committee of the American Public Transit Association.

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Introduction

This report offers a broad overview of consumer research as it applies to the specific problems of marketers of transit. Some of the information included is based upon data gathered as part of a Transit Marketing Demonstration Project conducted in Baltimore, Maryland and Nashville, Tennessee by the Urban Mass Transportation Administration. The purpose of this project was simple—to demonstrate to the transit industry that modern marketing techniques could be used to increase ridership on public transportation. Implementing this project involved several elements of marketing which have long been applied to a broad array of consumer products and services. One of these key elements which had become standard in other fields, but was relatively new to transit, was market research. Grey Advertising, Inc. was commissioned by the Urban Mass Transportation Administration to conduct this research. Reports on their research findings and other aspects of the demonstrations have been issued under separate cover. (See the Transportation Research Board's *Special Report 184, Urban Transport Services Innovations,* "Service Planning and Marketing, pp. 79-84.)

Since that time, there have been several other UMTA sponsored reports on marketing, and there has been a unified theme to their conclusions: that marketing research in transit should be "customer oriented," that is, it should delineate market segments for target marketing, solicit and interpret a wide range of attitudinal data from current and potential customers, and investigate the relation between stated intentions and later behavior of these individuals. In addition, it has been urged that transit agencies standardize and coordinate their data gathering instruments and procedures, so that more accurate comparisons can be made between comparable markets and market segments.

This document is intended to give transit marketers the tools to accomplish these goals by providing them with a better understanding of consumer research, its functions and limitations, so that they can use research effectively in a marketing program. It is not intended to make the reader a research expert any more than a single chapter on transit marketing could convert a researcher into a marketing expert. Therefore, this report will concentrate more on basic principles than detailed techniques. Consumer research is a more valuable tool when it is *problem-*oriented rather than *technique*-oriented.

The purpose of this particular report will be to describe the kind of research that is most useful in making marketing decisions so that the transit manager and the marketing researcher can work effectively together. The transit marketer must communicate the nature of the transit system and the issues he or she would like to explore to the marketing researcher. The researcher should be able to work with the transit marketer to decide which research techniques would be most appropriate. Through a close, team-oriented approach, the two can pool their expertise to get meaningful research data to solve real-world problems.

The report is divided into four parts:

Part 1 outlines the role of consumer research in the marketing decision-making process—what to research and when to do it.

Part 2 describes the types of research used at the different stages in the marketing program.

Part 3 discusses some of the research techniques—the tools and methods used in the different types of studies.

Part 4 discusses professional research services—how to select them and work with them.

A bibliography of marketing research material is attached to provide the interested reader with greater detail than is possible to cover within the scope of this document.

Part 1: The Role of Consumer Research in Transit Marketing

A. Understanding Consumer Research

Consumer research is a versatile marketing tool with a multitude of uses. In addition to commercial applications, it can be used to pursue political and humanistic goals. For example, consumer research can deal with merchandise such as canned soup, services such as public transportation, or political issues such as tax cuts.

Marketing strategies, whether applied to soup or transportation, are based on satisfying the needs of the buyer/user. In the context of public transportation, this means responsiveness to the service and information needs of *current* and *potential* riders. If transit marketing is to be effective, service offerings (headways, routing, safety programs, etc.) and communication/information efforts (advertisements, maps, schedules, etc.) must meet consumer needs.

Market research is a way to identify these consumer needs by gathering data regarding:

— Size and nature of the transit market, both current and potential.

— Consumer awareness of the transit system or a specific aspect of that system.

— Consumer attitudes toward the transit system or a specific aspect of that system.

— Competitive framework within which the transit system operates (e.g. car vs. bus) or specific parts within that system (e.g. subway vs. bus).

— Benefits current and potential riders of system perceive they could gain.

— Barriers to using the system or using it more often. (Do consumers believe that bus travel would take too long, or are they afraid of being mugged at the bus stop?)

The information gathered is used for several purposes:

— to help develop the marketing program;
— to guide the implementation of the program; and
— to refer back to when monitoring program effectiveness.

B. The Marketing Process

Consumer research plays an important role in every stage of the marketing process:

STAGE 1: The marketing process starts with *strategic research* which supplies information for developing the marketing strategy—e.g., who are the current riders, who are the potential riders and why they don't make greater use of the facilities, how can the transit operator better service the public, etc.

STAGE 2: "Product" or service improvements are planned and an information program is developed to inform target consumers of new transit services and facilities and to persuade them to use the services. This is the time for *pre-implementation evaluation research* which supplies consumer reaction to crucial parts of the program before their implementation at high cost.

STAGE 3: Once the marketing program is implemented, it needs to be monitored to track its effectiveness and determine where adjustments may be necessary. This is the time for *market response analysis* and *tracking and assessment*.

Part 2: Types of Research

A. Strategic Research

Definition

The purpose of strategic research is to gather appropriate data about consumers in the transit operating area and potential operating area so that an effective marketing strategy for the transit system can be developed. On its most general level, strategic research explores consumers' travel behavior, attitudes toward public and private transportation and transportation needs. Specific objectives of strategic research include:

* Defining the consumer groups offering the greatest potential for increased transit ridership.

* Identifying the motivators that will encourage these consumers to use transit services. It does this by providing an integrated understanding of their transportation needs, attitudes relating to transportation, and behavior patterns vis-a-vis current public and private facilities.

In order to achieve these objectives, market or consumer research seeks to answer the following questions:

Who is the target customer?

Who currently rides mass transit? Who might switch from private to public transportation? What proportion of the increased trip volume would come from current riders vs. switchers? Which group would be the best target? What is the size of this group in terms of both people and number of additional transit trips? What is the competitive framework? What modes of transportation does public transit compete against by trip type, e.g., business, shopping, leisure, etc.? For which of these trip types is it possible to attract new business away from competitive modes? In addition, what proportion of people would take particular trip types or use a particular service if these became available to them? How many trips would this last group of people account for?

Are changes in the system necessary to tap consumer potential?

When: Any seasonal patterns of usage? Is ridership different during the school year compared to summer? At what time and on what days, e.g. rush hour Monday-Friday?

Where: From what points to what destinations and for which purposes do the best transit prospects travel within the system's operating area?

Pricing: What are the benefits of raising/lowering fares, transfers, special fares? How would such fares affect trip volume? Revenue?

What motivating appeals are necessary to overcome ridership barriers?

Which benefits do people seek from the transport modes they use? Why do they use transit? What problems should be overcome to stimulate greater use of transit?

What should be stressed in communicating with customers?

Which benefits should be emphasized to motivate ridership? How should the target consumers be addressed? What tone should be used to appeal to their lifestyle? Which media will provide the maximum impact?

Types of Strategic Market Research

There are two main types of strategic research studies:

(1) MARKET WIDE STRATEGIC STUDY: When the research is concerned with an entire transit system within an entire metropolitan area.

(2) LIMITED AREA INCENTIVE STUDY: When the research is concerned with a specific route, neighborhood, or with a single system service.

Market-Wide Strategic Research

Although market-wide strategic research is expensive and time-consuming, such a study can provide a thorough understanding of consumer needs and desires. Opinions differ on how often market-wide strategic research studies should be conducted. Certainly if the demographics of your geographic area are changing, or if your market is altering for any other reason, such a study should be done every 3 to 5 years. It will supply the key information outlined above and identify:

* Target market.

* Attitudes, transportation needs, information needs, travel behavior, basic service satisfaction and dissatisfaction of current and potential riders in the operating area.

* The benefits which the communications program should stress and the tone the communications should adopt to achieve maximum impact.

The analysis of data collected from a market-wide strategic study lays the groundwork for a marketing plan for the entire transit area. However, before deciding to conduct a market-wide strategic study, it is suggested that the marketing manager examine studies conducted in other metropolitan areas, particularly similar areas. He or she may find that much of the information acquired in another area applies to his or her area. In this case, a smaller piece of research could be conducted to validate the applicability of data collected elsewhere to local conditions, thus saving time and money. Looking at studies from similar areas can also give you an idea of what types of questions yield the most useful information. Even if the demographic characteristics are different, it is still possible that the research design and methodology will be relevant.

Limited Area Incentive Studies

A limited area incentive study is a modified form of strategic research designed to gather relevant information regarding:

* Need for and/or market potential of a specific single change in the transit system, or

* One key market segment or mass transit need in one neighborhood.

As noted earlier, a limited area incentive study can be used to develop or modify a single component of a marketing plan or strategy. Since the specific issues addressed in a limited area incentive study vary, the nature of each study should be specially designed to best address the issue in question.

Some examples of topics for limited area incentive research are:

* a routing study to determine if the routes serving a particular neighborhood satisfy consumer origin and destination needs.

* a rider definition study to identify and locate groups of potential riders for a specific route or corridor, and the types of service improvements required to induce greater use of that route.

* a rider incentive study to determine consumers' image of transit service so that misconceptions about routes and special services can be addressed through better communications programs and information aids.

* an evaluation of a specific service such as park and ride.

* a needs assessment of a specific group such as senior citizens, handicapped riders, etc.

Limited area incentive studies should be conducted before implementing a service to determine whether there is truly a need for such a service from the consumer point of view, and what the market potential of such a service would be. In addition, when a service has been implemented, but has failed to meet its projected market potential, a limited area incentive study can answer some vital questions about why a service is *not* reaching projected market potential. By checking the original projections, comparing them to actual after-the-fact data, and running a second study, it is possible to learn what action is necessary to assure that the service will reach market potential.

Since the scope of a limited area incentive study is generally narrower than the scope of a market-wide strategic study, the latter generally has less stringent sampling requirements and costs less to conduct.

B. Pre-Implementation Research

An analysis of the data generated by market-wide strategic research and limited area incentive research can provide certain necessary information: the need for service improvements, the design of communication programs and information systems, etc. However, since a major effort and expense is required to implement service changes and advertising campaigns, it is frequently

worthwhile to get consumer feedback before implementing any part of a new plan. This pre-service evaluation will help determine if the plan will accomplish its objectives and if the money will be spent effectively.

Of the three basic types of consumer research discussed in this report, pre-implementation research will probably be the most frequently used by transit marketing managers. When questions arise regarding consumers' reactions, acceptance, or comprehension of a new product or service, pre-implementation evaluation is a means of obtaining consumer feedback relatively quickly. This kind of study is usually tailored very specifically to the situation at hand; that is, the objectives, design, scope and method of individual pre-implementation studies are determined by the specific problem to be addressed, making each such study a custom study. Consequently, the problems that may be explored in such research are as extensive and varied as the marketing program itself. However, they may be categorized in three general areas:

Concept tests:

Used to evaluate new ideas on the "drawing board," including new services, changes in service, or possible new products, such as timetables or bus shelters. The new ideas or concepts are presented to consumers in visual and/or verbal form, as appropriate to the concept being evaluated. Consumers are then asked about their reactions to the overall concept, attitudes on specific benefits/problems associated with the concept, likes and dislikes, likelihood to use, etc. Since concepts are frequently hypothetical, and often refined after applying information gathered from a concept test, marketers should always consider following up concept tests with "product" tests, when the product permits such evaluation.

