AN EVALUATION OF THE IMPORTANCE OF TRANSIT SERVICE TO MINORITY GROUPS IN TEXAS

by

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16. Abstract

The report presents the results of a survey of minority group transit needs in nine (9) urbanized and non-urbanized areas in Texas. The sample areas include: Houston, Galveston, Dallas, Fort Worth, Austin, Huntsville, New Waverly, Willis, and Conroe.

The objectives of the study are: (1) to determine the travel needs and other factors which appear to influence the perceptions of minority transit riders in selected Texas cities; (2) to determine the specific work-related and non-work related transportation needs; assess the nature of transportation constraints that appear to inhibit free mobility; the nature of existing service delivery, and related attitudinal and demographic factors; (3) to assess the relative importance of public transit to specialized groups; and (4) to attempt to quantify and measure the impact of their lower economic status and low level of automobile ownership on mobility.

Using a systematic random sample of residents in cities, five hundred forty-seven (547) home interviews were completed. The data reflect findings on demographic and population distribution, economic data, travel mode, behaviorally-based values relative to transit, constraints relative to mobility; attitudes and perceptions on public transit.

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SPECIAL ACKNOWLEDGMENTS

This study on the relative importance of public transit as perceived by minority groups attempts to employ three distinctive levels of analysis: distributive, demographic, and attitudinal or social psychological. The distributive-demographic levels are concerned with an analysis of the general population in terms of its distribution, its concentration, dispersal, and economic growth potential. These factors are related to actual and potential public transit planning and development. Data are also included on the demographic characteristics of the survey population. This information will be useful for future planning in the selected study areas.

The attitudinal or social psychological level of analysis deals with the impact of certain mobility requirements of the groups and the nature of existing transit service delivery on the manner in which individuals think, act, and make decisions on travel. A deliberate effort is made to explore attitudes, perceptions, beliefs, and behaviors concerning the importance of public transit. These and other data are treated as correlative elements when socioeconomic status and its relationship to public transit usage is assessed.

As with most efforts of this kind, this study has had the assistance of a number of individuals. Joyce Fisher and William L. McClure of the Texas Department of Highways and

Public Transportation provided assistance in collecting data and maps for areas from which the samples were drawn and monitored the progress of the study at every stage. Special thanks is extended to Linda Moore, Executive Director of the Austin Urban League, for supervising the field enumeration in Austin. She also served as a special consultant for the study. We wish to express our appreciation to Kenneth L. Brown for directing the statistical analysis during the latter part of the study. Clerical and fiscal duties were carried out by Larry C. Bonnemere, Marva M. Belt, and Claudia N. Gooch. The assistance of these persons was critical because of their understanding of the population studied, the operations involved in conducting the study, and the methodologies employed.

The Urban Resources Center staff was responsible for providing assistance in the selection of the sample, conducting all of the interviews, coding and editing the data, constructing maps and listings for sample study areas in the nine (9) cities and towns selected; preparing the initial versions of the data tapes, and typing all drafts of the manuscript. The concentrated efforts of the staff members are reflected in the following:

Sample Selection/Pre-testing..... *Jene Washington*
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The initial programming of the data was completed by Robert D. Bullard. The process of revising the computer tapes and developing all of the tables and charts included in this study was the responsibility of Kenneth R. Cook. He was assisted by Charles Mitchell and Rosalyn S. Mouton. Naem Husain and Shirley Finnell provided assistance in organizing the data. All drafts of the manuscript for the study were typed by Linda E. Brown. Without her invaluable assistance, the task of completing the study would have been much more difficult.

My greatest debt of gratitude is to the black respondents who were patient and understanding enough to respond to our questions about public transit needs and problems. They must be commended for giving their full cooperation under difficult time constraints. Without their cooperation, the study would not have been possible.

Urban Resources Center
Texas Southern University
March, 1978

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SUMMARY OF FINDINGS AND POLICY IMPLICATIONS

The study on the relative importance of public transit service attempted to describe the travel characteristics, attitudes, perceptions, and the overall transportation-related activities of respondents in nine (9) cities and towns in selected areas of Texas. The study objectives include the description of:

- *Travel characteristics which appear to influence the perceptions of minority group transit users.*
- *The specific work-related and non-work related needs of minority transit riders and an assessment of the constraints that appear to inhibit free mobility; the nature of existing service delivery and related attitudinal and demographic phenomena.*
- *The relative importance of public transit service in terms of the physical and socioeconomic position of transit riders.*
- *The measure of those variables which appear to quantify the impact of low economic status and low automobile ownership on mobility.*

To achieve these objectives, transportation-related activities were examined in five urbanized areas and four non-urbanized areas. The latter group comprised a sub-sample for the study. Home interviews were conducted with five hundred forty-seven (547) households, representing users and non-users of public transit.

In general, the study accomplished the objectives. However, certain factors may limit the extent to which the findings are applicable to other areas of comparable size, and the degree

to which the data can be generalized or conclusions drawn. One such limitation is inherent in the study being restricted to one minority group -- the black population of Texas. The study findings may not be representative of the public transit needs of all minority groups in Texas. Although it is suspected that socioeconomic status is a variable having a stronger influence on transportation accessibility and public transit use than racial origin, there is still reason to point out this possible constraint. Because of the racially-restrictive nature of the study, any reference to "minority group" in the study relates specifically to "black residents," except for the inclusion of citations from previous research.

The time period in which the study was conducted should also be considered when using the data. To be sure, the demographic data included in this study is the most recent information on the black population in the sample study areas. It provides greater insight into the status of blacks relative to transportation than the data contained in the Census reports. However, interviewing for the study occurred during the period July 1 through July 31, 1977. Since that time, some changes have been made in transportation systems and the delivery of services.

The impact of geography on the findings is minimal. The demographic characteristics of urbanized and non-urbanized areas as a whole were fairly representative, with possibly Houston being an exception. Houston's black population is more widely

distributed among the various class levels, making it more comparable to that for the City of Atlanta (Ga.). A greater percentage of blacks are classified as having middle class status in Houston than all other urban areas included in the study. On the average, blacks in Texas would not be distributed along class lines in the manner that is found among Houston's black population.

The final note relates to the use of the concepts, "public transit" and "public transportation." These phrases are used interchangeably throughout the study.

STUDY HIGHLIGHTS

Specific findings of the study include the following:

- There are certain economic and demographic factors operating in various sample cities and towns which appear to impact transportation planning and development in parts of Texas. The rapid growth of jobs in suburbia has caused some decline in the dominance of the central city in terms of employment. As population dispersal (including some blacks), industrial and commercial establishments have spread widely over metropolitan areas like Houston, Dallas, Fort Worth, and into the counties, the flux of daily movement has become an extremely prominent feature of urban-suburban activity.

- Concomitantly, the central city has begun to develop into a new kind of urban form where some re-vitalization is taking place by the emergence of "land use centers" and a reversal of the out-migration trend so characteristic of the last decade and a half. This imposes a new burden on transportation planning because of the need for increased "reverse commuting" from suburbia to the city during off-peak hours by private automobile. This tendency threatens to become the dominant trend, if public transportation fails to attract a sufficient ridership.

- Automobile dependency remains high among the public in all sample study areas. The percentage of dependency ranges from a low of 42 percent in Galveston to a high of 73.9 percent among the black population of Houston. A little over one-fourth of the traveling public utilize other modes of travel.

- Because of the complexities imposed by high levels of automobile dependency, and shifts in the economic balance (job site locations) from city predominance to suburbia, the mobility needs of the population are becoming increasingly more difficult to serve. Accepting this finding, some diversified or more specialized modes of transportation may become necessary.

- An important finding of the survey was that mobility patterns and needs of various layers of the population vary in the degree of severity of problems. The needs vary from one socio-economic level to another; within a given urban area as well as between urban and non-urbanized areas.

- The data from this survey reveal a wide range of transportation needs ranging from health-related trips to shopping for bare necessities. High levels of automobile dependency notwithstanding, there are some groups living inside and outside urban areas who do not own automobiles. They are unable to drive because of age or disability. Access to needed services is restricted because of their dependence on a public transit system designed to serve undifferentiated masses of people; or because no public transportation exists. In the former case, the needs of a large number of public transit dependents are often too specialized to be accommodated by existing systems.

- For the low income minority resident, in urbanized and non-urbanized areas, transportation choices are limited by low economic status, inadequate and costly private/public transportation, and the inability to own an automobile.

- Contrary to popular belief, in most urban areas the mobility problems of poor blacks are not necessarily related to the absence of public transportation. It is due more to inadequate income and the relocation of the more traditional employment opportunities to parts of suburbia not serviced by public transportation.

- There is an economic handicap which permeates the public transit problems of the poor. This handicap is reflected in difficulties encountered by them in seeking and holding a job, in attending better schools, shopping, and fulfilling other needs. The public transportation system does not adequately serve their immediate neighborhoods nor does it serve suburbia. Even if the system was designed to provide more specialized services, low income persons could not afford the higher costs for such services.

- A classic example of the low-paying status of patrons and high operating costs may be found in Houston. According to a recent news release (Houston Post, January 20, 1978) bus ridership in Houston was up 5.7 percent to 40.5 million passengers in 1977, but the City's subsidy for the bus company went up 59.1 percent, to $11.3 million in the same period.

The increase in transit patronage included more low-income persons than middle class persons. The data further reveal that "cost" is a major constraint when the mobility needs of low income minority groups are considered.

- In non-urbanized areas, the absence of public transit and the lack of access to automobiles are problems faced by a large number of elderly and disabled persons. The mobility needs of this group are only partially served. The lack of public transit and infrequent transit aasistance from friends when making "compulsory" trips have created a sense of isolation, contributing to a great deal of frustration among the poor and elderly.

- Carpooling, as a preferred mode of travel, is more acceptable among black residents in non-urbanized areas than in urban areas, with Fort Worth as a possible exception. There was no evidence to point to "carshare" programs as having any significant impact in this regard. The programs, as they were described by the respondents, were "voluntary" -- growing out of an expressed need among transit patrons -- rather than being related to any organized efforts.

- Our findings tend to support ideas advanced by previous works on the disadvantaged transit rider. Three categories of population groups were found to have unmet transit needs. The first was "public transit" dependent groups in urbanized areas with low mobility, no access to automobiles, low income persons, including elderly and handicapped persons. Another group is "private automobile dependents" or the type that depends on other forms of private transit. The third group is a "youth" group which is comprised of members too young to drive, including school children whose parents do not have cars and elderly persons who are not handicapped but too old to drive. These latter groups require direct and personalized transportation.

- There were some variations in the percentage of black residents using public transit by income level, but generally, the lower the income level, the higher the level of dependency on public transit.

- Traffic congestion, lack of automobile ownership, and low income were problems mentioned in relation to transportation by persons living in urbanized and non-urbanized areas. The causes of the problems varied by area and by socioeconomic status. In urbanized areas, more than 46 percent of the respondents indicated a preference for the automobile, and revealed this as a reason for not using public transit. Other reasons given by respondents in urbanized areas

(Houston, Galveston, Austin, Dallas, and Fort Worth) -- in the order of priority -- included: (1) it takes too long; (2) not going to desired location; (3) stops not close; and (4) it runs infrequently.

- Non-urbanized area respondents listed no public transit as the major reason for not using public transportation. These areas comprised the sub-sample. They are considered to be "feeder" towns for parts of Harris County, with a number of residents from these areas working, shopping, and using medical facilities in the metropolitan areas in close proximity to adjoining areas. Some commute daily; others on weekends. The "cost" of transportation, dangers in commuting, the time factor, and lack of comfort were given by this group for not using buses (meaning, Greyhound or Continental Trailways). A majority of the non-urbanized population group expressed favorable attitudes toward public transit.

- Another concern of the study related to perceptions relative to what residents were willing to do to reduce their apparent dependence on private automobiles. Less than half (41%) of urban residents and almost three-fourths (74%) of non-urban residents indicated a willingness to take the bus to work. In relation to carpooling as a reduction measure, we found substantial support for this in urban areas. The stimulus for automobile abandonment in urban areas appeared to be "severe traffic congestion;" for non-urban residents, "poor road and street conditions," "no public transit," and restricted mobility because of the lack of automobile ownership among the lower income groups.

Some specific questions treated in this section are:

A. WHAT IS THE PATTERN OF USE BY MINORITY GROUPS OF PUBLIC TRANSIT?

The pattern of use varied from area to area. Public transit patronage was highest in Dallas, Galveston, and Austin. Houston and Fort Worth had the lowest levels of transit patronage. In all cities, there were high levels of dependency on public transit among low income blacks, a finding consistent with previous conclusions by researchers.

B. WHO ARE THE PATRONS OF PUBLIC TRANSIT SYSTEMS?

The typical transit patron is black, relatively young, with a low income level and a low educational level. Generally, the individual is employed in a semi-skilled or unskilled occupation. Typically, the person is likely to have had some high school training; is between 20-44 years of age and does not own an automobile.

C. DO PEOPLE WANT IMPROVEMENTS IN PUBLIC TRANSPORTATION?

Yes. Most respondents recommended that improvements be made in existing public transit systems. The attitudes expressed toward public transit facilities were moderate, with the greater complaints being those related to the environment to which an individual is exposed when riding public transit. This factor appeared to be a major constraint affecting the use of public transportation.

All socioeconomic levels supported the idea of improving current service delivery and initiating options to private modes of travel.

D. HOW IMPORTANT IS PUBLIC TRANSPORTATION?

Extremely important. Most low income blacks would be severely restricted if public transit did not exist. The problem is even more acute in non-urbanized areas and rural parts of counties included in the study. The lack of adequate transportation, both public and private, appears to contribute to isolation among the elderly and poor; among rural youth and young adults in non-urbanized areas.

In all of the non-urbanized areas, respondents expressed favorable attitudes toward public transportation. It was felt that public transit would increase their life chances, i.e., it would provide greater access to job opportunities in Houston, Galveston, and other urban areas; it would enable them to participate more fully in cultural activities of urban areas in close proximity to them, in church activities, and provide some access to places of recreation, entertainment, and needed medical facilities.

E. WOULD VARIOUS SEGMENTS OF THE POPULATION USE PUBLIC TRANSIT, IF IMPROVED?

Responses to this question were more general. Most of the respondents indicated that they would use public transportation if the route scheduling was improved to coincide with travel activity points or if there was a shortage of resources, and if the benefits outweighed the costs. There were differential responses between urbanized and non-urbanized areas. A majority of the residents in non-urbanized areas expressed favorable attitudes toward public transportation.

POLICY IMPLICATIONS

The statistics presented in this study indicate that there is need for remedial strategies for dealing with transportation problems and needs. Policies aimed at improving public transit services, and increasing patronage must recognize that travel inconvenience is a barrier to employment; and unemployment

and/or the lack of adequate income are major factors which inhibit the use of public transit facilities.

> *We urge the continuation of transportation planning policies which incorporate a consideration for the spatial organization of a city. The residential locations of the poor are no longer systematically linked by transportation systems that increase their ability to reach job sites, places of recreation, and other compulsory activity sites. There should be a "reciprocal" network which allows for mobility within the various neighborhoods and between neighborhoods; there should be "reverse commuting" for individuals which may find jobs in suburban locations.*

Special attention and possibly major policy changes may be required to combat the rapidity with which populations shift and change.

> *Continuous studies on users and non-user characteristics are highly recommended. The focus of these studies would be on population dispersion and the spatial location of residences in relation to job sites, travel demand, and related phenomena.*

Most information on work-related travel is Census-based, and thus intermittent and too aggregative.

> *There is need for on-going survey-based data on travel needs of different segments of the population. Unfortunately, much of the data collected on travel behavior and public transit needs are drawn from on-board surveys. The variables measured generally relate to origin-destination, time, trip purposes, and whether the individual travels for other purposes. The concern for this type of information must be balanced with data which shed light on the more human factors such as motivations, quality of service delivery, and individual perceptions regarding public transportation. Also needed are ways of motivating the general public to view public transportation as a necessary mechanism for facilitating ease in mobility throughout urban and rural areas.*

Most studies provide evidence on automobile dominance, but few recommend remedial strategies for dealing with the problem of traffic congestion, air pollution, noise pollution, and other environmental problems.

> *It is recommended that special efforts be made to develop incentives for public transit patronage. Public transit patronage in-*

centives may not come in the form of financial gain or cost savings. Instead, we must view the freedom to move throughout the urban areas, region, and nation, as a service as fundamental as water, air, and garbage collection. The kind of conceptual change needed will require an on-going educational program piloted by social and behavioral scientists and others familiar with consumer motivations.

Greater participation in transportation planning by the general public is desirable. Here, emphasis should be placed on having representatives from youth groups, older persons, minority groups, elected and appointed public officials. The proposed remedial strategy for this phase will require meaningful interactional activities where individuals learn to understand and share ideas about increasing the level of patronage of public transit. Selection for participation should be based on interest, expertise in transportation, and the ability to influence large numbers of people.

Transportation planning agencies may want to explore cooperating with social agencies and institutions to accelerate changes in attitudes and the merging of private and public efforts to conserve energy resources. State transportation agencies would be chiefly responsible for initiating and financing such programs. One of the main deficiencies in public participation programs has been the lack of systematic, cooperative planning in concert with other agencies serving the public.

Knowing travel behavior in depth and building a typology for understanding linkages between transportation problems and urban problems in general should be the object of interdisciplinary research involving engineers, city planners, and the decision-makers concerned with urban growth and decay.

Each city or town should re-examine its transportation plans to determine mode proximity, the absence or necessity of transfers, a description of the images of different modes of travel, and what plans the public would really accept. A large number of travelers have a range of choice, but few examine this range in terms of expressed conditions of captivity and the percentage of persons who are captives of public transit and private automobiles.

In non-urbanized areas of the State, public transit services and para-transit (taxicabs) should be considered as possible alternatives. Some form of comprehensive transportation service is needed, for instance, between urban areas and other parts of the county. This would enable rural residents to draw on some of the resources (particularly medical and educational) of metropolitan areas. The UMTA 16(b)(2) program may be revised as a possible option for areas not having such a program at the present time.

Finally, two principal characteristics of public transit riders are low pay and lack of funds to buy automobiles. The reasons for these conditions are frequently far more complex than is generally believed. It may be that a "pricing flexibility" strategy designed to favor the poor could be one option. The way the system would work would be to charge lower fares for trips which either originate or end in a low-income transit zone. In this way, the poor would be subsidized, with possibly minimal participation by the non-poor. Partial alternatives to providing free public transportation have existed for a number of years in some cities. Such practices have included special groups such as the elderly, elementary and high school students.

To those who would suggest that there are abuses in such a system, we would add that the true impact of such services has never been fully assessed. Transit habits or travel behavior will not change immediately. There is need for effective leadership at the local, regional, state, and national levels, to encourage the public to participate in transit planning programs. In this kind of cooperative leadership lies the key to producing positive change.

APPROACHES AND SPECIFIC RECOMMENDATIONS

(Implementations Guidelines)

Research to facilitate effective decision-making at the local, regional, state, and national levels is needed on the following:

1. Procedures for assessing at the substate region and local community levels plans for designing, supporting, and conducting educational efforts to increase the understanding of transportation problems among all age groups and to explore possible actions relative to developing effective educational materials in this regard.

2. The identification of new options for reducing automobile dependency and analyzing various strategies for achieving this among all classes and age groups.

3. The identification of the advantages and disadvantages of incentive and penalty systems for implementing public transit programs (i.e., discounts vs. toll charges for single occupancy vehicles, etc.)

4. A longitudinal study of the effects of demographic changes, changes in land use, housing patterns, and social class status, and evaluate the impact of these variables on transportation planning for the future.

5. Determine the present patterns of residential location and their relationships to transportation routes.

From the implementation perspective, there is need to explore fully the following suggestions:

1. Foster Needed Institutional Support. There are many agencies and institutions that could facilitate greater public participation in transportation planning. Additionally, there is need to consider methodologies for fostering institutional support that may help relate economic growth, population dispersion, environmental maintenance, rural-urban balance in transit service delivery, and related community development

variables. Utilizing the findings of research which can more accurately identify the public transit service delivery limits and tolerance of rural and urban areas, there is need for an on-going assessment of the travel needs of neighborhood and community residents. Standard survey forms can be distributed to various agencies and institutions serving the public and collected periodically for analysis by transit planning agencies.

2. Examine the Feasibility of a Consortium Approach. It may be that the consortium approach, recommended earlier by other studies, should be seriously considered as a viable alternative in planning. This approach would involve a cadre of groups and institutions concerned with various aspects of community development (builders, realtors, public works, community groups, etc.) and public transit planning. Linkages would be established between educational units, governmental units, the business and labor community, and civic groups. The consortium arrangement appears to have the potential for maximizing dollars spent on various aspects of planning at the local, regional, state, and federal levels.

3. Small Passenger Service Vehicles for Non-Urbanized Areas. The findings indicate a grave need for some type of public transportation in the non-urbanized areas comprising the sub-sample for this study. In these same areas, a number of individuals are in need of some type of commuter service between the non-urbanized and urbanized areas. It is suggested that there is need to evaluate the prospects of developing a plan for using mini-bus service in small towns, and to explore the feasibility of

a rural-based program which would include operating assistance for private/public paratransit operators. Research studies on the costs and benefits of services for intracity and intercity travel may identify early those factors which may adversely affect the potential level of patronage.

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ABSTRACT

Study Title: An Evaluation of the Importance of Transit Services to Minority Groups in Selected Texas Cities.

This study seeks to conduct a direct assessment of problems relative to the incidence of low-income and low automobile ownership among minority group transit riders, and to determine the extent to which they perceive access to public transportation to be important insofar as their mobility needs are concerned. The major objectives of the study are: (1) To determine the travel characteristics and other factors which appear to influence the perceptions of minority transit users in selected Texas cities; (2) To determine the specific work-related and non-work related transportation needs of minority transit riders; assess the nature of transportation constraints that appear to inhibit free mobility; the nature of existing service delivery, related attitudinal and demographic factors; (3) to assess the relative importance of public transit to these specialized groups in terms of their physical and socioeconomic (financial) positions; and (4) to attempt to measure or quantify the impact of their lower economic status and lower level of automobile ownership on mobility. A deliverate effort was made to quantify the importance of service delivery to this group as manifested by their actual and perceived travel needs.

The general methodology for the study involves a survey of a systematic random sample of minority residents living in

four Texas cities. Variables such as travel needs, trip purposes, attitudinal and demographic items, and perceptual qualities or behaviorally-based values as they relate to transit system usage will be utilized in the survey instrument. The major hypothesis tested included the following: Minority low income transit riders are constrained in their mobility by both their economic predicament, the multiplicity of the nature of their travel behavior, and certain characteristics of the public transit system.

The findings of the research provide valuable information to decision-makers in their examination of alternative transportation plans, particularly "feeder" subsidiary transit networks. Policy implications and some suggested remedies for implementing the findings are also presented.

Chapter I

INTRODUCTION

Most evaluations of metropolitan transportation systems indicate degrees of inadequacy in existing public transportation services in meeting the needs of certain segments of the population. Consistently cited among the numerous problems encountered by planners are the unmet needs of low income transit dependent groups such as the elderly, handicapped, the young, and the poor -- especially minority groups. Of particular concern are recent studies which have cited inaccessibility and economics as factors in the mobility needs of minority groups and the urban poor. Benson and Mahoney (1972) call attention to income as a variable influencing transit service delivery. They contend that transportation planners and operators at all levels of government are beginning to realize that transit service delivery, like other facets of American life, has been oriented predominantly to the highly mobile, middle income trip-makers. "They have been provided with highways for their cars and transit for their downtown journeys to work," say the authors. Those who do not have access to automobiles have been expected to make use of available public transit whether it is tailored to their specific needs or not.

The main thesis of this proposal is that low income groups, lacking access to automobiles and an adequate income,

encounters a mobility gap by virtue of the lack of automobile ownership and sufficient incomes to support their mobility needs. Pursuant to this assumption, it is important to note that there is sufficient evidence to suggest that automobile ownership is increasing among middle and upper income groups, and that the incidence of poverty and low automobile ownership are factors that serve to restrict the mobility of low income transit dependent groups. Murin (1966) observes "that services for an undifferentiated public often have dire consequences for minority groups."

This study explores and documents the importance of transit service to minority groups in a sample of Texas cities. Utilizing a client-oriented perspective, the study focuses on low income blacks in selected cities, their mobility needs and perceptions, and their attitudes in reference to the importance of services both in terms of their present and potential demands.

Statement of the Problem

Problems experienced by minority group transit riders have been carefully documented by previous researchers (Falcocchio, Pignataro, et. al., 1972). Falcocchio, for instance, examines the transportation problems of inner city poor residents found in certain target areas of a city. The scope of his study was to identify transportation constraints that inhibit mobility. This study considers another aspect of the problems of mobility and accessibility. It explores the percep-

tions of minority groups in reference to public transit facilities and the importance of transit service in the light of the mobility needs of this group.

Objectives of the Study

The study objectives are to: (1) determine the travel characteristics which influence the perceptions of minority transit users in selected Texas cities/towns; (2) determine the specific work-related and non-work related transportation needs of minority transit dependent groups and to assess the nature of the transportation constraints that inhibit free mobility; the nature of existing service delivery and related attitudinal and demographic phenomena; (3) assess the relative importance of public transit service in terms of the physical and socio-economic (financial) positions of transit riders; and (4) seek to measure or quantify the impact of low economic status and low automobile ownership on mobility.

STUDY ORGANIZATION, DESIGN AND METHODOLOGY

The study of minority group transit needs was undertaken in the summer of 1977. It was based on a random sample of five hundred forty-seven (547) respondents residing in selected urbanized and non-urbanized areas of Texas. The sample is believed to be reasonably representative of the universe from which it was drawn. The data were collected from a sample of minority (black) group transit users and non-users in such a

way as to assure that every household within the defined universe would have a known probability of inclusion.

From a listing of cities in Texas, study areas were classified according to their population make-up and public transportation availability. From this group, we selected at random urbanized areas to be used as study areas. The selection process took place in concert with officials of the Texas Department of Highways and Public Transportation. After consulting data obtained from the State office, we divided the cities/towns into four priority areas. The cities chosen included: Dallas, Fort Worth, Houston-Galveston, and Austin. A subsample of smaller cities in proximity to one of the metropolitan areas included in the sample was also used. Huntsville-New Waverly-Willis-Conroe comprised a quad-city complex for the study. These smaller non-urbanized areas are similar in size and population make-up to those on the periphery of the other urbanized areas included. (See: Table 23 in Appendices).

The sample selected for the study was a multi-stage area probability sample. The steps used in the sampling procedure from the defined universe for the study included the following:

1. Selection of primary sampling units (PSU).
2. Selection of interviewing locations.
3. Selection of specific sample segments.
4. Selection of households where interviewing was to take place.

The PSU's for the study consisted of census tracts with a predominantly black population. The proportionate representation of blacks within each census tract ranged from 80 percent to 100 percent. In the non-urbanized areas, the black population was concentrated in selected areas of the city. From a listing of predominantly black census tracts, we randomly selected specific interviewing locations. Each of the census tracts (Primary Sampling Units) was then subdivided into secondary sampling units or zones. Census tracts were utilized in this division for the major cities. In areas beyond the limits of major cities, data on minor civil divisions were used.

The final sample was designed in such a way as to secure an adequate representation of upper, middle, and lower income households. For urban areas, sample segments were defined as blocks or groups of blocks. For the non-urbanized areas, sample segments were defined by recognizable physical boundaries such as roads, streams, and railroad tracks. Census tract statistics were used to estimate the size of sample segments in major cities. In other areas, mapping materials were used to subdivide Minor Civil Divisions into segments of equal size. Within each interviewing location, the probability of selection of each sample segment was equal since sample segments were units of equal size in certain locations.