Product tests:

Used to evaluate a prototype of an actual product such as route maps, timetables, or bus shelters or to evaluate a particular service such as "Park and Ride" lots or "Shoppers Specials." Consumers examine the product or try a test run of the services. They are then asked about their reactions to the product or service in terms of attitude overall, attitudes on specific benefits/problems, needs satisfaction, likes and dislikes, etc. (Obviously, product tests are not feasible for some services; for example, a new subway system). By determining if the new product or service will fill an unsatisfied need, and the relative market potential of such a service in terms of trip volume, the marketer can determine whether to proceed with the proposed change or to cancel or modify it.

Copy tests:

Deal exclusively with evaluation of an advertising execution. Copy tests expose current and potential riders to an execution to determine if it:

* Does not cause any negative reaction.

* Communicates the intended message—clearly, concisely, convincingly.

* Attracts attention.

* Persuades the viewer of the key benefits of the service being advertised.

*   Persuades the viewer to use the service being advertised.

By correctly analyzing the information gathered in a copy test, the marketing manager has the opportunity to improve an execution before it runs. As a result, the marketer will know that advertising dollars are working as effectively as possible.

The same conceptual approach can be used to evaluate whether other communication/information aids, such as brochures, timetables or route maps, are effective.

C. Tracking and Assessment

Once a new marketing plan, or a major portion of a plan, is implemented, it is essential to learn whether the plan is accomplishing its objectives. Market response analysis, such as passenger counts and revenue counts, evaluate the business or financial side of a program. However, such analysis does not, and cannot, explain why business is improving, declining, or remaining level. This kind of evaluation requires tracking or assessment research. Tracking research involves repeated sampling of a specified population, asking the same questions each time or a core of standard questions, but with a new selection of respondents.

Tracking, if designed properly, will provide a marketer with information regarding *why* business is up, down, or the same from a *consumer perspective.* Tracking usually involves a series of two or more identical surveys conducted over time. The first survey or wave of the series is commonly called the "benchmark" wave. This wave is conducted just prior to implementing a service or product being tracked. This wave provides the benchmark levels of:

— Consumer usage or ridership.

— Consumer awareness of service.

— Consumer attitudes toward service.

Follow-up surveys or waves are conducted at various intervals after the new service or product has been implemented. Results of successive waves are compared to earlier waves and the benchmark wave in order to determine the degree and direction of change over time on all of the above measures. For example, if a transit marketing manager learns why ridership on a new route is down, he may implement corrective action. The next wave of the tracking research should tell the marketer if the corrective action was effective.

The number and timing of subsequent "waves" depends on the implementation schedule for the marketing program. When a service improvement and communications package are initiated at the same time, two subsequent survey waves are recommended. The first should be conducted shortly after the implementation of the package, but with sufficient time for the marketing program to have had a measurable effect. For example, if the communication package involves a 4 week advertising campaign, the first wave of the research should be conducted within a few days of the end of the campaign. The next wave should be conducted after the program has been in operation enough time for it to have full effect (possibly a year). When a marketing plan is implemented in several stages, additional follow-up waves are desirable. Their timing, however, is crucial.

Part 3: Technique

The purpose of this section is to highlight various methodological issues that frequently arise when conducting consumer research. Before going further, though, it's necessary to understand the important distinctions between qualitative and quantitative research. These terms are frequently misunderstood, even by knowledgeable marketers.

A. Qualitative Research

Qualitative research is a valuable but limited marketing research tool. It can be a simple and inexpensive way to get good feedback from current and potential riders about such things as advertising copy, schedules, maps, graphics, jingles, and other elements of the transit service. However, it's important to remember that qualitative findings are not projectable to the larger population. Therefore, it is crucial that respondents be recruited in such a way as to accurately reflect, as closely as possible, the actual audience for a product or service. One way of putting it is that the purpose of qualitative research is to add meaningful input to quantitative research. For example, one can learn what language or words consumers use to describe a particular transit-related product, service or issue. This language can then be used in framing the questions for a quantitative study. Qualitative research may also be used to generate hypotheses, stimulate ideas, and develop background information about consumer attitudes, beliefs and predispositions.

Some examples of qualitative research are:

1. *Focus group discussions* — a talk session among 10-14 people under direction of a "moderator" who explores in-depth an issue using a guide prepared ahead of time by a team composed of the marketing manager, the researcher, and the person moderating or facilitating the group. (See Technical Appendix C: Focus Group Discussions.)

2. *Depth interviews* — a free-hand one-to-one talk session between a single consumer and an interviewer who probes the depths of the person's knowledge and/or opinions on a specific subject. This technique consists of probing more deeply into initial responses to questions.

3. *Small scale surveys* — a semi-structured interview with 10-25 individuals in which an interviewer asks a series of structured (pre-established) questions and probes responses in limited depth on subjects pertinent to the issue.

Qualitative research by its very nature is not decision-oriented and cannot be used to solve marketing problems. Its sampling universe is restricted, the information derived is scattered and non-objective; it represents the viewpoint/experience of a very limited number. It is important that the use of qualitative research be carefully controlled by the transit marketer to insure that the technique is not misused.

B. Quantitative Research

Quantitative research, on the other hand, usually relies on a much greater sample and is the basis for decision-making. It lays the ground for a study of broad scope, carefully designed and

properly sampled. Quantitative research is sometimes divided into applied research and descriptive research.

> *Applied research:* Used when a problem or issue has already been tentatively identified and management wants to get data that would help solve or illuminate it. Typical applied transit research projects would be to find causes of declining ridership on a specific route, to determine the reasons for poor morale among drivers, or to evaluate advertising alternatives.

> *Descriptive research:* Used to gather background data which helps management better understand their service and users. Transit agencies may be interested in the characteristics of riders and non-riders; they may want data about the behavior and attitudes of people within their service area. Another possibility is finding out more about the trip destinations and characteristics of their current and potential riders.

Quantitative Research Methodologies

There is no single way to conduct consumer research, no single technique that is appropriate for every type of marketing problem, and no single methodology that will provide valid results in all research situations. The specific methodology to be used in a study depends upon the definition of the marketing problem and the conceptual approach to it. For a very useful compilation of current mass transit survey questionnaires, see *Use of Market Research in Public Transit* (1985) prepared by the Center for Urban Transportation Studies, University of Wisconsin–Milwaukee.

Since there is such a close relation between the nature of the problem or issue in question and the technique used to study it, it is very important that the transit marketing manager and the researcher each have a clear understanding of the objectives of the study. In order to set specific goals, the problem or issue must first be clearly defined. Only then is it possible to set reasonable objectives by asking such questions as: What exactly is the study going to accomplish? What kind of "actionable" information will be gained? What segment of the market will be targeted for responses? What are the limits of the research?

Once the research problem has been defined and the objectives agreed on, the researcher and marketer can begin structuring their study. Before developing or selecting a methodology, they must consider:

— Nature of the problem and degree of risk in various solutions.
— Extent of data requirements.
— Nature of measurements to be made.
— Time and cost constraints.

Valid, reliable, and useful consumer research provides information on relevant issues which in turn enables management to make informed decisions. For this reason, the design and execution of quantitative studies should adhere to basic research principles in the following areas.

1. Sampling plan development.
2. Questionnaire development.
3. Interviewing methods and procedures.
4. Data preparation.
5. Data analysis and interpretation.

Note: No research problem is unique. Generally some information already exists that will aid in refining the questionnaire. Such sources of information include previous research conducted by the local transit authority, planning agencies, state or Federal transportation departments or other agencies such as the Census Bureau, as well as local colleges and universities. (See Exhibit C: Examples of Secondary Information Sources.)

Additional background information may be desirable to formulate hypotheses, develop phrase lists for attitude measurements, or learn what language consumers use to discuss the subject. For this type of preliminary exploration, qualitative research is used (group sessions, depth interviews, etc.)

1. Sampling Plan Development

After defining research objectives and selecting a methodology, the next task involved is developing a sampling plan. A sample is a finite part of a statistical population whose characteristics are to be studied in order to gain information about the whole population.

Developing a sampling plan consists of determining the:

* universe or "population" to be included in the study;
* type of sample to be drawn;
* size of the total sample and the necessary sub-groups to be analyzed.

The Sampling Universe

A sampling universe is the entire relevant population from which a sample will be drawn. Generally, a sampling universe for public transportation studies has two dimensions:

(1) Geography and (2) Type(s) of people.

The *geographic* universe for a sample is determined by the scope and intent of the study, and could involve an entire transit area, one neighborhood, or the area within a certain distance of a route. For example, the geographic boundaries of a systemwide study would encompass the entire transit operating area. For a single route study, the geographic boundaries would consist only of those areas served by the route. The characteristics of the geographic territory determine the precise description of the geographic boundaries.

These geographic characteristics will vary due to:

— Nature of the geographic constraints, i.e., the physical layout of the service territory.
— Density of the transit network.
— Presence or lack of multiple transit modes.
— Extent to which consumers in suburban or outlying areas have an opportunity to use existing or feasible new transit services, e.g., "park and ride" or commuter rail-bus lines.
— Franchise or other restrictions.

The type of people who make up a sampling universe is also determined by the scope and intent of the study, and could involve the entire population in a transit area or only one segment of the population, such as senior citizens, those living within a certain distance of a route, etc. For example, the universe for a market-wide strategic sample would encompass the entire population

in the transportation area. If evaluating the potential of a special fare for senior citizens the sample universe should be composed of senior citizens; for evaluating the potential of a special rush-hour route, the sampling universe would encompass those who live/work within a fixed distance of the route and travel at rush-hour.

Type of Sample

Sampling can be highly complex and technical. It is suggested that the transit marketer rely upon a consultant or research supplier to help determine the appropriate sampling universe and/ or draw the sample. Our discussion will highlight the nature of:

* Full probability sampling.

* Modified probability sampling.

* Quota sampling.

(For further details on sampling, see Technical Appendix A or refer to the statistics and market research sources in the Bibliography.)

Full Probability Sampling

This type of sample adheres strictly to all rules of sampling so that each member of the defined universe has both a *known* and *equal* chance of selection. In addition, all field controls (e.g., callbacks, respondent selection procedures, validation, etc.) are followed rigorously in order to ensure that the sampling procedure is properly administered. Such efforts are needed to successfully avoid respondent selection bias by the interviewer or the problem of the availability of some people and not others.