All households within each sample segment were pre-listed in accordance with detailed instructions in advance of interviewing. The location of each respondent could be clearly

identified in terms of street address, apartment number, or other means of identification.

The procedure outlined above resulted in the final sample which closely parallels the designated universe in its composition. The design and methodology of the study will provide greater details relative to the instrument used in the investigation and general methodological procedure.

Design and Methodology

The study design consisted of two components which were designed to explore specific variables relative to the perceived importance of public transit to the mobility efforts of low income minority transit dependent groups. The primary approach consisted of a survey of minority transit riders in selected cities to determine actual characteristics of this group and transit travel patterns; the relative importance of transit service to their means of mobility inside and outside metropolitan areas; and to quantify attitudes relative to public transit users and non-users.

The survey interview schedule was divided into several parts. The first part of the survey instrument included items relative to travel characteristics, such as problems and needs, choice of mode, mode utilization, perceived quality of existing service, and priorities relative to trip purposes. The second part of the schedule included variables such as conditions for increased public transit use, level of present patronage of public transit, work-related transit needs, and perceptual

factors. The demographic variables were included in the last part of the survey instrument. All items on the survey instrument are included in the Appendices.

Varied statistical techniques were used in the quantification of data collected by the survey instrument.

The study is organized into several chapters. This first chapter outlines the problem, study objectives, design and methodology, a description of the sample population and the survey instrument.

The second chapter sets forth a general survey of economic growth, population dispersion, urban population concentration, and attempts to provide a broader context for understanding the travel needs and requirements of minority groups.

Chapter 3 provides information on travel characteristics, transit needs and problems. Specific data are given on individual towns and cities included in the survey, and some effort is made to compare the findings on urbanized and non-urbanized areas included in the study. Chapter 4 is confined to attitudes and perceptual factors in relation to how minority groups perceive transportation service delivery in terms of its importance. These data are related to selected demographic factors which characterize socioeconomic status. The final section reviews the objectives of the study and summarizes the findings.

Chapter II

POPULATION TRENDS AND THE ECONOMIC PERSPECTIVE

As attention has been increasingly directed toward transportation problems of cities, it has become more and more apparent that such problems can no longer be treated in isolation or apart from suburban and rural areas. "Americans are the most mobile people in the world, and a very large share of this mobility takes place within metropolitan areas throughout the country or between them. Traffic congestion caused by the increasing use of private automobiles and inadequate mass transportation are problems not confined to urban areas; even though their most acute manifestations are often evident in larger cities. This is because of the difficulty one encounters when an attempt is made to distinguish sharply between urban and non-urban areas. In the past emphasis was placed on size, density, and hetereogenity of the city and its distinctive values, according to Chinoy (1976). As cities have grown and urban populations have spread, distinctions between urbanized and non-urbanized areas have become blurred. Elaborate networks of transportation and communications have served to mesh urban culture and populations in outer locations into larger and more encompassing social, economic, and political structures. It is essentially this kind of meshing that influenced the selection of the sample for this study. Both urbanized and non-urbanized

areas are included in this survey.

In addition to recognizing certain interrelationships which exist between urbanized and non-urbanized areas, it is also necessary to examine certain variables which tend to impact the transportation system. To a considerable extent, transportation problems in urban areas are related to growth trends. The economic, social, and environmental qualities of such areas depend heavily on the ability to move goods, services, and people from place to place throughout regions. In addition, the growth of economic activity is becoming of prime concern as transit systems are examined and up-dated (NACIR, 1977). The movement of goods and people have grown more difficult in many areas. This difficulty has occurred despite extensive planning efforts in metropolitan areas, and despite emerging transportation technology. In Harris County, for example, the rise in automobile ownership and the accompanying increase in traffic congestion has contributed to dispersed urban development which in turn has reinforced the need for automobile trips. This has contributed to a decline in the availability and use of public transit and is generally associated with the public transit's inability to provide services in an era of growing cities and expanding metropolitan areas.

What has been the extent of growth in the areas under study? What population trends exist? What is the level of travel demand which tend to contribute to problems of transportation in the survey cities? These are questions to which this section of the report is devoted.

This chapter is designed to provide a frame of reference for understanding the forces which appear to impact the need for transit services in select cities and towns of Texas. As a first step, certain factors which generally impact transportation planning and development will be examined, including growth trends, population dispersion and economic growth, industrial location, and related data. Following this, attention is devoted to minority population concentration and growth and certain factors which appear to contribute to the transit dependency of certain groups.

Population: Growth and Distribution

There are significant urban and suburban growth trends which have a direct influence on urban and rural transportation. Several trends have emerged during the past decades which reflect two dimensions relative to urban form and population growth: extreme dispersion (low density and scatteration) in some areas to extreme concentration (high density, contiguity, and strong centering); and from large scale integration (a single metropolitan system with specialized parts) to small-scale sub-integration (diversified communities within the region). The former two trends are more applicable to the survey cities than the latter ones.

The dominant trend toward low densities and scatteration in outlying developments appears to be characteristics of the Dallas-Fort Worth planning region, the Houston-Galveston region, and parts of Travis County. Outlying developments within the

areas have been brought within reach by the achievement of the private value of what has recently been coined as "automobility," which permits individual freedom of circulation and contributes to the dispersal of business, cultural, and service facilities. In the Dallas-Fort Worth region, a substantial amount of growth has occurred in the mid-cities areas (Grand Prairie, Arlington, etc.); in the Houston-Galveston region, growth has occurred in the North (Spring and Conroe, etc.) part of Harris County.

Private automobiles have tended to enhance rather than inhibit almost endless urban sprawl. Population dispersion has imposed tremendous traffic burdens on the State's highways and freeways because of obvious dependency on the automobile.

Automobile Dependency

Dependency on the automobile was generally high in all areas included in the survey. The percentage of dependency on the automobile ranged from a low of 42 percent in Galveston to a high of 73.9 percent in Houston. The higher levels of automobile dependency among blacks are found in Houston, Conroe, Willis, and New Waverly. Houston is the only urbanized areas which ranked in the higher category with "towns/non-urbanized" areas where public transit is not available. This occurred despite the fact that the City of Houston owns and operates the public transit system, and recently added on minibuses and purchased other new public transportation buses for use by the general public.

More than 59 percent of the respondents in Huntsville, where the Texas Department of Corrections and Sam Houston State

University is located, indicated that they depended on their personal automobile for travel. As the data in Table 1 show, black residents of Huntsville rely a great deal on friends and relatives for movement throughout the county and the region. A little over 10 percent of the residents in the area indicated that they used taxicabs and about two percent stated that they walked to various service institutions and social/recreational/ cultural establishments.

A further analysis of modes of transportation reveals greater public transit patronage in Galveston, Dallas, Austin, and Fort Worth among black groups. Data for Houston show that 17.6 percent of the survey population rely on friends and relatives, and less than two percent patronize private para-transit (taxicab) services. These findings tend to substantiate heavy dependency on automobiles in Houston. Individuals who do not own automobiles or have access to transportation through carpooling are almost totally dependent upon public transportation for mobility.

A greater proportion of the residents in Conroe (22 percent) and New Waverly (15 percent) walked to various places.

The rise in automobile ownership and its associated problem of traffic congestion has contributed to deficiencies in our metropolitan transportation networks. Other basic urban and suburban trends have emerged in areas of Texas. Within the last several decades metropolitan areas have grown rapidly. A cursory examination of the areas included in the study reveals significant patterns which have surfaced in major cities, counties and metropolitan regions of the State. Typical of the rapid

Table 1

The Percentage of Respondents Relying
on Personal Automobile for Travel by Select Cities

CITY	Car	Bus	Walk	Taxi	Friend or Relative	No Response	Total
DALLAS	36 (48.6)	29 (39.2)	2 (2.7)	2 (2.7)	5 (6.8)	0 (0.0)	74 (13.5)
FT. WORTH	33 (66.0)	9 (18.0)	1 (2.0)	1 (2.0)	6 (12.0)	0 (0.0)	50 (9.1)
HUNTSVILLE	29 (59.2)	0 (0.0)	1 (2.0)	5 (10.2)	14 (28.6)	0 (0.0)	49 (9.0)
CONROE	13 (72.2)	0 (0.0)	4 (22.0)	0 (0.0)	1 (5.6)	0 (0.0)	18 (3.3)
WILLIS	15 (71.4)	0 (0.0)	2 (9.5)	0 (0.0)	4 (19.0)	0 (0.0)	21 (3.8)
NEW WAVERLY	14 (70.0)	0 (0.0)	3 (15.0)	0 (0.0)	3 (15.0)	0 (0.0)	20 (3.7)
HOUSTON	122 (73.9)	29 (17.6)	0 (0.0)	2 (1.2)	12 (7.3)	0 (0.0)	165 (30.2)
GALVESTON	21 (42.0)	22 (44.0)	4 (8.0)	2 (3.8)	1 (2.0)	0 (0.0)	50 (9.1)
AUSTIN	64 (64.0)	27 (27.0)	1 (2.2)	1 (1.0)	7 (7.0)	0 (0.0)	100 (18.3)
Total	347 (63.4)	116 (21.2)	20 (3.7)	11 (2.0)	53 (9.7)	0 (0.0)	547 (100.0)

growth and dispersal trend are such Standard Metropolitan Statistical Areas (SMSA's) as Austin, Dallas-Fort Worth, Houston-Galveston and surrounding counties.

Population Growth and Distribution

The population of the Austin SMSA, located in the central part of Texas, was 296,000 in 1970 or 39 percent more than in 1960. By 1975, the population estimate for Travis County was 361,839, with 301,147 or 83.2 percent of the population residing in Austin. Other growing suburban towns in Travis County include West Lake Hills, with an estimated population of 1,732 persons, Manor (936), and Rolling Wood (885). The rapid growth of population in the Austin area is due partly to an economy based on education, state government, tourism, conventions, research and industry.

Another metropolitan region which is experiencing similar growth is located in North Central Texas and includes the cities of Dallas and Fort Worth. Current data on population growth in the North Central Texas Planning Region indicate that the core areas of Dallas and Fort Worth experienced a decline in population growth during the last decade while almost all suburbs of the largest Standard Metropolitan Statistical Areas revealed dramatic gains, with the largest proportional increases in the mid-cities areas. The Texas Almanac (1978) provides data on the population size for the Dallas-Fort Worth area. The 1975 population for the Dallas metropolitan area was estimated to be

1,388,615. Of this total, 822,451 persons lived in Dallas. Other cities and towns in Dallas County where growth occurred include: Garland (111,322), Irving (103,703), Mesquite (61,933) Richardson (59,190), Grand Prairie (56,842), Farmers Branch (33,101), Carrollton (25,940), Duncanville (22,385), Lancaster (12,636), and Desoto (12,024). Other towns include Highland Park (9,316), University Park (24,209), Balch Springs (10,960) and smaller areas like Kleberg, Cedar Hill, Seagoville, Cockrell Hill, Wilmer, Hutchins, and smaller black population pockets located on the periphery or between counties in the North Central Texas region.

Fort Worth (358,364) comprises a portion of the region. Additional suburban towns located in close proximity to Fort Worth include Arlington (110,543), Grapevine (9,566), White Settlement (15,580). Other smaller towns include Azie (4,965), Bedford (13,955), Benbrook (9,182), Blue Mound (1,312), Forest Hills (9,214), Haltom City (27,179), Hurst (28,176), and other smaller communities which combine to make up the estimated 728,951 residents of Tarrant County proper.

Located in the southern mid-section of the nation -- the North Central part of Texas, the Dallas-Fort Worth SMSA is a hub for trade, production and distribution of goods, and transportation. In the last several decades, this region experienced strong economic growth accompanied by extensive work force growth. Increases in growth can be attributed to employment opportunities in rapidly expanding defense-related industries, heavy concentra-

tion in manufacturing industries, the direct and indirect economic impact of the Dallas-Fort Worth Regional Airport, and continued population growth.

An examination of demographic and socioeconomic data for the region reveals that the population in the North Central Texas Planning Region grew by slightly less than 700,000 persons. Census reports further indicate a 1970 population of 2,636,000, up 33.8 percent since 1960. In 1960, the region's population represented only about 20.6 percent of the State's population. By 1970, the proportionate increase was 23.5 percent of the State's population. Predictions reveal a potential growth of more than one million persons through the 1980's and beyond. The highest growth rates are expected to occur in the Dallas and Fort Worth metropolitan areas. This anticipated population growth, coupled with other selective migration and economic factors, has and is expected to continue to affect transportation planning and development within the region.

Other factors also served to impact transit services, transportation planning and development. The out-migration movement of persons from Dallas and Fort Worth into outlying suburbs has placed financial strains on existing public transit services. This outward movement created dichotomous dimensions where lower income persons comprised the inner city and were the primary patrons of public transit; where the more affluent individuals lived in the suburbs and comprised the bulk of daily commuters in private automobiles throughout the metropolitan region.

Growing affluence and residential dispersion do not create a homogeneous transportation public as some would advise. Instead, these trends have tended to overtax individuals found in the inner city by virtue of their lower economic status; they have contributed to a transit dependent public with mobility needs that may not be met by existing transit systems. Previous research findings indicate that the tendency to plan transit services for undifferentiated publics in some cities and towns have created dire consequences for low income transit dependent groups (Murin, 1971). One of the greatest consequences has been the lack of access to employment opportunities found in suburbia. We found this to be applicable to our findings.

Both Dallas and Fort Worth have diversified economic bases. Dallas ranks second nationally as an insurance center. Its more than 2,500 manufacturing plants (a number of which are located in suburbia) produce a variety of products. Fort Worth is more closely tied to aerospace and electronics. Fort Worth, like Dallas, is an influential center for trade, transportaiton and finance. Jobs found in industrial, business, and manufacturing establishments have shifted with the population in the region from central city to suburbia. These industries employ a substantial number of low-skilled persons, many of which still reside in the inner city. The availability of transportation to these areas becomes an important factor affecting the employability of blacks and other minorities residing in the central cities of metropolitan areas.