Data collected from full probability samples are fully projectable to the entire target population. However, since full probability samples are generally quite expensive, they are used only when absolutely necessary, that is, when the decisions being made involve high risks. For example, one would probably use a full probability sample for a major market-wide strategic study or for a study requiring accurate volume projections. Otherwise, less stringent sampling can be used.

Modified Probability Sampling

When the decision being made is of a moderate risk level, a completely representative and fully projectable sample is often not necessary. In this case, the transit marketer can reduce research costs by using a modified probability sample. In such a sample, some of the rigid rules and field procedures of a full probability sample are sacrificed. For example, one might select fewer sampling points or locations. Since fewer sampling points increase the efficiency of the interviewer's time, savings can result from reducing points below that required for fully projectable results. However, respondents must still be selected on a random basis from those sampling points used, if the results are to be at all representative.

Quota Sampling

When the decision being made involves relatively low risk, a quota sample may suffice, particularly if the universe consists of one or two specific segments of the population.

Quota sampling requires interviewers to reach out and find eligible respondents as they come across them, until the number of interviews reaches the pre-designated sample size. However, in order to guarantee that the relevant population is included in the sample, specific eligibility requirements are established. Potential respondents are screened to see if they meet these eligibility requirements before a full length interview is conducted. This method is often used for product tests.

Determination of Sample Size

Sample size must always be determined in advance, regardless of the type of sample one is using. This is a very important task. Sample size is partly based upon the number and nature of the sub-groups being analyzed. For example, in strategic studies, it is necessary to have a large enough total sample size to permit valid analyses of various sub-groups such as heavy riders, moderate riders, light riders, and non-riders. Each sub-group should have a minimum of 100 respondents.

When conducting pre-implementation evaluation research and tracking or longitudinal research, it is necessary to first decide how much statistical sampling error will be tolerated. Then the appropriate sample size can be calculated, one that will permit you to stay within the desired range of sampling error. (Any statistics textbook will have formulas for this process.)

2. Questionnaire Development

The purpose of a questionnaire is to collect data in an organized and objective manner. It is a tool used to gather relevant information from consumers which will later be analyzed. Appropriate marketing decisions can then follow analysis. The length and form of a questionnaire will vary according to the objectives and budget of the study. It is necessary to develop a different set of questions for each research project, with data tailored to meet the objectives of each specific study. A good questionnaire asks the right questions in proper sequence, in clear, unambiguous, unbiased language. Long questionnaires should also be constructed in a way that avoids respondent fatigue. For example, if there are a lot of rating items, they should be broken up into two or more questions to encourage respondents to give a more thoughtful answer. In personal interviews, various props such as cards with answer choices can be used to alleviate respondent fatigue.

Questionnaire development is a critical step in the research process because the usefulness of the data collected can be no better than that of the questionnaire itself. Therefore, it is recommended that transit marketers rely on someone with extensive experience in questionnaire writing.

Designing the Questionnaire

The development of the actual questionnaire involves a team effort by a transit marketer and a researcher.

The MARKETER'S ROLE is to provide a clear statement of the problem, the marketing issues, and objectives of the project.

The RESEARCHER'S ROLE is to translate the above information into a questionnaire that will accomplish the objectives of the study.

The procedure is one of give and take. The marketing needs are assigned priorities to ensure proper focus of the questionnaire. One of the greatest difficulties in drafting a questionnaire is

resisting the temptation to ask everything. The content must be confined to the most relevant issues.

Questionnaire Content and Techniques

Although the content of questionnaires varies widely, there are two basic questioning techniques: STRUCTURED CLOSED-END questions and UNSTRUCTURED OPEN-END questions.

STRUCTURED CLOSED-END questions limit respondents' answers to predetermined possibilities such as yes/no, true/false, rating scales, and other multiple choice questions. The respondent merely selects his or her answer from a list.

Rating scales are a widely used form of structured closed-end questions, especially for attitudinal information. Rating or intensity scales use between three and eleven point scales to measure opinions. Deciding how many points to use on a scale depends on general considerations such as the purpose of the survey and the nature of the issue. It can vary between three and eleven, but the most common scales fall in the three to seven range. That is because, generally speaking, discrimination levels off at seven points, with no refinement at all possible after eleven. The Likert scale is a popular example of this type of ranking. It presents five or six degrees of possible agreement:

Disagree	Disagree	Disagree	Agree	Agree	Agree
Strongly	Moderately	Mildly	Mildly	Moderately	Strongly

In a face-to-face interview, the interviewer often gives the respondent a card with the scales printed on it because the range of responses is large. Rating questions, no matter what their point scales, usually elicit the following kinds of responses:

OPINIONS:
excellent, very good, good, fair, not so good, poor.

USAGE INTENTION:
definitely would ride the bus, extremely likely, very likely, somewhat likely, not very likely, not at all likely to ride the bus.

DESIRABILITY OF SPECIFIC BENEFITS of a product or service:
extremely desirable, very, quite, rather, slightly, not at all desirable.

Attitude or ranking scales are very sophisticated tools and should be used carefully by those fully familiar with their assumptions and limitations.

In contrast to the highly-structured questions above, UNSTRUCTURED OPEN-END questions allow the respondent unrestricted expression of opinion; thus they permit more detailed responses than is possible to obtain from closed-end questions. However, open-end questions are somewhat subjective because the response to such questions depends upon the interviewer's ability to effectively probe the respondent, the respondent's ability to verbalize thoughts, and the coder's ability to correctly code the answers (place the responses into categories so that they can be fed into the computer). Therefore, the use of open-end questions should be restricted to questions for which a closed-end answer would not be adquate to elicit the desired information.

It is important to understand that proper questionnaire design is a critical component of the survey process and can determine the success or failure of the study. The information desired must be carefully thought through in advance. Factors that must be considered when designing a questionnaire are:

* GET ALL THE INFORMATION NEEDED, but restrain the impulse to ask everything.

* WORD QUESTIONS ACCURATELY
  — Keep wording as simple as possible.
  — Make sure questions can be understood by all.
  — Avoid slang and technical terms.
  — Do not bias responses.

* ARRANGE QUESTIONS CAREFULLY
  — The first question should arouse interest.
  — The order of questions should be checked to make sure that one question will not bias the response of another.
  — Break-up monotonous questions; for example, it too many rating items are asked at one time, the respondents are likely to get bored and give a less than thoughtful answer.
  — The order of rating items should be rotated. In other words, one phrase should not always be in the same position on the line (first, second, last, etc.). In this way, no one phrase will be subjected to interest bias because of positioning.
  — Ask all recall or unaided awareness questions first, before respondent can guess purpose of study. These questions and their proper interpretation can provide insightful diagnostics at a later time.
  — Personal questions should be worded in a way that will avoid embarrassing or offending respondents.

* MAKE QUESTIONNAIRE MECHANICALLY EFFICIENT
  — Make sure there is adequate space for answers.
  — Make sure that question sequence and skip patterns are easy to follow by means of organization, layout and instructions.
  — Transition phrases between question areas should prepare respondents for the next topic area, as well as stimulate interest.

Question Sequence

The sequence in which questions are asked within the survey is crucial to successful questionnaire design. This is still another phase that requires close teamwork between the transit marketing manager and the researcher.

Generally speaking, transit survey questionnaires consist of questions in the following four categories:

1. Introduction.
2. Warm-up.
3. Main study.
4. Demographics.

The most difficult questions to ask are those regarding personal characteristics such as age, sex, race, income, religion, etc. That is why the demographic questions should come at the end of the questionnaire, after the interviewer has had the chance to establish rapport with the respondent. Placed earlier in the questionnaire, such personal questions could scare the respondent off or create tension that would affect responses. The designers of the survey need to ask themselves if the information elicited in each question is really necessary. For example, income data by itself is not very useful; it may be more meaningful to determine automobile ownership, a figure that relates more directly to transit use and also can be used as an indicator of income.

Question Areas

Each questionnaire should begin with an introduction which informs the potential respondent of the:

1. Name of the interviewer's research organization.
2. Purpose of the study.
3. Importance of respondent's cooperation.

Following are five general categories of mass transit research questions:

1. AWARENESS: How much the public knows about the transit system, including services available, existing routes, stops/terminals, sources of information, fares and advertising.

2. CONSUMER BEHAVIOR: What consumers' usage habits are relative to transportation, including frequency of travel, purpose of travel, weekday/weekend usage, time of travel, purpose and use of public transportation facilities and purpose and use of alternative modes of travel.

3. CONSUMER ATTITUDES: How consumers feel about a transit service and about competitive modes on the overall and on specific features (such as dependable service, ease of use, economy, comfort, etc.). How satisfied/dissatisfied consumers are with existing services. Would proposed new services fulfill their needs, etc.?

4. SERVICE REQUIREMENTS: Whether current routes serve consumer requirements and what changes are desirable, including where riders come from/go to (origin-destination), time of trip, length of trip and amenities.

5. CLASSIFICATION OF TARGET GROUPS: Which consumers offer the greatest volume or potential volume of business, their demographic description (age, sex, occupation, education, income), and their life-style characteristics (homebodies, socially-conscious, family-dedicated, footloose, etc.).

Pre-test Questionnaire

Once a questionnaire is drafted, it is pre-tested. Pre-testing is essentially a "dress rehearsal" before the actual fieldwork for the study begins. Pre-testing is a means of checking the structure of the questionnaire and interview length. Pre-testing can also highlight sensitive questioning areas in which respondents may be reluctant to participate; it can also point out questions that are difficult for the respondent to understand or answer. Pre-testing allows for appropriate changes in

the questionnaire before the final version is printed. A standard rule in the field of market research is that the pre-test should be conducted with ten percent of the planned sample size. In cases where portions of the questionnaire are re-designed after a pre-test, a second pre-test should be conducted.

Note: As part of the pre-test, answers should be coded, recorded and analyzed to check out the entire procedure.

3. Interviewing Methods and Procedures

INTERVIEWING METHODS: Interviews can be conducted in person, on the telephone or through the mail. The interview method selected depends upon:

* Type of sample:
  Full probability.
  Modified probability.
  Quota, etc.

* Nature of Interview:
  Length and complexity of questionnaire.
  Need to show product or other visual stimuli.
  Time and budget limitations.

  There are four major types of interviews:
  1. Personal Interviews.
  2. Telephone Interviews.
  3. Mail Interviews.
  4. Combined methods.

(See Exhibit D: Comparative Assessment of Alternative Survey Methods.

Personal Interviews

Personal interviews can be conducted in three different ways: in-home, on-site (such as on a bus or at the bus stop) or in a central location such as a shopping mall.