Houston, like Dallas and Fort Worth, has experienced phenomenal population growth and dispersion. As the largest city in Texas and the South, Houston's growth is manifested in economic growth and the outward migration of more affluent residents; the inward migration of the less fortunate. It is the center of the Standard Metropolitan Statistical Area that includes Harris, Brazoria, Fort Bend, Walker, Waller, Austin, and Montgomery counties. Other contiguous counties include Chambers and Galveston counties. The Houston area's population is about 2,578,400, according to the U.S. Census Bureau's revised 1976 estimates. The data indicate that two-thirds of the growth in the area resulted from migration. The revised estimates also show that the SMSA's growth is accelerating as evidenced by growth patterns from July 1, 1973 through July 1, 1975. During this period there was an annual growth of 78,000. The population grew by 82,300 in the year ending July 1, 1976.

Houston is one of the world centers for petroleum refining and petro chemical production. Many corporate and regional headquarters of major U.S. companies have located in Houston in recent years. It boasts of its international influence in trade. A leading center for medical education and research, the Houston metropolitan area is a distribution and trade hub for the populous Gulf Coast area.

The port cities of Galveston and Texas city are economic centers for Galveston County. Port activities dominate the economy of the Galveston area. Other activities which con-

tribute to the economy of Galveston include tourism, education, manufacturing, and petrochemical. Because of the close proximity of the two areas (Houston-Galveston), the economy for the region is intertwined with that of the major cities.

The aforementioned federally designated metropolitan areas are characteristic of the State's urban centers and the suburban clusters that form around the core cities. According to estimates by the U.S. Bureau of the Census, four of every five Texans live in the 25 metropolitan areas. Over 47 percent of the people living in the state, reside in Dallas, Fort Worth, Houston, and San Antonio. The metropolitan areas of Texas have grown at a rate slightly higher than the statewide population.

Population growth is also spreading to more counties, in the smaller towns and rural areas. Dallas, Travis, Harris, Montgomery, Walker, and Fort Bend Counties have experienced great gains in population since 1970. Included in the counties are several of the survey towns, namely, Huntsville-New Waverly in Walker County; Conroe-Willis in Montgomery County. The latter area has benefited considerably from out-migration of the population from Houston and surrounding areas.

The rapid growth of jobs in suburbia has caused some decline in the dominance of the central city in terms of employment opportunities. As population, industry, and commercial establishments have spread more widely over metropolitan areas such as Houston, Dallas, and Fort Worth, the flux of daily movement has become an extremely prominent feature of urban life. Work places have continued to scatter over the metropolitan

areas, accompanied by a great amount of expressway mileage. Multiple car ownership has become more common. Table 2 indicates the percentage of the population having one or more cars.

As indicated in Table 2, more than 36 percent of the black respondents in the survey of Dallas did not own a car; 43.2 percent stated that they owned one car; 13.5 percent owned two cars and 6.8 percent owned three or more cars. In Fort Worth, a smaller proportion of the survey population did not own a car, but 36 percent did indicate that they owned one car. The number of black respondents owning cars in Fort Worth was almost twice that for Dallas, with 8 percent of the respondents stating that they owned three or more cars. Multiple car ownership in Houston was highest, with 12 percent of the respondents from Galveston; 23 percent of the respondents from Austin; 21.1 percent of the persons in New Waverly; 19 percent from Willis; 11.1 percent from Conroe; and 16.3 percent in Huntsville revealing that they owned two cars. Houston and Austin had the highest percentage of blacks owning three or more cars.

Table 2

Number of Cars Owned by Blacks
in Select Cities of Texas, 1977
(N=542)

CITY	None	One	Two	Three	Four or More	Total
DALLAS	27 (36.5)	32 (43.2)	20 (13.5)	4 (5.4)	1 (1.4)	74 (13.7)
FORT WORTH	16 (13.0)	18 (36.0)	12 (24.0)	2 (4.0)	2 (4.0)	50 (9.2)
HUNTSVILLE	18 (36.7)	19 (38.8)	8 (16.3)	3 (6.1)	1 (2.0)	49 (9.0)
CONROE	4 (32.2)	12 (66.7)	2 (11.1)	0 (0.0)	0 (0.0)	18 (3.3)
WILLIS	4 (19.0)	12 (57.1)	4 (19.0)	1 (4.8)	0 (0.0)	21 (3.9)
NEW WAVERLY	5 (26.3)	8 (42.1)	4 (21.1)	2 (10.5)	0 (0.0)	19 (3.5)
HOUSTON	28 (17.4)	55 (34.2)	60 (37.3)	13 (8.1)	5 (3.1)	161 (29.7)
GALVESTON	26 (52.0)	15 (3.0)	6 (12.0)	3 (6.0)	0 (0.0)	50 (9.2)
AUSTIN	16 (16.0)	46 (46.0)	23 (23.0)	13 (13.0)	2 (2.0)	100 (18.5)
Total	144 (26.6)	217 (40.0)	129 (23.8)	41 (7.6)	11 (2.0)	542 (100.0)

The territorial spread of destinations regularly traveled varies fairly systematically with socioeconomic status. That is, the higher the income of the urban/suburban resident, the more likely he or she is to own one or more cars. This pattern appears to prevail irrespective of the race of the respondent. As will be shown in subsequent sections of this report, there is some correlation between socioeconomic status and the ownership and number of cars per household.

An additional impact on transportation and the economy relates to travel business. Tourism tends to impact public transit planning in the state and nation. In a study conducted by the United States Travel Data Center in Washington, D.C. for the Texas Tourist Development Agency provides insight into the travel market for the cities and counties included in the survey. Utilizing an economic impact model, the study identifies total travel expenditures, travel generated payrolls and employment, state and local tax receipts. The model measures the economic impact of all travel involving overnight trips away from home, and trips at least 100 miles or more from home, including travel by Texans as well as out-of-state visitors for all purposes. Table 3 gives information on the economic impact of travel on a county-by-county basis. Of special note is the apparent impact tourism also has on traffic flow and congestion during peak periods.

Table 3

County Travel Economic Impact Model (CTEIM)
U.S. Travel Data Center (Texas, 1978)

REGIONS	Total Travel Expenditures (1,000's)	Travel Generated Payroll (1,000's)	Travel Generated Employment (Jobs)	State Tax Receipts (1,000's)	Local Tax Receipts (1,000's)
Gulf Coast Region					
Houston-Galveston					
Brazoria	27,670.5	5,191.9	927.0	1,100.3	258.0
Colorado	6,203.8	1,231.9	236.4	246.7	52.6
Fort Bend	21,289.1	5,970.9	521.5	846.5	125.8
*Galveston	124,793.5	26,551.7	5,159.6	4,962.2	1,335.2
*Harris	1,200,147.0	265,905.9	46,134.9	47,721.8	12,225.5
Liberty	6,696.2	903.4	111.1	266.3	29.0
Matagorda	9,828.7	1,971.1	380.5	390.8	82.7
Wharton	5,133.3	977.9	183.0	204.1	52.0
*Montgomery (Conroe/Willis)	21,658.2	3,814.1	651.5	861.2	140.5
Walker (Huntsville/New Waverly)	12,880.7	2,618.8	505.7	512.2	139.1
North Central Texas					
Dallas-Fort Worth					
Collin	7,754.2	1,400.1	236.8	308.3	56.7
Cooke	9,628.5	1,926.5	371.4	382.9	81.1
*Dallas	1,376,532.0	339,433.8	46,035.3	54,735.5	12,237.0
Denton	22,699.4	4,424.3	816.6	902.6	185.5
Ellis	10,876.8	2,076.6	386.7	432.5	110.8
Erath	3,297.7	647.5	123.5	131.1	28.2
Fannin	1,832.3	309.0	53.1	72.9	17.2
Grayson	20,447.4	3,750.8	652.4	813.1	186.0
Hood	515.4	75.6	11.4	20.5	5.2

Table 3 (Continued)

County Travel Economic Impact Model (CTEIM)
U.S. Travel Data Center (Texas, 1978)

REGIONS	Total Travel Expenditures (1,000's)	Travel Generated Payroll (1,000's)	Travel Generated Employment (Jobs)	State Tax Receipts (1,000's)	Local Tax Receipts (1,000's)
Hunt	9,221.4	1,849.3	347.5	366.7	93.7
Johnson	4,802.4	816.0	138.4	191.0	37.0
Kaufman	3,285.5	490.8	72.5	130.6	22.8
Navarro	6,000.8	1,160.0	219.1	238.6	65.0
Palo Pinte	16,831.0	3,640.5	614.7	669.3	169.7
Parker	4,112.4	759.1	139.2	163.5	36.6
Rockwall	2,812.4	539.4	100.9	111.8	23.0
Somervell	3,678.8	751.7	146.7	146.3	30.5
*Tarrant	296,072.2	65,306.2	10,678.0	11,772.8	2,748.0
Wise	1,773.6	329.0	60.5	70.5	15.7
Austin					
Travis	198,845.1	41,771.8	7,815.6	7,906.7	2,065.8
Hays	12,623.6	2,562.3	495.1	502.0	136.2

Information obtained from Texas Tourist Development Agency.

*Counties inwhich our studies were conducted.

The last significant background fact concerns the continuing urbanization of the black population and other minorities. Minority population growth has occurred in central cities and suburban areas of Texas. They are mostly found in inner city areas of large cities; on the outerskirts of smaller towns.

The process of urban concentration is more evident among the black population and has advanced beyond that of the white population (Hawley, 1971). This is clearly evident when we view trends relative to minority population growth.

Minority Population Growth

Within the metropolitan areas, the central cities grew more slowly than the suburbs in previous years. From 1960 to 1970, overall population increases in the central cities were a product primarily of the gains in the black population, due to both in-migration, annexations, and rates of natural increase. Whereas, the expansion of the suburbs (outside the central cities) was overwhelmingly the result of the influx of the white population from the central cities.

Despite the movement toward suburbia, however, within a four-year period the black population in the central cities experienced a slow-down in its rate of growth. This was attributed, in part, to the outward movement of middle class blacks to suburbia in select metropolitan areas. During the decade between 1960 and 1970, for example, there was a significant influx of nonwhites and Mexican-Americans into the North Central Texas Planning Region. In 1970, 13.5 percent of the region's

population was non-white. An examination of minority residence patterns in this area reveals a higher concentration of blacks and Mexican-Americans within the metropolitan areas of Dallas and Fort Worth. Of the total nonwhite population in the region, 92 percent lived within the Dallas SMSA and the Fort Worth SMSA, according to a report prepared by the Manpower Planning Division of the North Central Texas Council of Governments in 1972. Houston also experienced some outward movement of its minority population into such areas as Fort Bend and Waller Counties and a few in Montgomery county and to the east of the downtown area.

Another reason for the slow down in the rate of growth for central cities can be attributed partly to the decline in the rate of natural increase and an apparent decline in the rate of net in-migration. The black population growth in the Houston SMSA compares relatively favorable with the growth of the general population as a whole. A substantial proportion of the blacks who came into Houston, however, were lower middle to upper middle class persons who were seeking employment as a result of the decline in employment in the areas from which they came. The "pull" factors of employment and educational opportunities and the "push" factor of preferences for greater space - account for some stabilization in central city growth. A number of newcomers chose to live on the city's periphery, causing a kind of spillover from central city growth into suburbia.

The suburban population for the nation as a whole recorded some gains and increased at a higher annual rate (4.4 percent) than that for whites (1.8 percent). This increase was not enough to change the prevailing pattern of urban concentration so characteristic of the black population. Without much specificity, it is suspected that minority suburban population growth is distributed throughout the region, but is more likely concentrated in "bedroom" commuter zones -- formerly occupied exclusively by whites -- and located on the periphery of larger cities.

As a means of summarizing the foregoing data, it is important to note that for at least two decades, metropolitan growth outside the central cities was unplanned and uncontrolled according to some urbanologists. In some areas of Texas and the nation, suburban growth took place gradually and casually as housing developments, service institutions, business and industrial establishments were newly built or relocated. This wave of suburban expansion created new communities which were composed of residents that varied widely in class composition; in the element of distinctiveness of service facilities and institutions. In these same areas, the varied elements -- including the central cities and rural-suburban fringes -- are linked together by networks of highways and by automobile dependency. Because of the complexities imposed by automobile dependency and shifts in the economic balance from city predominance to suburbia; because of the diverse needs of populations characterized by this population variation, the mobility needs of the population become

more difficult to serve and the availability of public transit becomes more necessary.

Through the advent of a comprehensive or metropolitan planning concept, an attempt has been made to address regional needs of the population. Until recently, regional transit plans were considered as a possible strategy for resolving mobility problems for the total population. Planning proposals adhered to a comprehensive concept for metropolitan transportation system development. The challenge was to find a means of linking planning for one area with the planning for another, while at the same time linking intermodal transportation plans with comprehensive development policies for the whole region. A 1974 report prepared by the National Advisory Commission on Intergovernmental Relations devotes full discussion to issues involved in developing a more balanced transportation system for metropolitan areas.

Perloff and Connell (1975) called attention to the fact that limited, particularized transit systems which had the capabilities for serving a differentiated public preceded the development of region-wide transit services. They also assert or imply that it might be useful for transportation planners to recognize the need for more specialized transit services which have the potential for meeting the transit demands of those groups whose mobility needs are being neglected.

Three categories of population groups can be identified as having particular transit needs. "These are groups," says Perloff and other, "generally characterized by low mobility and

dependent largely on public transportation. Four subgroups are identified: persons not having regular access to automobiles, low income groups -- generally because of their special job and other needs, especially blacks; various age groups; and the elderly and handicapped groups. How important is transit service to these several subgroups of clientele? What are their travel characteristics? What kind of attitudes and perceptions do minority groups have toward public transit service?

In the next several pages, an attempt will be made to provide answers to specific queries and other transportation-related issues. The investigation's main focus is on black residents of geographically defined communities whose transportation needs are assessed and whose attitudes and perceptions are measured according to how they view the importance of public transit services.