When personal in-home interviews are conducted, the interviewer goes door-to-door, selecting the appropriate household and selecting the appropriate respondent in each according to prescribed procedures. (These procedures are part of the sampling plan.) Finally, the respondent is interviewed in his or her home.

When on-site surveys are conducted, interviewers screen for eligible respondents at the site, and then personally interview them on the spot. In some situations, the interviewer will give the respondent a self-administered questionnaire to fill out.

When central location interviews are conducted, interviewers go to high pedestrian traffic areas, such as shopping malls, and screen passers-by. Eligible respondents are then taken into an enclosed area for a full-length interview. Central location interviewing is often used when a quota sample is sufficient and/or if the respondents are required to handle a product or view a commercial.

Telephone Interviews

Telephone interviews are a widely-used, cost-efficient method of data collection. The interviewer dials the appropriate telephone numbers and asks for the appropriate person to talk with in each household according to prescribed procedures. (See Technical Appendix B, Strengths and Weaknesses of Interviewing Methods for telephone sampling procedures.) The amount of interviewer time required is considerably less for telephone interviews than for personal interviews, making field work faster and less expensive.

Ideally, telephone interviews should be restricted to one-half hour for maximum quality of response, but there are cases where longer telephone interviews have been successful.

(Note: In most markets, the proportion of households with telephones is sufficient. However, it should be pointed out that in those areas where a large proportion of households [20%] do not have telephones, another interviewing method should be used.)

Mail Interviews

Mail interviews are generally conducted by research companies which maintain a panel of households which participate in surveys on a regular basis. For transit studies of a selected area, the transit marketer would have to select a custom sample from a reverse telephone directory in order to canvass the area affected by a new or expanded route or service. Mail surveys of this type have a significantly lower completion rate than either personal or telephone surveys, and also require longer overall time to complete due to the time lapse between mail-out and return.

Combining Interviewing Methods

For some situations it may be appropriate to combine interview methods. For example, if one is looking for a small segment of the population, such as users of special transportation for the handicapped, one might want to screen them by telephone, make an appointment, and conduct the full-length interview in person in their homes.

INTERVIEWING PROCEDURES: Interviewing is a special skill that requires extensive training so that interviewers can learn to:

* establish rapport with respondents quickly;
* not influence responses;
* follow questionnaire procedures.

Without such training, interviewers tend to bias the responses and make many other serious mistakes which can jeopardize the results of the study. Therefore, it is essential to use professionally-trained interviewers, maintain interviewing quality, and follow all basic sampling and questionnaire procedures. Marketing research companies either have their own interviewers or will contract with interviewing services.

Written Instructions

Written instructions should be provided which describe study objectives, sampling procedures, respondent requirements, timetable for field work, and any necessary special instructions such as how to use visual aids.

Interviewer Briefings

Interviewer briefings should be conducted in-person by an experienced supervisor. When a lengthy or complex interview is involved, it is advisable for someone from the market research supplier's central staff and/or the transit agency's staff attend the briefing to ensure that difficult sections of the questionnaire will be executed correctly and that any problems will be resolved to the transit agency's satisfaction. During the briefing, all interviewers should be thoroughly informed about the purpose of the study in order to increase their interest in the assignment. Sampling requirements, call-back instructions and interviewer instructions about the questionnaire should be clearly explained, so that no confusion exists about the proper selection of respondents or administration of the survey. The interview should be reviewed with all interviewers on a question-by-question basis. This procedure is most efficiently accomplished in one group meeting so that instructions are uniform and individual interviewers can hear the questions and concerns of others. Where feasible, it is wise to distribute questionnaires to interviewers in advance of the briefing sessions. In addition, all interviewers must conduct at least one practice interview. This step is critical, particularly with complex questionnaires.

Monitoring

In the early stages of data collection, interviews should be monitored to ensure that the interviewers are administering the questionnaires properly. Questions should be read exactly as written and the interviewer's own opinion should never be discernible, either by word or tone of voice. Auditing three or four interviews per interviewer usually suffices.

Validation

In order to check that the proper respondents were interviewed, a minimum of 10% of each interviewer's respondents should be recontacted by a third party and asked if certain question areas should be covered, and if the interviewer was courteous. This is only one method of evaluating field work quality, but is a vital control which virtually every reputable research company exercises.

4. Data Preparation

After field work is completed, the data must be prepared for analysis, a procedure that requires extensive quality control.

Editing and Cleaning

Editing is the first step in processing. Editing requires that each questionnaire be checked for:

ADHERENCE TO SAMPLING INSTRUCTIONS: If the interview was not made with the proper respondent, it is rejected.

LEGIBILITY: If handwriting is illegible, editors first attempt to decipher responses. When deciphering is impossible, the interviewer is contacted for clarification. If necessary, the question under consideration is excluded from final tabulation.

COMPLETENESS: Editors review any blanks to determine whether all questions have been answered.

CONSISTENCY: Each questionnaire is reviewed for discrepancies (for instance "brand of car owned" recorded under one question and "do not own car" recorded in another). The editor also confirms that the skip patterns have been followed accurately (e.g. if "no" in Q. 3, skip to Q. 6). Questionnaires are thus "cleaned" to insure that erroneous data are not recorded.

UNDERSTANDABILITY: Open-end responses are often difficult to decipher because of abbreviations used by interviewers while recording verbatims. It is the editor's role to interpret the intended meaning where possible or decide whether that question should be eliminated from the tabulation.

Coding for Closed Ends

Before the final version of the questionnaire is printed, all closed-end structured questions are pre-coded. That means column numbers and code numbers are assigned to each answer area to facilitate transfer of data into a form that will be easy to enter into whatever computer program has been chosen to analyze the materials.

It is important that the transit marketing manager and the researcher discuss ahead of time how the data will be analyzed. Until the recent past, the usual practice was to keypunch computer cards which were then run through large mainframe computers. With the advent of large storage microcomputer hardware, and sophisticated data base and statistical analysis software packages, many researchers and/or marketers may be able to do the analysis using their own hardware/software, or that of their agencies. What's important is that the transit marketer and the researcher agree at the outset how the data will be handled.

Coding for Open-Ends

After all interviews are completed, coders determine into which of pre-established categories similar responses fall. A number is assigned to each category, the appropriate number written in the margin next to each response on every questionnaire, and the codes are available when data on the completed questionnaires are ready to be processed.

Transcription

Although tabulation can be done manually for simple questionnaires and small samples, most transit studies will use computerized statistical analysis.

Cleaning

While many checks can be made manually during the editing and coding stage, computers can more efficiently clean the questionnaire by checking the logical consistency of responses, the skip patterns or any other element of importance to the analyst. Computer cleaning requires the use of programs specially designed to clear, code, and reformat data. When errors occur in computer cleaning, they can be corrected mechanically by a programmed instruction, or manually by examining the original data.

5. Data Analysis and Interpretation

As mentioned earlier, data tabulation methods have changed radically in the last decade. Many marketers and researchers will now have the in-house capability of analyzing their own data. Again, though, what is important is that the transit marketer and his consultant or research

supplier has available the appropriate tabulation programs and statistical packages. Since computer programs and microcomputer hardware vary in the amount of data they can accept and the statistical techniques they can execute, it is necessary that both the marketer and researcher have a thorough understanding of the size and complexity of the data base they need for their analysis.

The first step after the raw data have been prepared is to run marginals. Marginals are printouts which show how many people fall into the various answer categories and form a basis for deciding which sub-groups it will be possible, as well as enlightening, to analyze. The computer then counts the number of responses in each category for every question and prints these numbers on data tables. When selecting sub-groups for analysis, the objectives of the study should be kept in mind. For example, the objectives of a study may require the analyst to examine the attitudes and behavior of current riders, potential riders and non-riders.

After the analytical sub-groups have been determined and run, the data from each can be reviewed and compared for differences and/or similarities. If the questionnaire was effective, it will elicit information which will provide firm guidelines about whether or not to implement a proposed service or product change. As a rule of thumb, if 40% or more of the respondents indicate little or no interest in using the service or product being evaluated, it should probably not be implemented, unless changes desired by consumers can be made.

There are many statistical tests available for validiating the results of your sampling. One that is appropriate for some of the longitudinal and tracking research done in transit market research is the chi-square test. This is a statistical measure of the difference between the actual and expected results in your survey or a particular wave of your research. Put most simply, it is a way to check whether or not the degree of difference between what was expected (or what was found in earlier research) and what was found is significant. It is important that the transit marketer make certain that the researcher is performing the correct statistical analysis on the data and then validating the results.

Part 4: Professional Research Services

A. Guidelines for Selecting a Market Research Supplier

Because both the design and execution of research studies require a considerable degree of experience, skill and technical expertise, transit operators and other marketers without their own research departments should seek the services of marketing research professionals.

Professional aid is available from a variety of suppliers. Universities represent one resource. In addition, several different kinds of independent companies maintain qualified research personnel, such as:

* Companies that specialize in market research, called research "suppliers."
* Companies that specialize in marketing/communications with internal research capability, e.g. advertising agencies.

Marketers can find help in locating market research companies by using sources such as the American Marketing Association's *International Directory of Market Research Companies and Services,* an annual listing of most major research companies with addresses, telephone numbers and a brief synopsis of their services. (This is referred to in the trade as the "Green Book.") In addition, the American Marketing Association maintains offices in many American cities. You may be able to get lists of appropriate companies in your area by contacting the local A.M.A. chapter.

When selecting a market research firm or other organization for assistance, the transit marketer should make sure that the firm provides the specific services needed. While some firms provide the full range of services for the planning and execution of custom research studies, from consultation on the nature of the problem, through preparation of a proposal and actual execution and analysis of the study, others provide only very specialized services such as:

* Qualitative research
* Media research
* Tracking or assessment research
* WATS telephone interviewing
* Door-to-door interviews
* Computer output

The transit manager can use any or all of the services that may be offered by such a market research company, from questionnaire design to data analysis. The transit manager should present a written statement of the services that will be required, i.e. the number of completed interviews needed, estimated incidence of qualified respondents, sample selection, questionnaire design and production, field work, data processing, analysis and final report. The supplier should provide a detailed cost estimate listing each service to be provided and the approximate cost for each service. A contingency price variation of $\pm 10\%$ is normally included. As with all major purchases, it's probably best to shop around and get more than one estimate for what you need. It's also advisable to check with transit agencies in comparable markets to see what such services have cost them.

The following checklist can be followed as a guide in selecting a competent and reputable research company. It details the relevant areas to be considered in evaluating suppliers of market research.