Chapter III

AN ANALYSIS OF SELECTED TRAVEL CHARACTERISTICS AND PROBLEMS

A current issue of major concern to transportation planners is the extent to which people rely on public transportation. Most evaluations of metropolitan transportation systems underscore the inadequacy of public transportation in meeting the needs of certain segments of the population. A common theme found in the findings of such studies is one which point to the unmet needs of the handicapped, the elderly, the young, and the poor -- especially minorities. "Of special interest are studies which cite inaccessibility as a factor in unemployment of the urban poor." The thesis is that low-income groups, lacking access to automobiles, are unable to reach the increasing number of unskilled jobs in the suburbs. In the previous chapter, a background on this problem was given. Of all the problems mentioned, few, if any, consider attitudes and perceptions of the problems mentioned, few, if any, consider attitudes and perceptions of low income transit dependent groups with respect to the importance of public transportation. This study considers the travel characteristics of black residents in selected cities and towns of Texas and assesses the relative importance of public transportation in terms of their mobility needs.

In order to satisfy the objectives cited earlier in the study, data were sought on the following questions: What are the general travel characteristics of minority respondents in urbanized and non-urbanized areas of Texas? What are the specific work-related and non-work related needs of the transit dependents? Are there transportation-related constraints that inhibit free mobility? What is the nature of existing transit service delivery? What is the impact of low economic status and low automobile ownership on mobility? What is the relative importance of public transit service in terms of the physical and socioeconomic position of users and non-users?

Demographic Profile of Respondents

Home interviews were conducted with a representative group of black residents in nine (9) cities and towns in Texas. Thirty-eight percent (38%) of the survey population was male and 62 percent (62%) were females. The sex distribution for individual cities and towns were somewhat comparable. Exceptions were Willis where 70 percent of the respondents were male and New Waverly where the respondents were equally divided according to sex. It is suspected that the differentials relate to several characteristics of households found in the two towns. In both towns, there were a large number of individuals, particularly the poor and elderly, living laone, and a substantial proportion of them were very poor.

Age. A breakdown of the survey population according to age shows a broad representation of blacks according to age.

Over 7 percent of the total survey group was 18 years of age; 14.2 percent fell within the 19-24 age group; 31.1 percent fell between the ages of 25-44 years; 21.4 percent between 45 and 64 years; and about 25.6 percent indicated an age of 65 years and over. The survey data indicate that the elderly population is considerable larger in some urbanized and non-urbanized areas than others. Conroe and Huntsville, for instance, had the largest proportion of elderly persons. About one fourth of the population of New Waverly and Willis, though considerably younger, were elderly persons.

Education. A little over 9 percent of the respondents had "no schooling"; 17.4 percent completed grade school; 20.46 percent indicated that they had attended high school but did not graduate; 30.4 percent were high school graduates; 14.7 percent had received some college training; only about 5 percent were college graduates (some were local school teachers); and less than five percent were professionals or had attended graduate school.

In Austin about one-fourth of the survey population had some college training; in New Waverly about 15 percent of the population had similar experiences; Houston, 24.7 percent; Galveston, 28.6 percent; and Huntsville, 20.4 percent. Black respondents in Dallas, Conroe, and Fort Worth had received less college training than other survey areas. In Huntsville, 20.4 percent of the survey respondents had attended college. A substantial proportion of these individuals indicated that they had attended Texas Southern University and Prairie View A & M

The proximity of these two predominantly black schools to Huntsville may account for the high proportion of individuals with college experience. This same fact could account for the suburban/rural areas of New Waverly and Willis having a high proportion of persons who have attended college. Table 4 gives a demographic and socioeconomic profile of the survey population by area and percent.

Income. Of those responding to the question on income, the larger proportion of the total population had incomes of less than $15,000 per household, and less than 10 percent of the population fell within the $15,000 and over income category. An analysis of the data by city or town shows a somewhat different income distribution. Five percent of the black respondents in New Waverly had graduated from college; 5 percent of the population had incomes of over $20,000 per year. Similarly, five percent of the population in Austin were college graduates and professionals; 15 percent made between $15,000 and $20,000 annually. The lowest incomes were found in the subsample of towns in non-urbanized areas: Willis, Conroe, Huntsville, and New Waverly. Over 44 percent of the population in Huntsville had incomes of less than $5,000 per year; 35 percent of the respondents in Willis were in this category; 27.8 percent in Conroe; and about 25 percent of the black respondents in New Waverly could be considered poverty-stricken.

Houston's black population is considered to be more evenly distributed in terms of its income distribution. Less than 15 percent of the residents in Houston had incomes of less than

Table 4

Demographic Profile of Survey Population
by Area and Percent

ITEM	New Waverly	Austin	Houston	Galveston	Dallas	Conroe	Willis	Huntsville	Fort Worth
SEX									
Male	50.0	27.0	40.0	40.0	23.0	27.8	70.0	33.7	30.0
Female	50.0	73.0	60.0	60.0	70.3	72.2	30.0	66.3	70.0
AGE									
Under 18	0.0	17.0	10.2	8.2	6.8	0.0	10.0	2.0	14.0
19 - 24	25.0	19.0	12.0	8.2	17.6	11.2	25.0	4.1	6.0
25 - 44	35.0	33.0	38.0	36.7	21.6	33.3	30.0	20.4	32.0
45 - 64	25.0	24.0	25.9	18.4	25.7	11.1	10.0	34.7	18.0
65 & Over	15.0	7.0	7.0	28.5	28.4	44.4	25.0	38.8	30.0
EDUCATION									
No Schooling	5.0	0.0	4.3	10.3	13.5	22.2	15.0	6.1	5.0
Grade School	15.0	6.0	18.7	14.3	31.1	27.8	15.0	14.3	15.0
Some High School	20.0	31.0	10.8	22.4	12.2	33.3	10.0	24.5	20.0
High School Grad.	45.0	37.0	27.7	22.4	18.9	5.6	40.0	32.7	45.0
Some College	10.0	21.0	16.3	24.5	14.9	11.1	15.0	10.2	10.0
College Graduate	5.0	4.0	8.4	4.1	1.4	0.0	5.0	10.2	4.9
Professional	0.0	1.0	4.2	0.0	5.3	0.0	0.0	2.0	0.1
Graduate School	0.0	0.0	9.6	2.0	2.7	0.0	0.0	0.0	0.0
INCOME									
Under $4,999	25.0	13.0	14.5	12.2	40.5	27.8	35.0	44.9	22.0
$5,000 - 6,999	25.0	20.0	6.0	2.0	21.6	38.9	20.0	18.4	18.0
$7,000 - 9,999	20.0	13.0	9.6	8.2	5.4	16.7	5.0	6.1	6.0
$10,000 - 14,999	10.0	28.0	16.3	8.2	4.1	5.6	25.0	14.3	4.0
$15,000 - 20,000	0.0	6.0	11.4	10.2	2.7	0.0	0.0	6.1	6.0
Over $20,000	5.0	2.0	10.2	4.1	2.7	0.0	10.0	6.1	0.0
No Response	15.0	18.0	31.9	55.1	23.0	11.2	5.0	4.1	44.0

Table 4 (Continued)

ITEM	New Waverly	Austin	Houston	Galveston	Dallas	Conroe	Willis	Huntsville	Fort Worth
OCCUPATION									
Prof/Tech	5.0	7.0	17.5	10.2	4.1	5.6	0.0	8.2	2.0
Managerial Adm.	0.0	2.0	4.8	0.0	4.1	0.0	0.0	6.1	0.0
Clerical	0.0	12.0	7.2	0.0	5.4	0.0	0.0	2.0	2.0
Craftsman	0.0	3.0	4.8	8.2	6.8	5.6	10.0	2.0	2.0
Equipment Oper.	15.0	2.0	4.8	8.2	5.4	11.1	5.0	0.0	6.0
Laborer	0.0	15.0	6.0	4.1	1.4	5.6	25.0	16.3	6.0
Service Worker	20.0	18.0	9.0	4.1	5.4	0.0	5.0	6.1	4.0
Homemaker	0.0	8.0	7.2	10.2	5.4	11.1	0.0	10.2	12.0
Student	0.0	8.0	3.6	0.0	4.1	0.0	5.0	0.0	6.0
Retired	5.0	8.0	14.5	16.3	27.0	44.4	25.0	30.6	22.0
Unemployed/ Disabled	30.0	11.0	6.0	24.5	16.2	16.6	15.0	10.2	24.0
Other/No Response	25.0	6.0	14.4	14.2	14.9	0.0	10.0	8.1	14.0
EMPLOYMENT									
One	50.0	30.0	35.2	40.8	37.8	16.7	25.0	32.7	32.0
Two	35.0	38.0	34.7	14.3	23.0	38.9	35.0	24.5	22.0
Three	0.0	13.0	5.4	8.2	5.4	5.6	0.0	0.0	4.0
Four-Above	0.0	2.0	2.4	0.0	4.1	0.0	10.0	2.0	2.0
Retired/Disabled	15.0	17.0	18.7	32.7	28.4	38.9	30.0	40.8	34.0
No Response	0.0	0.0	3.6	4.1	1.4	0.0	0.0	0.0	6.0
PERSONS LIVING IN HOUSEHOLD									
Live Alone	25.0	12.2	14.5	14.3	12.2	22.2	20.0	18.9	16.0
Two Persons	15.0	28.4	32.5	28.6	28.4	38.9	25.0	28.4	30.0
Three Persons	20.0	16.4	16.3	16.3	16.4	16.7	15.0	24.5	18.0
Four Persons	10.0	12.2	16.9	18.4	12.2	11.1	10.0	6.0	6.0
Five-Seven Persons	20.0	26.0	17.5	22.4	28.4	11.1	20.0	16.2	28.0
Eight and Over	10.0	9.0	2.3	0.0	2.4	0.0	10.0	6.0	2.0

Table 4 (Continued)

ITEM	New Waverly	Austin	Houston	Galveston	Dallas	Conroe	Willis	Huntsville	Fort Worth
TYPE DWELLING									
Single Family	100.0	87.0	75.5	71.4	59.5	77.8	100.0	37.9	77.0
Mobile Home	0.0	0.0	1.8	0.0	2.7	11.1	0.0	6.1	0.0
Duplex	0.0	7.0	3.0	0.0	2.7	0.0	0.0	2.0	6.0
Apartment	0.0	5.0	15.7	26.6	17.6	11.1	0.0	0.0	4.0
Condominium	0.0	1.0	4.0	2.0	17.5	0.0	0.0	2.0	12.0
Other	0.0		0.0	0.0	0.0	0.0	0.0	2.0	0.0
YRS. LIVED IN AREA									
Less than 1	0.0	2.0	8.4	4.1	17.6	5.6	0.0	4.1	16.0
1 - 2	0.0	3.0	2.4	2.0	8.1	16.7	0.0	6.1	6.0
3 - 5	30.0	11.0	7.8	4.1	2.7	0.0	15.0	2.0	8.0
6 - 9	10.0	13.0	10.8	2.0	1.4	5.2	15.0	4.1	4.0
10 & Over	60.0	71.0	70.6	87.8	70.2	72.5	70.0	83.7	66.0
LIKE AREA									
Yes	85.0	95.0	78.9	95.9	70.3	0.0	75.0	91.8	80.0
No	15.0	5.0	19.3	2.0	27.4	0.0	25.0	4.6	16.0
No Response	0.0	0.0	1.8	2.1	2.3	0.0	0.0	3.6	4.0
PLAN TO MOVE?									
Yes	20.0	18.0	24.7	16.3	16.2	11.1	20.0	16.3	18.0
No	80.0	82.0	71.7	79.6	79.3	88.9	80.0	83.7	76.0
No Response	0.0	0.0	3.6	4.1	4.5	0.0	0.0	0.0	6.0
DWELLING UNIT									
Own	65.0	66.0	60.8	52.0	52.7	44.4	55.0	79.6	48.0
Rent	35.0	28.0	34.3	42.9	31.1	50.0	40.0	14.3	44.0
Other	0.0	6.0	3.6	2.1	4.1	5.6	5.0	2.0	4.0
No Response	0.0	0.0	1.3	4.0	12.1	0.0	0.0	2.1	4.0

$5,000; 12.2 percent of the population of Galveston can be classified this way; and 13 percent in Austin. Dallas and Fort Worth have the largest proportion of its black populations falling in the income category of "less than $5,000." In the higher income category, only Houston among the largest cities can boast of increasing middle class status among its black population. More than 37 percent of the black respondents in Houston had income of $10,000 and over. Analyzing this percentage further, the data show that 11.4 percent of this group fall within the $15,000 to $20,000 category; 10.2 percent reported incomes of $20,000 or more. Although there may be some skewness in the data, there is substantial evidence to suggest that the size of Houston's black middle class is increasing. In addition, the findings suggest some correlation between socioeconomic status and income. More than 38 percent of the respondents in Houston had received some college training or graduated from college or attended professional/graduate school; and 37.9 percent of the black population in Houston had incomes of more than $10,000. Blacks in Dallas and Fort Worth are less fortunate in their educational training and income levels.

Chart 1 illustrates the relationship between education and income for the nine survey cities.