MARKET RESEARCH SUPPLIER CHECKLIST

1. Study Design

* Will supplier suggest alternative research designs if there is a better way to solve the problem?
* Is supplier responsible for layout of questionnaire?
* Is questionnaire easy to follow?
* Does supplier write interviewer instructions? Are they clear?
* Is physical set-up conducive to good work? Is all essential equipment available?
* Is office well-organized so that components of a study can be found at any time?

2. Sample Selection

* Does supplier advise on type of sample to use? Is a reliable probability sample obtained when desired? Are quotas met with quota sample desired?
* Who draws sample, and how is sample drawing actually done?
* Are sampling instructions clear and specific?
* What is the procedure for callbacks?
* What checking is done to make sure that interviewer followed sampling plan?

3. File Control and Supervision

* What ensures a smooth work flow to field? Within field? And back? How can one detect problems?
* What communications exist between home office and field? How does one know that all materials are mailed to field and received by field, and then returned when work is completed?
* How would potential problems be resolved?
* Do supervisors have clearly defined responsibilities? Can they adequately manage their interviewers? Do they validate and edit?
* How does the company check or evaluate the supervisor's work? Interviewer's work?
* What kind of training do supervisors and interviewers have?
* Are briefing sessions and practice interviews conducted?

4. Validation

* What proportion of interviews are validated? Does supervisor validate? Does home office? What records are kept?

5. Editing and Coding

* Who does the editing, and what type of editing do they do?
* Are editing instructions clear?

* For open-end questions, how are codes built? How large a sample of question-
  naires are used, and how are they selected?
* Who approves codes?
* What controls ensure that each questionnaire is actually coded, coded properly,
  and coded only once? How are questionnaires identified? Individually? In
  batches? Is coding verified? How much?

6. *Transcription*

* How accurately is data transferred to the computer?
* Is typing or keypunching verified? How much?
* Are data cleaned? Are cleaning instructions clear?

7. *Tabulation*

* Who decides what tabulations shall be run?
* Can you request additional tabulations after data is analyzed? At what cost?
* Who writes tab specifications?
* How are print-outs checked to ensure no mistakes were made?
* How long will data be stored?

8. *Analysis*

* Is analysis thorough? Are all objectives addressed? Are all appropriate sub-
  groups examined? Are all necessary and appropriate special analyses con-
  ducted? Are appropriate statistical tests run when necessary?
* Will the analyst go over data and findings with you?
* Can the analyst explain data in lay people's terms?
* Are written reports well-organized, concise, and clear?
* Are recommendations reasonable? Can they be implemented?

B. Communication Between Marketer and Research Supplier

The key to a successful research project is full communication between marketer and
supplier.

The transit marketing manager needs to prepare the following:

* BACKGROUND MATERIAL & PROBLEM STATEMENT—the communication
  must start with a clear statement by the marketer of the problem and the kind of
  decision that will be based on the outcome of the research.

* TIME AND COST REQUIREMENTS—these determine the size and scope of the
  study. Where these limitations are inconsistent with the type of study required for
  the marketing problem, the knowledgeable supplier will help to re-define the
  problem or suggest alternative approaches.

* SAMPLE REQUIREMENTS, SAMPLE DATA ANALYSIS, AND PRESENTATION
  REQUIREMENTS—these help to determine the specific design elements of the
  study.

The supplier needs to prepare the following:

During the initial communication process, the supplier is responsible for preparing a proposal which outlines the supplier's understanding of the problem and specifies the entire research plan. The major components of the proposal are these:

* STATEMENT OF OBJECTIVES—covering the marketing objectives and the research objectives.

* STATEMENT OF DECISION CRITERIA, wherever possible.

* SPECIFICATIONS OF THE SAMPLING PLAN, including:

    — a definition of the universe to be sampled (including geographic boundaries, if relevant);
    — a definition of the eligible respondents (i.e., the types of consumers who will be included and excluded from the study);
    — the number of people to be interviewed, and whether quotas will be established for consumer sub-groups of particular interest;
    — a description of methods used to draw the sample (full probability sampling, or census data, telephone directories, etc.)

* OVERALL STUDY DESIGN (methodology).

* OUTLINE OF INFORMATION TO BE OBTAINED, categorized by topic.

* RELEVANT "LOGISTICAL" CONSIDERATIONS, such as how products or ads will be placed with or exposed to respondents, whether each interviewer will handle all test items, how the test items will be identified, etc.

* COST OF THE RESEARCH.

* TIMING.

Where several suppliers have been approached for competitive bids on a study, each supplier's proposal, along with his actual bid, is the basis for deciding which will perform best. In the marketing research field, giving one supplier's proposal to competitors for purposes of bidding is highly unethical, unless the supplier is told in advance of preparing the proposal and reimbursed for the time spent on it.

C. Determinants of Research Costs

The following is a list of the major variables influencing the total cost of a research project:

* The larger the sample, the higher the cost.

* If only 10% of the population qualifies for the interview, the cost will be higher than if 80% qualify.

* Personal, in-home interviews are always more costly than telephone interviews because of interviewer travel time.

*   Since interview length determines both the daily interview completion rate and the amount of data which must be analyzed, the longer the interview, the higher the cost.

*   The more open-end questions, the higher the coding costs.

*   Computer time and analytical staff time increases with the number of sub-groups analyzed.

*   Report writing/presentation requirements will increase cost.

*   If the study must be done in an unusually short time frame, overtime costs could be high.

When conducting a research study, however, one must consider value as well as cost. For example, although longer interviews cost more, they may be the only means of providing all required information. If it is not possible to acquire the needed information by telephone, it would be more economically beneficial to conduct in-home interviews. Telephone interviews which do not yield enough data upon which to base sound marketing and expenditure decisions are worthless.

One last note: it is becoming increasingly standard to run what are called longitudinal studies. These are essentially tracking studies over a longer period of time. In order to ensure that these are both efficient and effective, the marketing manager must have both a long and short range survey plan. As noted earlier, keeping surveys in as standard a form as possible, asking questions essentially similar to those asked in surveys of comparable public transit markets, making sure that questions asked over time remain the same and that the core of respondents remains demographically the same—all of these steps will help give your research greater reliability and projectability.

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TECHNICAL APPENDIX A:
Guidelines for Determining Sample Size

Sampling is based on laws of probability which state that the larger the sample size, the more confidence can be placed in the findings. This confidence is measured statistically in terms of a range of error that is likely to occur due to random chance alone.

In designing studies, it is important to estimate the error range in advance in order to determine the sample sizes that are required. Since costs rise as sample size increases, it is necessary to determine a reasonable trade-off between the desired accuracy of the results relative to the funds available for the study. It is also important to consider the number and size of the analytical sub-groups in the sample in order to be sure that results can, in fact, measure meaningful differences. In this respect, it may be necessary to rank the sub-groups by their value to the final analysis and to eliminate certain ones from the study altogether.

Sample size will depend on several factors: the purpose of the research, the nature of the sample design, and the degree of diversity within the target population. Sample size will also vary according to the degree of desired precision and confidence in the results of the study. Available time, money, and personnel are also key considerations in determining sample size. Below are a few general rules regarding sample size:

1. The larger the sample size, the less probability of error.

2. The more sub-groups you need analyzed, the larger your sample needs to be.

3. Conversely, the greater the similarities within the study population, the smaller the sample can be.

The sample needs to be large enough to ensure an acceptable level of precision. The researcher can never be 100% sure that the data are dependable. However, he or she needs to get the maximum level of confidence within the bounds established by available resources, so that the information resulting provides a good basis for decision-making. Researcher and marketer thus become involved in a trade-off between various cost and time constraints weighted against the sample size and the level of detail in the analysis. If the amounts of time and money are too severely limited, the whole idea of gathering primary data should be reconsidered.

There are several formulas for computing sample size available to experienced researchers. One table is presented below as an example:

SIMPLE RANDOM SAMPLE SIZE FOR SEVERAL DEGREES OF PRECISION

| | Confidence Levels | |
Tolerated Error	95 Samples in 100	99 Samples in 100
1%	9,604	16,587
2%	2,401	4,147
3%	1,067	1,843
4%	600	1,037
5%	384	663
6%	267	461
7%	196	339

From the above it is evident that a great price is paid for increased precision and confidence. Although increasing the sample size lowers tolerated error and/or raises confidence limits, the improvement is not proportional to the increase in sample size required.

Two Samples or Groups

The issue in the two-group case is to determine whether the difference between the results is statistically significant, i.e., are the differences on the mean percentages between two groups greater than would be expected due to random chance.

The following table is used to help one determine whether one is designing the study with samples large enough to measure differences between two groups at the 80% confidence level. The table provides the minimum range or difference between the group means that will be required before the results can be considered greater than those occurring due to chance differences.

**MINIMUM RANGE REQUIRED TO BE 80% CONFIDENT
THAT THE PERCENT FROM TWO GROUPS ARE DIFFERENT**

Group Sample Size	Average of the Two Observed Percents				
	10% 90%	20% 80%	30% 70%	40% 60%	50% 50%
100	5.4	7.2	8.3	8.8	9.0
200	3.8	5.1	5.8	6.3	6.4
300	3.1	4.2	4.8	5.1	5.2
400	2.7	3.6	4.1	4.4	4.5
500	2.4	3.3	3.7	4.0	4.0
750	1.9	2.6	3.0	3.3	3.2
1000	1.7	2.2	2.6	2.8	2.9
2000	1.2	1.6	1.9	1.9	2.0

For example, if one were to do a tracking study of 100 per wave and expected to get about a 5 percentage point difference in ridership, one would want to know whether this increase was large enough to be sure that it was the result of our marketing program and not a chance occurrence due to the sample size one is using. Using the assumption of 20% ridership level, a sample size of 100 would require a difference of 7.2 percentage points before results would be statistically significant at the 80 percent confidence level. Since one wants to be able to measure a 5 percentage point difference in ridership between two waves, we would need to increase the sample size to 200 per wave. At this size, we would be able to measure a 5.1 percentage point difference.

An illustration of two groups from the same sample would be a case where one wants to compare the attitudes between the riders on two routes toward their service to determine if the percent liking the service differs. Suppose it is decided that a 6 percentage point difference between liking the service is acceptable, one needs to know what sample size is needed to indicate that a 6 percentage point difference represents a real difference in consumer attitudes toward service. Assuming that about 70 percent on the average will like the service, the table indicates that a sample size of 200 on each route is necessary to measure a 5.8 percentage point difference between routes.

Setting Levels of Confidence

In the above discussion, an 80 percent confidence level, or about four to one odds of making the right choice, has been used. However, for situations of a *very high risk* nature, a confidence level of 90% or 95% may be worth the additional cost of increasing sample size. In fact, when any important decisions are to be made, it is probably necessary to achieve a 95% level of confidence, with a tolerated error ranging from + or − 3% to + or − 8%. Conversely, in certain situations where risks are minimal, a lower confidence level, e.g., 66 percent or 2 to 1 odds, may be all that is required.