CHART 1

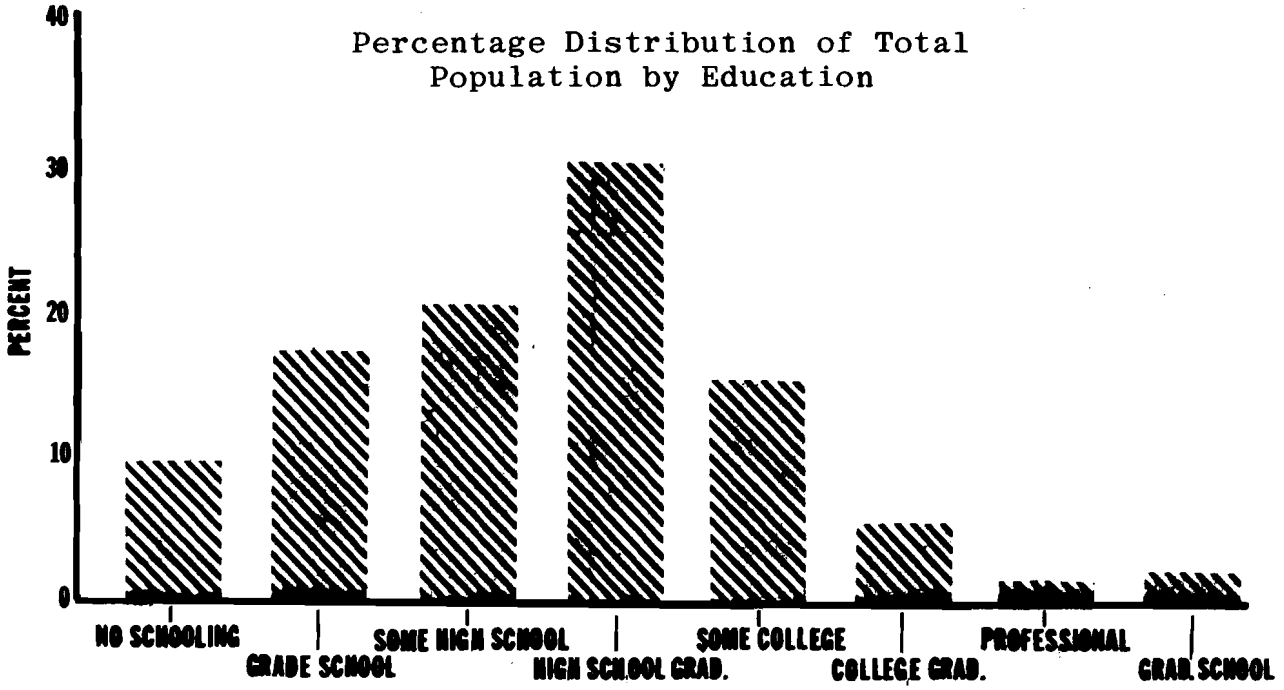
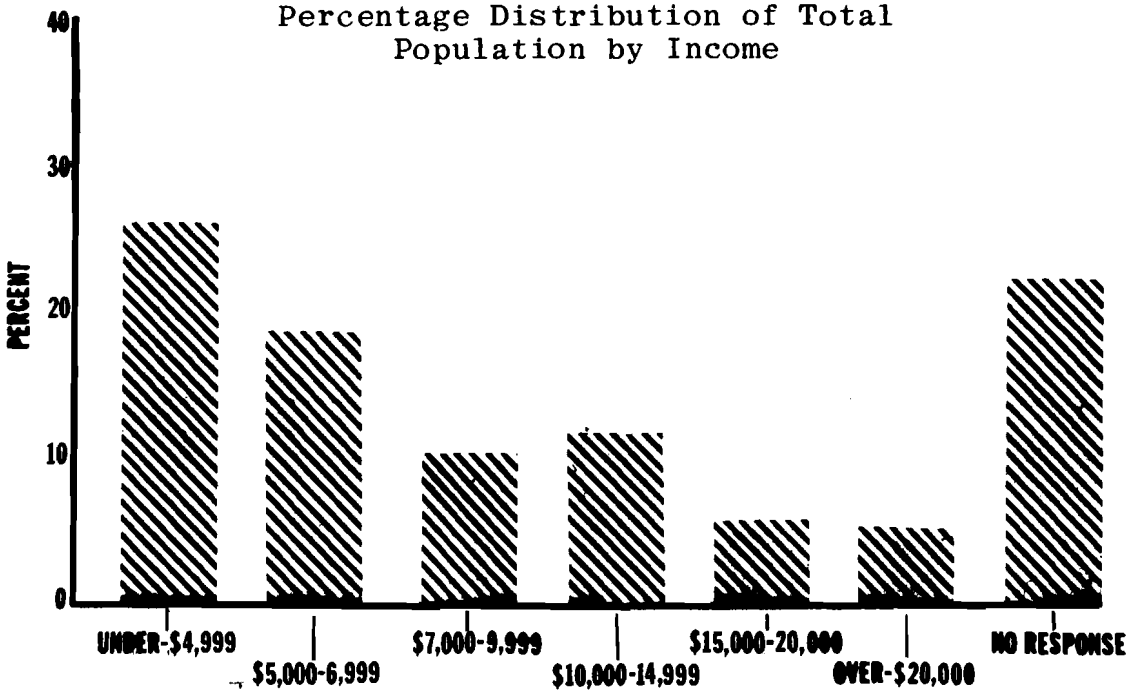


CHART 1A



A similar percentage distribution of respondents exists for occupation. Of special note is the number of unemployed and retired persons among the survey group. Again, Houston's black unemployment rate for the total population averages out at about 6 percent despite the large number of unemployed teenagers. This latter group makes up the largest group of unemployed in Houston, ranging from 15 to about 25 percent in some census tracts. Yet, the overall rate for Houston is smallest in comparison to other cities and towns in the survey. All other cities have large numbers of unemployed and disabled persons. The percentages range from 11 percent in Austin, the state capitol, to a high of 30 percent in New Waverly.

Employment. When the employment picture is examined in greater detail, there is data to suggest that there is a large percentage of households with only one member of the family working. Over 29 percent of the households had two persons employed; 4.6 percent had three persons employed; and less than three percent had four or more persons working. A substantial proportion of the employed persons in all cities were employed in unskilled or semi-skilled positions. In discussing employment, several respondents indicated that they were commuting from parts of Walker County to jobs located in Houston, Galveston, and Texas city. Some commuted daily; others rented rooms or lived with relatives and commuted to and from home on weekends.

Other Social Characteristics. A majority of the respondents lived in single family dwellings. Austin, Huntsville,

New Waverly, and Willis registered the highest percentage of single family dwellings; while the largest urbanized areas -- Houston-Galveston and Dallas-Fort Worth had the largest representation of apartment dwellers.

The typical black respondent is stable as evidenced by the large percentage of persons having lived in the areas for ten years or more. Dallas (17.6%), Fort Worth (16.0%), Houston (8.4%) and Conroe (5.6%) had the greater proportion of newcomers. In addition to evidence of some stability in residence, as measured by length of time in metropolitan area, most respondents were not only satisfied with the areas in which they lived but few indicated that they planned to move within the near future.

When the cities and towns were grouped together into urbanized and non-urbanized areas, there are more poor persons in non-urbanized areas than in urban centers. Lower income persons is predominant in non-urbanized areas or counties adjacent to large cities like Houston. Only in the income group of $10,000 to $14,999 do percentages almost correspond between these two groups of cities. It is suspected that this parity is due to the suburban movement of individuals from Houston into areas like Conroe, Willis, and New Waverly.

The percentage of the population included in the study who lived in single family homes was similar, with 75.4 percent of the respondents in urbanized areas indicating that they lived in single family homes; and 79.5 percent from non-urbanized areas. There are no apartments in Willis and New Waverly where blacks live; there are few in Huntsville and Conroe where blacks live.

Table 5

Comparative Analysis of Socioeconomic Variables by Urbanized vs. Non-Urbanized Areas

ITEM	Urbanized[1] Average % Rank	Non-Urbanized[2] Average % Rank
Income Level of Household		
Under $5,000	17.2	29.8
$5,000 - 6,999	9.5	24.4
$7,000 - 9,999	9.2	14.3
10,000 - 14,999	13.0	13.9
15,000 - 19,999	6.7	1.0
20,000 and Over	3.6	6.4
No Response	40.8	10.2
Type of Dwelling		
Single Family	75.4	79.5
Mobile Home	0.8	4.1
Duplex	4.9	0.5
Apartment	14.9	3.3
Length of Residence		
Under 1 Year	1.4	0.0
1 - 2 Years	2.2	4.7
3 - 5 Years	6.7	13.5
6 - 9 Years	6.7	7.3
10 or More	83.0	74.6
Like Area		
Like Area	90.7	89.7
Plan to Move	18.9	16.1
Number of People in Household		
Live Alone	14.4	21.9
Two People	27.5	28.1
Three People	17.8	20.5
Four People	14.7	7.9
Five - Seven People	22.4	15.1
Eight or More	3.2	7.5

[1]Dallas, Ft. Worth, Houston, Galveston, Austin
[2]Huntsville, Conroe, Willis, New Waverly

The greater proportion of the group residing in apartments or multi-family dwellings in Huntsville attend Sam Houston State University. The data tend to support the contention that differences between urbanized and non-urbanized areas are diminished when certain variables for these areas are grouped as a whole. Chinoy (1973) notes that as cities grow and populations spread distinctions between urbanized and non-urbanized areas become less identifiable. With the exceptions of public transit availability, few differences were found to exist between larger urban areas and smaller geographic units in the survey.

The descriptive information on the survey groupings has served to highlight important socioeconomic factors which tend to influence the attitudes and perceptions of minority groups concerning public transit services.

The next section attempts to provide a critical examination of the minority traveler's behavior; identify characteristics relative to mobility needs and transit problems; and assess the main factors and constraints which tend to impact decisions made concerning public transit service.

Travel Characteristics, Transit Needs, and Problems

In the survey of the various cities, questions were designed to explore several dimensions. In most instances single questions were used to determine attitudes, perceptions, and behavior in regard to travel factors. An attempt was made to construct composite categories of questions, with each con-

sisting of several items designed to improve the validity of the measure and to examine more fully the attitudinal and behavioral components. Some of the key variables examined in this chapter include mode of travel, types of mobility problems, preferences for certain modes of travel, certain factors which may shape decisions relative to transportation, frequency of use, time and cost considerations, trip purposes and specific work-related needs, and related factors.

Mode of Travel. In an effort to establish the extent of transit dependency among minority (black) transit groups in the various sample areas, respondents were asked to indicate the pattern of use for various modes of transportation. As indicated in Table 6, the pattern of use varied from area to area. Public transit patronage was highest in Dallas, Galveston, and Austin. Minority (black) transit groups in Houston and Fort Worth had the lowest percentage of riders of public modes of travel. The quad-towns (including Huntsville, Willis, New Waverly, and Conroe), as a sub-sample, do not have public transit systems. In these non-urbanized areas, there is a high level of dependency on personal automobiles and other forms of private transportation as regular methods for getting around cities and throughout the metropolitan region. Conroe had the highest level of patronage for taxicabs, with 22.2 percent of the respondents indicating that they use taxicabs from time to time.

"Carpooling", as a means of travel, was more popular among residents in non-urbanized areas. Individuals living in

the smaller areas were more likely to not own automobiles or be unable to drive than those in larger areas. The problem of traffic congestion was not a variable which appeared to influence their decisions to carpool. The percentage of respondents using carpooling as a means of travel ranged from a low of 5.6 percent in Conroe to a high of 42.9 percent in Huntsville. Respondents living in Conroe depend more on their personal automobiles and taxicabs than many living in other non-urbanized areas.

Chart 2 shows a distribution of the total population according to mode of travel. The data indicate that more than 60 percent of the total survey population use their own car for travel; 17.1 percent carpool, with the largest proportion found in Huntsville; 18.6 percent use public transportation or other buses, with Galveston and Dallas having the largest percentages of public transit patronage; and less than three percent patronize taxicabs, with Conroe residents comprising the bulk of this group.

A further examination of taxicab use reveals that almost 90 percent of the minority respondents in Huntsville who use taxicabs as a mode of travel are Medicaid recipients. The transportation services are provided by the Yellow Cab Company, and includes trips to Medicaid providers (i.e., hospitals, clinics, physician offices, and pharmacies). A Medicaid Transportation Calendar is published in The Huntsville Item, a local newspaper. Transportation services are available to Austin-Colorado-Waller counties; to Liverty-Chambers-Fort Bend-Wharton

counties; to Montgomery County and parts of Walker County. Regular trips for Medicaid clients are scheduled from Huntsville to the Houston-Galveston area because of limited access to specialized medical facilities.

The high level of carpooling in Huntsville (42.9%) apparently stems, in part, from the large number of Louisiana-Pacific employees residing in Huntsville and working at this plant in New Waverly. Many black residents from all parts of Walker County and adjoining areas work there. Carpooling is used to save travel costs to and from work, according to comments made by some of the respondents. It is a "voluntary" system of carpooling which grew out of work-related needs of the employees. The percentages for carpooling are based more on a voluntary form of savings in travel costs than organized programs similar to the one in Houston. This is why some differences are apparent when percentages are compared on the number of respondents using private automobiles as regular modes of travel (shown in Chart 2) and the percentage of car owners found in Table 6-A.

Preferences and Mode of Travel. Of considerable interest to this investigation was the fact that a majority of the respondents indicated a "very strong" attachment to the automobile. The percentages ranged from 87.5 percent in Huntsville to 99 percent in Austin (Table 7). By comparison, they also revealed that public transit was also acceptable to them but to a lesser degree. The public bus is not as acceptable to Houston residents as it is with persons in other towns and cities "for visiting."