In the final analysis, the confidence level to select is based on the risk involved versus cost considerations. Confidence limits for any level can be obtained from formulas in statistical textbooks.

TECHNICAL APPENDIX B:
Strengths and Weaknesses of Interviewing Methods

The following pages discuss the pros and cons of the various interviewing methods.

In-Home, Personal Interviews

The major advantages are:

— permits selection of highly representative and projectable samples
— permits interview of greater length
— makes it possible to incorporate small visual aids (cue cards, scaling cards, etc.) into the interview
— provides maximum opportunity for probing open-end responses

The major disadvantages are:

— high cost
— vulnerability to geographical "cluster effects" unless a sufficient number of areas are included
— requires highly experienced research personnel
— difficulty of getting interviewers to go into "undesirable" neighborhoods

Central Location/Street Intercept Interviews

The major advantages of the personal interview conducted in a central location are:

— possible to incorporate visual aids into the interview, such as videotaped commercials which cannot be carried door-to-door
— permits interview of greater length
— saves travel time and permits group interview

The major disadvantages are:

— less sampling control—impossible to draw a probability sample, possibility of under-or-over representing certain consumer groups

On-Board Surveys

The major advantages are:

— very inexpensive method for interviewing transit users
— provides a good cross-section of riders on specific routes

In addition to the disadvantages cited for central location/street intercept interviewing, further disadvantages of on-board surveys are:

— cannot survey non-riders
— limited amount of information obtainable
— possible bias due to on-board environment
— limited questionnaire design if self-administered

Telephone Interviews

The major advantages of telephone interviewing are:

— relatively low cost per interview
— easier sample selection procedures
— no geographical cluster effects
— easier to reach certain population sub-groups (such as those in very high income brackets or those in less desirable neighborhoods)
— less expensive call-backs
— efficient for large-scale screening to locate low incidence consumer groups

The major disadvantages are:

— lack of opportunity to present visual stimuli
— less flexible than personal interviews in terms of interviewing techniques that require respondent involvement
— limitations in interview length
— non-coverage or difficulty in covering certain population groups (non-telephone households)

TECHNICAL APPENDIX C: Focus Groups

Focus group discussions are becoming increasingly popular in qualitative transit market research. This technique consists of a structured discussion with a group of carefully selected people from the market segment being studied. Talking with people in groups rather than individually is an approach designed to encourage spontaneous interchange. The technique is based on the notion that people, allowed to be spontaneous in a social, relaxed, non-threatening environment, will reveal personal opinions that are not captured in direct questioning. In fact, some experienced facilitators contend that the dynamics of an in-depth group interview prompts respondents to reveal things of which they themselves were previously unaware.

Scope

The groups can involve anywhere from 10 to 14 people led by a facilitator. It is crucial that the objectives be thoroughly understood before the discussion is conducted. Whether the discussion is being used to elicit information, probe attitudes, resolve issues, develop a survey, or build support or consensus, the objective sets the direction for the facilitator who seeks the information in a style appropriate to the occasion. Attitudinal information may require the preparation of a list of questions by the facilitator to serve as a guide for discussion. As a result, the information gathered is generally greater than the sum of the individual respondents' comments. The interaction itself can provide findings otherwise unattainable which, when summarized, yield insights into motivations and priorities, the salience of various issues and possible negotiating points to be considered in the implementation of alternative programs. These sessions are often tape recorded to provide more freedom to the facilitator to lead group members, without having to be concerned with "getting everything down."

Selection

Successful focus groups require that everyone involved attend the discussion and be on time. Often those conducting the research offer some kind of financial incentive to ensure punctual attendance. It is advisable that participants be telephoned the day prior to the discussion to be reminded of the time and place. The composition of the group is very important. The selection process must take into account the relevant market segments to be studied. It is very important to take caution not to over or under represent any significant segment of the population to be sampled. Researchers must work to reduce the chance of conducting all the group discussions with respondents holding similar viewpoints, and thus biasing the projected reaction of the whole community.

Training

It is very important that the group facilitator or moderator work closely with the marketing manager ahead-of-time so that he or she understands exactly what kind of information is being sought. Despite its "casual" setting, focus group discussions are pieces of serious research and should be treated as such. Three to six weeks should be allotted to the preparation for group discussions. During this period a list of relevant questions is developed and refined and the types of panel respondents are chosen. Other steps in the process include: developing and mailing any written notices to be used, developing the discussion guide, scheduling the time for the group to meet and reserving the facilities. The actual discussions generally last about 2 to 2½ hours, unless the respondents are highly enthusiastic and prefer to keep going. The time required for

analysis of the group interviews depends on the number of groups conducted, degree of detail required, and whether or not each group is to be summarized separately.

Summary

The group process itself is interactive. The results depend upon the selection of the facilitator, the selection of the respondents, the objective of the discussion, the preparation and the flexibility and adaptability of the research agenda. Since this approach is qualitative and is not statistically projectable, it is most effectively used in conjunction with other quantifiable techniques.

TECHNICAL APPENDIX D: Survey of Surveys

In May of 1983, the Center for Urban Transportation Studies at the University of Wisconsin–Milwaukee conducted a survey of transit agencies to examine their use of surveys as a market research tool. This survey consisted of a questionnaire mailed out to a preselected sampling of transit agencies. The transit agencies to be chosen as potential respondents were identified in the American Public Transit Association publication PASSENGER TRANSPORT as having conducted a market research study during 1982 and 1983. Forty of the 60 transit agencies selected for the survey responded.

The questionnaire solicited information from each transit agency concerning the purpose of the survey, the method by which the survey was administered, usefulness of the information collected by the survey, and what, if anything, would have been or will be changed if the survey was/is conducted again. Each respondent was asked to include a sample of the survey form when returning the questionnaire. Forty-seven sample surveys were received from the 40 transit agencies responding; some agencies including more than one survey, and others completed only the questionnaire.

1. By reviewing the responses to the questionnaire, some general observations on the use of the surveys by the various transit agencies can be made.

    ### User/Non-User and Trip Profile

    — to obtain information on the characteristics of user and non-user (i.e., demographic, socioeconomic, etc.);

    — to obtain origin-destination and other trip characteristic information (i.e., frequency of ridership, method of payment, etc.).

    ### User/Non-User Attitudes

    — to obtain information necessary to assess user and non-user attitudes toward and perceptions of the transit agency, transit service, etc.;

    — to identify inhibitors and potential incentives to using the transit service.

    ### Marketing Effectiveness

    — to measure ridership awareness of advertising campaigns and evaluate marketing campaigns;

    — to obtain information necessary to develop a strategy to increase ridership;

    — to determine the effect of various marketing techniques on the usage of the transit system.

— to determine the economic impacts of the transit system on the surrounding community.

2. Almost all of the sample surveys received had more than one stated purpose or objective. The practice of "piggybacking" or combining questions onto one survey to serve more than one purpose is a common element found in all the sample surveys received.

3. The most common method of conducting a survey, as seen observed in the "survey of surveys" is the use of an on-board survey. Approximately 49 percent (23 surveys) of the surveys received were on-board surveys. Telephone interviews made up 38 percent (18 surveys) of those received. Personal interviews (on-board interviews, mail-intercept, in-home) comprised 10 percent (5 surveys) of the total received, with mail-out surveys comprising 2 percent (1 survey) of the total received.

4. Seventy-five to 80 percent of the sample surveys received having "user/non-user profiles" and "user/non-user attitudes" as their primary purpose were conducted with an on-board survey. The remaining 20 to 25 percent were conducted with a telephone interview.

   Eighty percent of the sample surveys received having "marketing effectiveness" as their primary purpose were conducted with a personal interview. The remaining 20 percent were conducted with an on-board survey.

   The one economic impact survey received was conducted through an on-board, personal interview.

5. Some of the general comments made concerning changes that might have been or will be made to the survey itself include:

   — include questions seeking information necessary to conduct a "follow-up" (i.e., name, phone number)'

   — include more questions concerning the attitudes, perceptions, and opinions of both users and non-users;

   — develop or improve coding of questions to aid in tabulation.

(from *Use of Market Research in Public Transit*)

EXHIBIT A
Sample Screener Questionnaire

Time Interview Started:_____
Time Interview Ended: _____

Start 79-0
    80-1

(Please Print)

Name: _____   Tel.#( )_____

Address: _____   County:_____

City/State:_____   Zip: _____

Interviewer: _____   Date:_____

Name of Nearest Main St. _____   Sampling Area: _____

Hello. My name is _____ and I represent the_____ *(insert firm name).*
May I please speak to the man or woman head of the house?

- *If neither the male nor female head of household is at home, ask to speak to another adult, 21 years of age or older.*

- *If no adult is at home, find out when one of the head(s) of household will return, and call back then.*

                        AM
Time for call back:_____ PM

RESPONDENT IS:	
Male Head	1
Female Head	2
Other Male Adult	3
Other Female Adult	4

We are conducting an opinion poll about various public service issues in your community, and your household has been randomly selected as part of our sample. The opinions of your household will be very valuable in defining the needs and attitudes of your neighborhood, and will be kept in the strictest confidence.

A.   First, what do people call the section of town where you live? _____

1(a)   People of different ages often have different points of view about public service issues. Therefore, we need to known the name and age of each person presently living in the household. Let's start with the male head of household. What is his name and age? *(Record in appropriate spaces on referral sheet. If no male head of household, write in "none.")*

1(b)   Now, please tell me the names and ages of any **other** males, 16 years of age or older, who presently live in your household. Start with the oldest person and end with the youngest. Do not mention students who life outside the _____ Metropolitan Area during the school year. *(Record in appropriate spaces on referral sheet. Remember to obtain both **name** and **age**. If respondent is male, but not household head, make sure he includes himself.)*

1(c)   And what is the name and age of the female head of household? *(Record in appropriate spaces on referral sheet. If no female head of household, write in "none.")*

1(d)   And what are the names and ages of any other females, 16 years of age or older, who presently life in your household? Again, start with the oldest person and end with the youngest. Do not mention students who live outside the _____ Metropolitan Area during the school year. *(Record in appropriate spaces on referral sheet. Remember to obtain both name and age. If respondent is female but not household head, make sure she includes herself.)*

1(e)   Of **all** the household members you've mentioned, which of them have jobs outside your home? *[Circle as many as apply in column 1(e) on referral sheet.]*

1(f)   Which, if any, of the household members living at home, are students? *(For each person named ask:)* Does **(household member)** go to a high school, college or technical school? *[Circle in column 1(f) on referral sheet.]*

1(g)   Which of your household members possess a driver's license? *[Circle as many as apply in column 1(b).]*

1(h)   Which of the people in your household make a round trip beyond walking distance of home **at least twice a week**? *[Circle as many as apply in column 1(h). If none, **terminate**.]*

1(i)   *[For each household member circled in column 1(h), ask:]* Is **(household member)** at home right now? *[Record in column 1(i).]* Now I have to ask just one more question about your household that will permit us to group your responses with those of other people with similar characteristics.