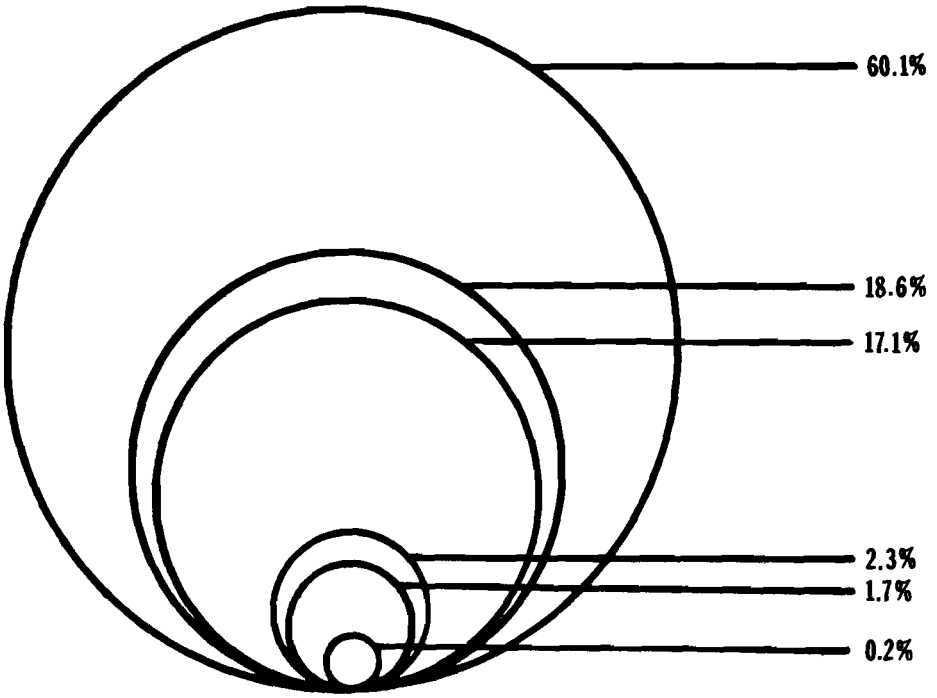
Table 6

A Percentage Distribution of Black Respondents
by Select Cities and Mode of Travel

CITY	Own Car	Carpool	Bus	Bicycle	Taxi	Walk	Total
DALLAS	35 (47.3)	9 (12.2)	27 (36.5)	0 (0.0)	1 (1.4)	2 (2.7)	74 (13.6)
FORT WORTH	29 (58.0)	13 (26.0)	6 (12.0)	0 (0.0)	1 (2.0)	1 (2.0)	50 (9.2)
HUNTSVILLE	26 (53.1)	21 (42.9)	0 (0.0)	0 (0.0)	2 (4.1)	0 (0.0)	49 (9.0)
CONROE	13 (72.2)	1 (5.6)	0 (0.0)	0 (0.0)	4 (22.2)	0 (0.0)	18 (3.3)
WILLIS	15 (71.4)	6 (28.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	21 (3.9)
NEW WAVERLY	14 (70.0)	5 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (5.0)	20 (3.7)
HOUSTON	119 (72.6)	16 (9.8)	23 (14.0)	0 (0.0)	3 (1.8)	3 (1.8)	164 (30.1)
GALVESTON	20 (40.8)	9 (18.4)	17 (34.7)	0 (0.0)	1 (2.0)	2 (4.1)	49 (9.0)
AUSTIN	56 (56.6)	13 (13.1)	28 (28.3)	1 (1.0)	1 (1.0)	0 (0.0)	99 (18.2)
Total	327 (60.1)	93 (17.1)	101 (18.6)	1 (0.2)	13 (2.3)	9 (1.7)	544 (100.0)

CHART 2

MODE OF TRAVEL



OWN CAR	60.1%	TAXI	2.3%
BUS	18.6%	WALK	1.7%
CAR POOL	17.1%	BICYCLE	0.2%

Table 6-A

A Percentage Distribution of Survey Respondents
Who Own Cars by City, 1977

CITY	Yes	No	No Response	DK	Percent of Total Sample
DALLAS	45 (60.8)	29 (39.2)	0 (0.0)	0 (0.0)	74 (13.5)
FORT WORTH	34 (68.0)	16 (32.0)	0 (0.0)	0 (0.0)	50 (9.1)
HUNTSVILLE	31 (63.3)	18 (36.7)	0 (0.0)	0 (0.0)	49 (9.0)
CONROE	13 (72.2)	5 (27.8)	0 (0.0)	0 (0.0)	18 (3.3)
WILLIS	14 (66.7)	7 (33.3)	0 (0.0)	0 (0.0)	21 (3.8)
NEW WAVERLY	13 (65.0)	7 (35.0)	0 (0.0)	0 (0.0)	20 (3.7)
HOUSTON	132 (80.0)	32 (19.4)	1 (0.6)	0 (0.0)	165 (30.2)
GALVESTON	23 (46.0)	27 (54.0)	0 (0.0)	0 (0.0)	50 (9.1)
AUSTIN	81 (81.0)	18 (18.0)	0 (0.0)	1 (1.0)	100 (18.3)
Total	386 (70.6)	159 (29.1)	1 (0.2)	1 (0.2)	547 (100.0)

Some comments by residents in Houston indicated that the lack of crosstown busing and discontinued services on particular routes caused them to rely on other means for visiting with relatives and friends.

In the non-urbanized areas of Conroe, Willis, New Waverly, and Huntsville, public transportation was an acceptable means of travel. More than half or 55.1 percent of the respondents in Galveston felt this way.

When asked about using the "bus at night," respondents appeared to be less prone to consider this option. A substantial proportion of those rejecting this idea indicated that their attitudes were motivated by a fear of criminal elements in the various cities with public transit systems. "Walking" was more favorable to Houston and Galveston residents than those from other areas. Additionally, we found that taxicabs are acceptable to 40 percent of the respondents in Houston and less acceptable to residents of Dallas and Fort Worth. About one-third of all residents indicated that taxicabs were an acceptable mode of travel.

The motivations which undergird "choice of mode" of transport were also probed. We asked survey respondents "How important are such factors as low cost, being available on time, vehicle comfort, short waiting time, and vehicle safety to you when making decisions regarding travel?" As revealed in Table 8, low cost transportation, short waiting time, vehicle comfort, time and safety are variables which influence the motivations of users and non-users.

Table 7

A Percentage Distribution of Responses Relative to the Acceptability of Modes of Travel

CITY	CAR ACCEPTABILITY (N=541)		BUS FOR VISITING (N=530)		BUS FOR RECREATION (N=528)		BUS AT NIGHT (N=513)		WALKING (N=516)		TAXI (N=522)	
	Accept.	Unaccept.	Accept.	Unaccept.	Accept.	Unaccept.	Accept.	Unaccept.	Accept.	Unaccept.	Accept.	Unaccept.
DALLAS	66 (89.2)	8 (10.8)	37 (50.7)	36 (49.3)	31 (43.1)	41 (56.9)	21 (29.2)	51 (70.8)	26 (35.6)	47 (64.4)	12 (16.7)	60 (83.3)
FORT WORTH	46 (92.0)	4 (8.0)	25 (50.0)	25 (50.0)	24 (48.0)	26 (52.0)	15 (30.0)	35 (70.0)	16 (32.0)	34 (68.0)	6 (12.0)	44 (88.0)
HUNTSVILLE	42 (87.5)	6 (12.5)	30 (66.7)	15 (33.3)	29 (65,9)	15 (34.1)	23 (57.5)	17 (42.5)	11 (26.2)	31 (73.8)	16 (37.2)	27 (62.8)
CONROE	18 (100.0)	0 (0.0)	16 (88.9)	2 (11.1)	14 (77.8)	4 (22.2)	3 (23.1)	10 (76.9)	1 (7.7)	12 (92.3)	8 (53.3)	7 (46.7)
WILLIS	20 (100.0)	0 (0.0)	14 (70.0)	6 (30.0)	13 (65.0)	7 (35.0)	6 (35.3)	11 (64.7)	2 (11.8)	15 (88.2)	3 (15.0)	17 (85.0)
NEW WAVERLY	19 (95.0)	1 (5.0)	17 (85.0)	3 (15.0)	17 (85.0)	3 (15.0)	4 (25.0)	12 (75.0)	2 (11.8)	15 (88.2)	3 (15.8)	16 (84.2)
HOUSTON	158 (98.1)	3 (1.9)	59 (37.3)	99 (62.7)	53 (33.8)	104 (66.2)	38 (23.9)	121 (76.1)	73 (45.9)	86 (54.1)	62 (40.0)	93 (60.0)
GALVESTON	47 (94.0)	3 (6.0)	25 (51.0)	24 (49.0)	27 (55.1)	22 (44.9)	19 (38.8)	30 (61.2)	21 (43.8)	27 (56.2)	26 (53.1)	23 (46.9)
AUSTIN	99 (99.0)	1 (1.0)	50 (51.5)	47 (48.5)	44 (44.9)	54 (55.1)	38 (39.2)	59 (60.8)	41 (42.3)	56 (57.7)	36 (36.4)	63 (63.6)
Total	515 (95.2)	26 (4.8)	273 (51.5)	257 (48.5)	252 (47.7)	276 (52.3)	167 (32.6)	346 (67.4)	193 (37.4)	323 (62.6)	172 (33.0)	350 (67.0)

Of less significance to all groups appeared to be "privacy" when compared with travel cost. This factor, though important to users and non-users, ranked lowest among all groups.

Frequency of Public Transit Usage. Of the total number using public transportation, a majority of the respondents in Dallas (62.2%), and Austin (56.0%) had used public transit three months prior to the survey, although not regularly. Houston and Fort Worth ranked lowest among cities with public transportation systems. In New Waverly, five percent of the respondents stated that they had used public transportation. As a matter of clarification, reference here is made to regular bus service provided by Continental Trailways between cities and towns in the region.

Table 9 contains data on the frequency of use over a specified period of time. Frequency of use was highest in Dallas, Fort Worth, Galveston, and Houston.

Transportation Costs. A majority of the survey respondents spent $15.00 or more monthly for transportation. This amount was usually spent on gasoline/oil, repairs, and car payments. All other costs were extremely low. The costs incurred by respondents include data on transit riders irrespective of whether they were car owners or not. As indicated in Table 10, minority (black) group residents in Conroe and Willis spent more on transportation than those in other areas. Anecdotal comments by individuals living in these areas suggest that a moderate number of them is commuting to Houston and Galveston for a variety of reasons, including work.

Table 8

The Motivations of Respondents as to Modal Choice, 1977

CITY	Important Low Cost (N=533)		Being Available on Time (N=538)		Short Waiting Time (N=532)		Vehicle Comfort (N=535)		Privacy (N=528)		Short Riding Time (N=529)		Vehicle Safety (N=524)	
	Imp.	Unimp.	Imp.	Unimp.	Imp.	Unimp.	Imp.	Unimp.	Imp.	Unimp.	Imp.	Unimp.	Imp.	Unimp.
DALLAS	68 (93.2)	5 (6.8)	72 (97.3)	2 (2.7)	67 (90.5)	7 (9.5)	70 (95.9)	3 (4.1)	40 (54.1)	34 (45.9)	63 (86.3)	10 (13.7)	71 (98.6)	1 (1.4)
FT.WORTH	49 (98.0)	1 (2.0)	48 (96.0)	2 (4.0)	47 (94.0)	3 (6.0)	49 (98.0)	1 (2.0)	34 (68.0)	16 (32.0)	46 (92.0)	4 (8.0)	49 (98.0)	1 (2.0)
HUNTSVILLE	42 (91.3)	4 (8.7)	44 (95.7)	2 (4.3)	39 (86.7)	6 (13.3)	41 (93.2)	3 (6.8)	29 (63.0)	17 (37.0)	39 (86.7)	6 (13.3)	42 (95.5)	2 (4.5)
CONROE	11 (61.1)	7 (38.9)	12 (66.7)	6 (33.3)	12 (66.7)	6 (33.3)	17 (94.4)	1 (5.6)	6 (33.3)	12 (66.7)	12 (66.7)	6 (33.3)	18 (100.0)	0 (0.0)
WILLIS	17 (85.0)	3 (15.0)	17 (81.0)	4 (19.0)	16 (76.2)	5 (23.8)	14 (70.0)	6 (30.0)	7 (46.7)	8 (53.3)	11 (68.8)	5 (31.3)	19 (95.0)	1 (5.0)
NEW WAVERLY	12 (63.2)	7 (36.8)	14 (70.0)	6 (30.0)	13 (65.0)	7 (35.0)	14 (70.0)	6 (30.0)	12 (60.0)	8 (40.0)	13 (65.0)	7 (35.0)	18 (94.7)	1 (5.3)
HOUSTON	128 (80.5)	31 (19.5)	149 (93.1)	11 (6.9)	144 (92.3)	12 (7.7)	140 (87.0)	21 (13.0)	68 (43.6)	88 (56.4)	121 (77.1)	36 (22.9)	151 (96.2)	6 (3.8)
GALVESTON	43 (86.0)	7 (14.0)	44 (89.8)	5 (10.2)	41 (85.4)	7 (14.6)	45 (90.0)	5 (10.0)	20 (40.0)	30 (60.0)	39 (78.0)	11 (22.0)	45 (93.8)	3 (6.2)
AUSTIN	86 (87.8)	12 (12.2)	100 (100.0)	0 (0.0)	93 (93.0)	7 (7.0)	83 (83.8)	16 (16.2)	40 (40.4)	59 (59.6)	83 (83.0)	17 (17.0)	90 (93.8)	6 (6.2)
Total	456 (85.6)	77 (14.4)	500 (92.9)	38 (7.1)	472 (88.7)	60 (11.3)	473 (88.4)	62 (11.6)	256 (48.5)	272 (51.5)	427 (80.7)	102 (19.3)	503 (96.0)	21 (4.0)

*Imp = "Important"; Unimp. - "Not Important"

Table 9

The Frequency of Public Transit Usage
By Survey Group

CITY	USE PUBLIC TRANSIT (Last 3 months)			TIMES USED TRANSPORTATION IN LAST MONTH			
	Yes	No	No Response	Not at All	Once	Twice	Three or More
DALLAS	62.2	37.8	0.0	39.2	6.8	8.1	45.9
FORT WORTH	36.0	64.0	0.0	60.0	4.0	4.0	32.0
HUNTSVILLE	0.0	100.0	0.0	100.0	0.0	0.0	0.0
CONROE	0.0	100.0	0.0	100.0	0.0	0.0	0.0
WILLIS	0.0	100.0	0.0	100.0	0.0	0.0	0.0
NEW WAVERLY*	5.0	95.0	0.0	95.0	0.0	5.0	0.0
HOUSTON	40.6	58.8	0.6	63.0	7.3	5.5	24.2
GALVESTON	66.0	34.0	0.0	40.0	14.0	6.2	40.0
AUSTIN	56.0	44.0	0.0	46.0	7.0	10.0	37.0