2.   Is the total income in your hosuehold **under** $10,000, or is it **$10,000 or more**, before taxes? Please include the income of **all** your household members.

Under $10,000— Is that:

    Under $7,500 1   Under $5,000 3
           or   or
    $7,500 or more . . . . 2 $5,000 or more 4

$10,000 or more— Is that:

    Under $15,000 5   Under $20,000 7
           or   or
    $15,000 or more . . . . . . 6 $20,000 or more 8

Refer to Q.1 on referral sheet to determine the household member with whom you should continue. Select respondent from those at home now [column 1(i)] according to priority list below. For example, if a college student and a working female are at home, you'd interview the college student. If a working male and a working female are at home, you'd interview the working male, and so forth.

Select in this priority:

1. A college student

2. A high school student

3. A working male

4. A working female

5. A non-working male, not a student

6. A non-working female, not a student

If no other household member at home, continue with same respondent. Circle respondent to be interviewed on Q.1 referral sheet (right-hand column).

If you are to continue with same respondent, skip to Q.3(b).

If you are to interview another household member ask: May I please speak with **(household member)**?

Continue with full questionnaire with proper respondent.

EXHIBIT B
Sample Full Questionnaire

Time Interview Started:_____
Time Interview Ended: _____

(Please Print)

_____

Name: _____ Tel.#_____

Address: _____ County:_____

City/State:_____ Zip: _____

Interviewer: _____ Date:_____

Name of Nearest Main St. _____ Sampling Area: _____

_____

1. *Introduce yourself with:* Hello, I'm _____ from the *(insert company name).* We're conducting a survey to find out how people in the Metropolitan Area feel about various public service issues and we need your opinion about the needs of your community.

    Continue with all respondents:

2. There are many problems and social issues affecting the quality of life in our urban areas today. I'll read you a list of such issues, and I'd like your opinion about the **importance** of each one to the Metropolitan Area.

    To help you express your opinion, I'd like you to write down a few short phrases and read them back to me. Do you have a pencil and paper? *(Wait until respondent has writing materials.)* Now, please list the following phrases, one under the other: Extremely, Very, Quite, Rather, Not Too, and Not At All.

    Record whether respondent wrote down phrases: Yes *1*
    No *2*

    First, think about the issue of *(read item X'd).* Using the phrases you just wrote down, would you say this issue is **extremely** important, **very** important, **quite** important, **not too** important, or **not at all** important to the overall welfare of the Metropolitan area? *(Record below.)*

    And how important is *(read next item)* to the overall welfare of the Metropolitan area? *(Record below and repeat question for each item on the list. Read down, then return to first item until you have reached your starting point.)*

*If respondent did not write down rating phrases, repeat the phrases for each item by saying: "Would you say this issue is **extremely** important, etc."*

Start Here	Items	IMPORTANCE RATINGS					
		Extremely	Very	Quite	Rather	Not Too	Not At All
( )	Redeveloping the downtown business district	6	5	4	3	2	1
( )	Relief of traffic congestion	6	5	4	3	2	1
( )	Controlling air pollution	6	5	4	3	2	1
( )	Providing a good bus system for public transportation	6	5	4	3	2	1
( )	Providing the needs of senior citizens	6	5	4	3	2	1
( )	Installation of the rapid transit system	6	5	4	3	2	1

Because it would take up too much time to cover all these issues in one interview, we are asking each person to talk about only one of them. In your household, we'd like to cover issues relating to public transportation, especially the metro area bus system.

3. What is the **name** of the bus system in your area? *(Write in verbatim what respondent says on line below.)*

_____

(write in name of bus system)

4. How would you rate the overall quality of service provided by the bus system in the _____ Area? Would you say it is excellent, very good, good, fair, not so good, or poor? *(If respondent says "don't know/never ride," ask:)* Based on whatever you know about the bus system or what you've seen of the buses, what is your impression of the bus service? Is it . . . *(Read list):*

Excellent 6
Very Good 5
Good 4
Fair 3
Not So Good 2
Poor 1

5(a) Is there a bus line within walking distance of your home?
Yes *[ASK Q.5(b)-(c)]* 1
No *[SKIP to Q.6]* 2
Don't know 3

5(b) Do you know where the bus goes, either for all or part of its route?
Yes 1
No 2

5(c) Do you know the location of the bus stop closest to your home?

Yes 1

No 2

6. On average, how often do you, yourself, use the Metro Area bus system in a typical month? Count the bus ride from home to your destination as one trip, and the bus ride from your destination to home as a separate trip. Now, about how many bus trips do you make in a typical month?

_____

(write in number of trips)

*[If **less than 3 trips** in Q.6, ask Q.7. if **3 trips or more** in Q.6, skip to Q.8(b)]*

7. Let's suppose that new and improved bus service were introduced in your area to match your travel needs. Use the phrases you wrote down before to tell me how **likely** you would be to use the bus then. Would you be **extremely** likely, **very** likely, **quite** likely, **rather** likely, **not too** likely, or **not at all** likely to use the bus?

[GO TO Q.8(a)] ————

Extremely 6
Very 5
Quite 4
Rather 3

[SKIP TO Q.8(b)] ————

Not too 2
Not at all 1

8(a) Do you usually walk to work, or do you use some other form of transportation?

Walk *[SKIP to Q.9(a)]* 1
Use other transportation
    [CONTINUE with Q.8(b)] 2

8(b) Do you work part-time or full-time?

Part-time 1
Full-time 2

8(c) Do you work a regular Monday to Friday work week?

Yes 1	No 2	Schedule . . 3
Do you travel to and from work *(Read List)*	How many days a week do you work? _____ *(Write in Number)*	
During morning and evening rush hours 1	How many of those days are weekdays? _____ *(Write in Number)*	
During daytime non-rush hours . . . 2		
Nights 3	And how many of those days are Saturday/Sundays? _____	
Or does your schedule vary 4	*(Write in Number)*	

(If respondent works on weekdays ask:) On the weekdays when you work do you travel to or from work: *(Read List)*

Out of your last 10 work trips, how many times did you use the bus? _____
                              (Write in Number)

During morning or evening
rush hours 1

During daytime non-rush hours . . . 2

Nights 3

Or does your schedule vary 4

8(d)   *[If work trips were less than 6 times in Q.8(c), ASK Q.8(d), otherwise SKIP to Q.9.]* If new improved bus services were introduced in your area to match your **working** trip needs, how likely would you be to use the bus more often for work trips? Would you be extremely likely, very likely, quite likely, rather likely, not too likely, or not at all likely to use the bus more often?

                                          LIKELIHOOD:
                                          Extremely 6
                                          Very 5
                                          Quite 4
(Record answer on referral sheet.)   Rather 3
                                          Not too 2
                                          Not at all 1

9.   *Refer to referral sheet:*

   • *If respondent does not work, SKIP to Q.11.*

   • *If respondent works and has used the bus 6 or more times [in Q.8(c)] **or** would be extremely–rather likely to use the bus more often for work [Q.8(d)], ASK Q.9 and Q.10.*

   • *If respondent works and used the bus less than 6 times in Q.8(c) and would **not be** likely to use the bus more often for work trips [Q.8(d)], SKIP to Q.11.*

   Now, I'd like to have your overall opinion of car and bus transportation as a means of getting to and from work. I'd like your opinions of **both** types of transportation, regardless of how much or how little you now use either type. If you don't drive a car to work, or if there is no bus service from neighborhood to where you work, just base your opinion on what you **think** travel in the Metropolitan Area would be like if you had a car or a bus line at your disposal.

   Use the list of phrases you wrote down before, with "extremely" at the top and "not at all" at the bottom—to indicate how satisfied you are overall with the car and the bus.

9(a) First, let's talk about car transportation. On an overall basis, how satisfactory would you say **driving a car** is as a means of getting to and from work? *[If respondent did not write down rating scale, read list below. Record response in column 9(a).]*

9(b) And on an overall basis, how satisfactory would you say **riding a bus** is as a means of getting to and from work? *[Record below in column 9(b).]*

Overall Satisfaction	Q.9(a) Driving a Car	Q.9(b) Taking a Bus
Extremely	6	6
Very	5	5
Quite	4	4
Rather	3	3
Not too	2	2
Not at all	1	1

10. Now, I'd like to know how **satisfied** you are with car and bus transportation—as they exist at present—in terms of some specific considerations. I'll read the list of statements and as I read each one, tell me first what you think of **driving a car to work**, and then what you think of **riding a bus to work**, in terms of that consideration. Give me your opinion of both driving a car and riding a bus, regardless of the transportation you now use for your work trip.

Use the list of phrases with "Extremely" at the top and "Not At All" at the bottom to express your opinion.

Now, how satisfactory is "**driving a car—to work**" in terms of: *(Read X'd item. Record response in appropriate row. If respondent did not write down rating phrases, repeat phrases by saying:)* Would you say it was extremely satisfactory, very satisfactory, quite satisfactory, etc.

And how satisfactory is "riding a bus—to work" in terms of: *(Read X'd item. Record response in appropriate row. Repeat rating phrases if necessary.)*

(Continue in same manner for all items on the list. Ask for rating of car and then rating of bus on the same item before moving on to the next item.)

Start Here	How Satisfactory Is (driving a car) (riding a bus) to Work in Terms of:	Extremely	Very	Quite	Rather	Not Too	Not At All
( )	**Letting you come and go whenever you want to**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Eliminating worry about delays caused by traffic congestion**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1

Exhibit B-5

Start Here	How Satisfactory Is (driving a car) (riding a bus) to Work in Terms of:	SATISFACTION RATINGS					
		Extremely	Very	Quite	Rather	Not Too	Not At All
( )	**Being an accepted way to travel by people like yourself**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Letting you do your part on conserving gasoline**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being easy to use**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being dependable in bad weather**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Letting you do your part in reducing air pollution**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Getting you from door to door quickly**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Letting you avoid having to fight traffic**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being a comfortable way to travel**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being an inexpensive way to travel**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being reliable, with little risk of delay**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Letting you come and go whenever you want to**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Not having to worry about being mugged while walking to or waiting for the (car/bus)**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1

11. *Refer to Referral Sheet.*

Now I'd like to have your overall opinion of car and bus transportation as a means of getting to and from the area where you prefer to shop. Remember that we are talking about the shopping you do other than grocery shopping. I'd like your opinions of **both** types of transportation, regardless of how much or how little you now use either type. If you don't drive a car for shopping, or if there is no bus service from your neighborhood to where you shop, just base your opinion on what you **think** travel in the Metropolitan Area would be like if you had a car or a bus line at your disposal.

Use the list of phrases you wrote down before, with "Extremely" at the top and "Not At All" at the bottom—to indicate how satisfied you are overall with the car and the bus.

11(a) First, let's talk about car transportation. On an overall basis, how satisfactory would you say **driving a car** is as a means of getting to and from the area where you prefer to shop? *[If respondent did not write down rating scale, read list below. Record response in Column 11(a).]*

11(b) And on an overall basis, how satisfactory would you say **riding a bus** is as a means of getting to and from the area where you prefer to shop? *[Record below in column 12(b).]*

Overall Satisfaction	Q.11(a) Driving A Car	Q.11(b) Taking A Bus
Extremely	6	6
Very	5	5
Quite.	4	4
Rather.	3	3
Not Too	2	2
Not At All	1	1

12. Now, I'd like to know how **satisfied** you are with car and bus transportation—as they exist at present—in terms of some specific considerations. I'll read the list of statements and as I read each one, tell me first what you think of **driving a car for shopping**, and then what you think of **riding a bus for shopping**, in terms of that consideration. Give me your opinion of both driving a car and riding a bus, regardless of the transportation you now use for your shopping trips.

Use the list of phrases with "Extremely" at the top and "Not At All" at the bottom to express your opinion.

Now, how satisfactory is "**driving a car for shopping**" in terms of: *(Read X'd item. Record response in appropriate row. If respondent did not write down rating phrases, repeat phrases by saying:)* Would you say it was extremely satisfactory, very satisfactory, quite satisfactory, etc.

And how satisfactory is "riding a bus for shopping" in terms of: *(Read X'd item. Record response in appropriate row. Repeat rating phrases if necessary.)*

(Continue in same manner for all items on the list. Ask for rating of car and then rating of bus on the same item before moving on to the next item.)

Start Here	How Satisfactory Is (driving a car) (riding a bus) to Work in Terms of:	SATISFACTION RATINGS					
		Extremely	Very	Quite	Rather	Not Too	Not At All
( )	**Letting you come and go whenever you want to**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Eliminating worry about delays caused by traffic congestion**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being an accepted way to travel by people like yourself**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Letting you do your part on conserving gasoline**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being easy to use**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being dependable in bad weather**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Letting you do your part in reducing air pollution**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Letting you avoid having to fight traffic**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being a comfortable way to travel**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Being an inexpensive way to travel**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1

Exhibit B-8

Start Here	How Satisfactory Is (driving a car) (riding a bus) to Work in Terms of:	SATISFACTION RATINGS					
		Extremely	Very	Quite	Rather	Not Too	Not At All
( )	**Being reliable, with little risk of delay**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1
( )	**Not having to worry about being mugged while walking to or waiting for the (car/bus)**						
	Car	6	5	4	3	2	1
	Bus	6	5	4	3	2	1

13. Have you used (ITEM) in the past month? *(Circle below under column 14.) (Read X'd item first and continue.)*

	Q.13 Used in Past Month
Improved timetables for individual bus lines.................	1
A new brochure describing how you use the bus system	2
New maps showing the bus routes within the Metropolitan Area ..	3
New outdoor map displays of bus routes	4
Other (SPECIFY): _____ ...	5
None	xxx

13(a) To the best of your knowledge, does the transit system offer any special express services or any other special bus services on certain routes?

Yes [ASK Q.13(b)-(d)] 1
No 2
Don't know/Not sure
SKIP TO Q.14(a)............. 3

13(b) What specific services can you think of? *(PROBE:)* Any others? *[Circle below under column 13(b).]*

13(c) *[For each item **not** circled in column 13(b), ASK:]* Have you ever heard of (ITEM)? *[Circle below under column 14(c).]*

13(d) *[For each item circled in columns 13(b) and 13(c), ASK:]* Have you used (ITEM) in the past month? *[Circle below under column 14(d).]*

	Q.13(b) Heard of Unaided	Q.13(c) Heard of Aided	Q.13(d) Used in Past Month
Park 'n Ride Services	1	1	1
The Metro Flyer	2	2	2
Express service on regular bus routes	3	3	3
The Downtown Shuttle	4	4	4
Other (SPECIFY:) _____ . . .		xxx	5
None	0	xxx	xxx

14(a) Does the MTA have a special number you can call to get bus service.

Yes *[ASK Q.14(b)]* 1
No *[SKIP to Q.15]* 2
Don't know/Not sure 3

14(b) Have you ever used that telephone information services?

Yes *[ASK Q.14(c)]* 1
No *(SKIP to Q.15)* 2

14(c) How would you rate the telephone information service, based on your experience using it? Would you say it was Excellent, Very Good, Good, Fair, Not So Good, or Poor?

Excellent 1
Very Good 2
Good 3
Fair 4
Not So Good 5
Poor 6

CLASSIFICATION

Ask All Respondents:

Now I just need to check on a few points to help us classify our data.

15(c) For how long have you lived in the Metropolitan area? *[Circle below in column 15(a).]*

15(c) And for how long have you lived at your present address? *(Circle below in column 16(b).]*

	Q.15(a) Metropolitan Area	Q.15(b) Present Address
Less than 1 year	1	1
1-2 years	2	2
3-4 years	3	3
5-6 years	4	4
7-10 years	5	5
More than 10 years	6	6

16(a) In total, how many cars are owned by the members of your household?

1	1
2 . . . *[ASK Q.16(b)]*	2
3	3
More than 3	4
None . . . *(SKIP to Q.17)*	0
Refused	y

16(b) To what extent do you normally have personal use of a car available to you? *(READ LIST.)*

Always	1
Most of the time	2
Part of the time	3
Occasionally	4
Never	5

17. What was the last grade you completed in school?

Eighth grade or less	1
Some high school	2
Completed high school	3
Some college	4
Completed college	5
Graduate school	6
Refused	7

18(a) What is your occupation/the occupation of the male head of the household? *(Probe for specific job. If unemployed, ascertain whether respondent/male head is retired, disabled or temporarily unemployed.)*

_____

_____

*(Ask if respondent is female head **or** if household has no male head and respondent is **not** female head:)*

18(b) What is your occupation/the occupation of the female head of the household? *(Probe for specific job. If unemployed, ascertain whether respondent/female head is retired, disabled or temporarily unemployed.)*

_____

_____

(Ask if respondent is neither male head nor female head:)

18(c) What is your occupation? *(Probe for specific job. If unemployed, ascertain whether retired, disabled or temporarily unemployed.)*

_____

_____

[If respondent is student, ask Q.18(d). Otherwise, go to end.]

18(d) Do you work either full time or part time while you are going to school?

Yes *[ASK Q.18(e)]* 1
No *(GO TO END)* 2

18(e) What do you do at work? *(Probe for specific job.)*

_____

_____

THANK YOU VERY MUCH FOR YOUR COOPERATION!

Record respondent data in box on page 1. Make sure completed referral sheet is attached to completed questionnaire!

Validated By:_____   Date:_____

REFERRAL SHEET

Name	Age	Work	H.S. Stud	Tech/ Coll. Stud	Have Lic	Make Trips	At Home Now	Respondent Interviewed
Male Head/Household								
_____	____	1	1	1	1	1	1	1
Other Males								
_____	____	2	2	2	2	2	2	2
_____	____	3	3	3	3	3	3	3
_____	____	4	4	4	4	4	4	4
_____	____	5	5	5	5	5	5	5
Female Head/Household								
_____	____	6	6	6	6	6	6	6
Other Females								
_____	____	7	7	7	7	7	7	7
_____	____	8	8	8	8	8	8	8
_____	____	9	9	9	9	9	9	9
_____	____	0	0	0	0	0	0	0
None								*TERMINATE*

Of last 10 **work** trips, number of times rode bus: *(WRITE IN:)* _____

Likelihood of using bus for **work** trips *(CIRCLE ONE:)*

Extremely
Very 1
Quite
Rather
Not too 2
Not at all

Of last 10 **shopping** trips, number of times rode bus: *(WRITE IN:)* _____

Likelihood of using bus for **shopping** trips *(CIRCLE ONE:)*

Extremely
Very 1
Quite
Rather
Not too 2
Not at all

EXHIBIT C
Examples of Secondary Information Sources

1. **U.S. Census**

   Socioeconomic, demographic and housing data are available in census tracts or block groups, always aggregated, sometimes incomplete.

   Critical Information
   1. Location of place of work
   2. Income distribution
   3. Automobile availability
   4. Mode to work
   5. Age distribution

   Available on tape or hard copy, usually from planning agency.

2. **Planning Agencies**

   Current Land Use Plan
   Current Zoning

   Raw Data
   1. Employment locations
   2. Centers of Commercial Activity sales tax data

   Locations of Special Trip Generators
   1. Elderly Housing
   2. Medical Facilities
   3. Schools
   4. Employment
   5. Shopping

3. **Traffic Department**

   Traffic Volumes/Capacity
   Intersection Geometry/Control
   Parking and Other Regulations
   Construction Plans

Exhibit C-1

4. **In-House Data Collection**

Running Time Information
   Time Between Check Points
   Schedule Adherence
   Running Time on Alternative Routes

Passenger Comments/Complaints
Driver Comments/Complaints

Ridership Counts
   Rate Revenue
   Off-On Counts
   # of Transfers Issued/Accepted

5. **Community Sources**

Political Leaders

Other Community Leaders/Knowledgeable Persons
   Informal Sources
   Task Forces

Public Hearings

6. **Private Sources**

Utility Records and Surveys
Newspaper Surveys and Market Information
Chamber of Commerce Surveys, Local Area Promotional Information

Exhibit C-2

EXHIBIT D
Comparative Assessment of Alternative Survey Methods

Criteria / Method	Average Costs	Response Rate	Data Recovery Time	Rapport	Call Back/ Follow-up	Normal Length
Telephone	moderate	highest	immediate	moderate	easy low cost, quick	10 to 30 minutes
Personal Interview	highest	highest	moderate/ immediate	highest	difficult, costly, slow	15 to 45 minutes
On-Board	lowest	lowest	moderate/ immediate	lowest	easy, moderate cost, very slow	10 to 20 minutes
Advantage	**On-Board**	**Personal Interview**	**Telephone**	**Personal Interview**	**Telephone/ On-Board**	**On-Board**

(from *Guide to Market Research in Public Transit*)