*Continental Trailway Bus

Table 10

Monthly Transportation Costs by City, 1977

CITY	0	Less than $5.00	$5.00-$6.99	$7.00-$8.99	$9.00-$10.99	$11.00-$12.99	$13.00-$14.99	$15.00 & Over	Total
DALLAS	1 (1.4)	15 (21.1)	11 (15.5)	3 (4.2)	6 (8.5)	2 (2.8)	2 (2.8)	31 (43.7)	71 (14.3)
FT.WORTH	2 (5.4)	6 (16.2)	3 (8.1)	1 (2.7)	3 (8.1)	1 (2.7)	0 (0.0)	21 (56.8)	37 (7.5)
HUNTSVILLE	0 (0.0)	3 (6.8)	3 (6.8)	3 (6.8)	3 (6.8)	0 (0.0)	0 (0.0)	32 (72.8)	44 (8.9)
CONROE	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (6.3)	1 (6.3)	14 (87.4)	16 (3.2)
WILLIS	0 (0.0)	0 (0.0)	1 (6.3)	0 (0.0)	0 (0.0)	1 (6.3)	0 (0.0)	14 (87.4)	16 (3.2)
NEW WAVERLY	1 (5.0)	0 (0.0)	1 (5.0)	0 (0.0)	0 (0.0)	1 (5.0)	1 (5.0)	16 (80.0)	20 (4.0)
HOUSTON	2 (1.3)	10 (6.7)	3 (2.0)	4 (2.7)	9 (6.0)	3 (2.0)	1 (0.7)	117 (78.6)	149 (30.1)
GALVESTON	0 (0.0)	6 (14.3)	4 (9.5)	0 (0.0)	4 (9.5)	1 (2.4)	1 (2.4)	26 (61.9)	42 (8.5)
AUSTIN	0 (0.0)	9 (9.0)	8 (8.0)	2 (2.0)	7 (7.0)	3 (3.0)	2 (2.0)	69 (69.0)	100 (20.3)
Total	6 (1.2)	49 (9.9)	34 (6.9)	13 (2.6)	32 (6.5)	13 (2.6)	8 (1.6)	340 (68.7)	495 (100.0)

Missing observations = 52

Table 11

Item Expenditures for Monthly Transportation Services

CITY	Car Payment (N=546)		Car Repairs (N=547)		Gas/Oil (N=547)		Bus Fares (N=547)		Taxi Fares (N=547)		Other (N=547)	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
DALLAS	2 (2.7)	72 (97.3)	4 (5.4)	70 (94.6)	28 (37.8)	46 (62.2)	46 (62.2)	28 (37.8)	3 (4.1)	71 (95.9)	3 (4.1)	71 (95.9)
FT.WORTH	0 (0.0)	50 (100.0)	0 (0.0)	50 (100.0)	23 (46.0)	27 (54.0)	10 (20.0)	40 (80.0)	1 (2.0)	49 (98.0)	0 (0.0)	50 (100.0)
HUNTSVILLE	11 (22.4)	38 (77.6)	8 (16.3)	41 (83.7)	34 (69.4)	15 (30.6)	1* (2.0)	48 (98.0)	9 (18.4)	40 (81.6)	6 (12.2)	43 (87.8)
CONROE	1 (5.6)	17 (94.4)	3 (16.7)	15 (83.3)	10 (55.6)	8 (44.4)	0 (0.0)	18 (100.0)	4 (22.2)	14 (77.8)	3 (16.7)	15 (83.3)
WILLIS	4 (19.0)	17 (81.0)	8 (38.1)	13 (61.9)	16 (76.2)	5 (23.8)	0 (0.0)	21 (100.0)	1 (4.8)	20 (95.2)	1 (4.8)	20 (95.2)
NEW WAVERLY	2 (10.0)	18 (90.0)	7 (35.0)	13 (65.0)	17 (85.0)	3 (15.0)	1* (5.0)	19 (95.0)	1 (5.0)	19 (95.0)	1 (5.0)	19 (95.0)
HOUSTON	16 (9.8)	148 (90.2)	19 (11.5)	146 (88.5)	111 (67.3)	54 (32.7)	38 (23.0)	127 (77.0)	10 (6.1)	155 (93.9)	10 (6.1)	155 (93.9)
GALVESTON	0 (0.0)	50 (100.0)	4 (8.0)	46 (92.0)	19 (38.0)	31 (62.0)	22 (44.0)	28 (56.0)	3 (6.0)	47 (94.0)	1 (2.0)	49 (98.0)
AUSTIN	19 (19.0)	81 (81.0)	32 (32.0)	68 (68.0)	68 (68.0)	32 (32.0)	40 (40.0)	60 (60.0)	7 (7.0)	93 (93.0)	5 (5.0)	95 (95.0)
Total	55 (10.1)	491 (89.9)	85 (15.5)	462 (84.5)	326 (59.6)	221 (40.4)	158 (28.9)	389 (71.1)	39 (7.1)	508 (92.9)	30 (5.5)	517 (94.5)

More than 87 percent of the sample population in these areas spent fifteen ($15.00) dollars or more on transportation each month; while respondents from New Waverly (80%), Houston (78.6%), and Huntsville (72.8%) spent similar amounts on travel. Table 11 gives data on what items are included in the transportation costs.

A large percentage of those spending higher sums on transportation are car owners and use their vehicles to travel to and from work.

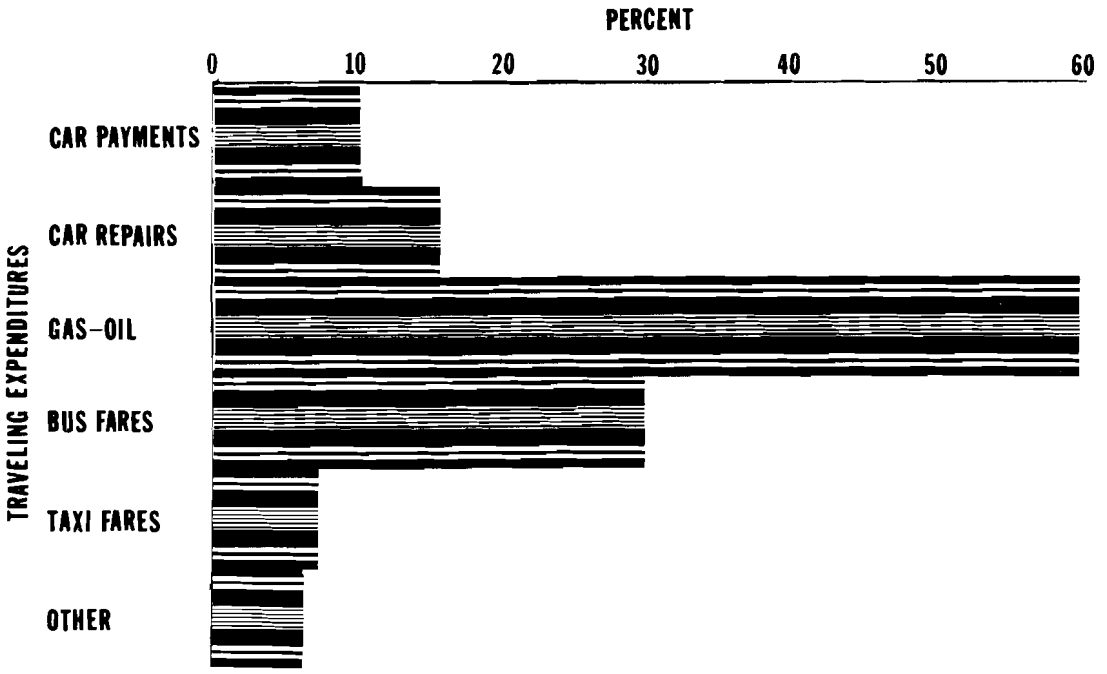
Few respondents used bus passes as a means of cutting the costs for transportation. Chart 3 illustrates how dollars are spent for transportation by the total survey population. A further examination of the data shows that "voluntary" carpooling appeared to be the key method utilized in attempts to cut costs for transportation by black residents. Low income persons are more likely to employ this method in non-urbanized areas than middle and upper middle class persons.

In addition to cataloguing certain travel characteristics, some attention was given to particular transit needs and problems as perceived by the survey group.

Transit Needs and Problems. The deficiencies in existing transportation networks were reflected in problems of traffic congestion in urbanized areas; in low levels of patronage of urban public transit, and the lack of public transit in non-urbanized selected areas of Texas. These problems dominated the comments from the various respondents. Mobility problems are generally those related to trips made to places other than work.

CHART 3

TOTAL EXPENDITURES FOR TRAVEL



Residents in non-urbanized areas encounter problems getting to work. In urbanized areas, the problems are related more to traffic congestion caused by use of the private automobile. To probe deeper, individuals were asked to indicate the extent to which "getting to where you want to go for normal activities pose a problem for you." The findings indicate that respondents in the sub-sample of cities without public transportation perceived mobility as a greater problem to them. The degree of severity of the problem, however, varied widely (Table 12).

Of the total number of respondents acknowledging that they had encountered problems getting from place to place, most were attributed to these reasons: unsuitable transit routes (20.4%), lack of dependable service (18.1%) for cities with public transportation; health and mobility (17.5%) for the general population, no public transit (16.4%), and cost of transportation services (8.8%).

Particular Transit Problems. Respondents were also queried about any problems they had experienced in traveling to specific places such as shopping for groceries, the journey-to-work, medical-related trips, general shopping for things other than groceries, and various social-cultural-recreational activities. The data, as revealed in Table 14, suggest that the largest number of respondents (34.4%) were having problems getting transportation to grocery establishments. Of this total, residents in the non-urbanized areas of Huntsville, Conroe, New Waverly, and Willis had the largest percentage of residents with mobility problems in this regard.

Table 12

A Percentage Distribution of Respondents
Relative to General Transportation Problems

CITY	Major Problem	Moderate Problem	Minor Problem	No Problem	No Response	Total
DALLAS	3 (4.1)	5 (6.8)	14 (18.9)	52 (70.3)	0 (0.0)	74 (13.6)
FORT WORTH	6 (12.0)	2 (4.0)	2 (4.0)	40 (80.0)	0 (0.0)	50 (9.2)
HUNTSVILLE	11 (22.4)	7 (14.3)	11 (22.4)	20 (40.8)	0 (0.0)	49 (9.0)
CONROE	5 (27.8)	0 (0.0)	2 (11.1)	11 (61.6)	0 (0.0)	18 (3.3)
WILLIS	2 (9.5)	0 (0.0)	1 (4.8)	18 (85.7)	0 (0.0)	21 (3.9)
NEW WAVERLY	6 (30.0)	0 (0.0)	0 (0.0)	14 (70.0)	0 (0.0)	20 (3.7)
HOUSTON	14 (8.6)	15 (9.3)	21 (13.0)	112 (69.1)	0 (0.0)	162 (29.8)
GALVESTON	5 (10.0)	4 (8.0)	5 (10.0)	36 (72.0)	0 (0.0)	50 (9.2)
AUSTIN	4 (4.0)	12 (12.0)	23 (23.0)	61 (61.0)	0 (0.0)	100 (18.3)
Total	56 (10.3)	45 (8.3)	79 (14.5)	364 (66.9)	0 (0.0)	544 (100.0)

Missing Observations = 3

Table 13

Types of Mobility Problems
(N=171)

CITY	Health/ Mobility	Eyes Poor	Cost Transit	Not Like to Depend	Routes Unsuitable	No Public Transit	Other	Total
DALLAS	4 (20.0)	0 (0.0)	2 (10.0)	5 (25.0)	3 (15.0)	0 (0.0)	6 (30.0)	20 (11.7)
FT.WORTH	3 (30.0)	0 (0.0)	1 (10.0)	1 (10.0)	1 (10.0)	1* (10.0)	3 (30.0)	10 (5.8)
HUNTSVILLE	7 (22.6)	1 (3.2)	0 (0.0)	3 (9.7)	0 (0.0)	20 (64.5)	0 (0.0)	31 (18.1)
CONROE	3 (42.9)	0 (0.0)	2 (28.6)	0 (0.0)	0 (0.0)	2 (28.6)	0 (0.0)	7 (4.1)
WILLIS	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (66.7)	0 (0.0)	3 (1.8)
NEW WAVERLY	2 (40.0)	0 (0.0)	0 (0.0)	1 (20.0)	0 (0.0)	2 (40.0)	0 (0.0)	5 (2.9)
HOUSTON	6 (12.8)	1 (2.1)	3 (6.4)	13 (27.7)	17 (36.2)	1* (2.1)	6 (12.8)	47 (27.5)
GALVESTON	3 (23.1)	0 (0.0)	3 (23.1)	4 (30.8)	3 (23.1)	0 (0.0)	0 (0.0)	13 (7.6)
AUSTIN	1 (2.9)	1 (2.9)	4 (11.4)	4 (11.4)	11 (31.4)	0 (0.0)	14 (40.0)	35 (20.5)
Total	30 (17.5)	3 (1.8)	15 (8.8)	31 (18.1)	35 (20.5)	28 (16.4)	29 (17.0)	171 (100.0)

A large number of persons responding in the affirmative to this question were elderly, handicapped, and the rural poor. Some individuals living within these towns indicated that they walked to and from corner grocery stores, but had problems when they found the need for service beyond their immediate neighborhoods. Concomitant with the low mobility of inner "town"residents,some individuals lived beyond the city limits, creating the necessity for them to gauge their shopping according to the movement of relatives and friends upon whom they depended for transportation. There were a few individuals that stated they had problems getting to medical facilities and work.

More than 34 percent of the total survey population ranked "shopping for groceries" as a major problem. Other problems, in the order of percentage rank, included the following:

Other Problems	31.7%	Other Shopping	5.7%
Journey-to-work	11.1%	Church	4.2%
Doctor (medical-related)	11.1%	Visiting	1.9%

The analysis of the data underscore the thesis that three categories of population groups tend to have unmet transit needs. The first category comprises individuals largely dependent on public transportation. Generally this group consists of residents in urbanized areas with low mobility, persons not having regular access to automobiles, low income persons, including blacks, other minorities, the elderly and the handicapped.

Table 14

Specific Trip Purposes and Problems
by City, 1977
(N=262)

CITY	Shopping/ Grocery	Shopping/ Other	Travel to Work	Doctor	Visiting	Church	Other	Percent of Sample Group
DALLAS	11 (24.4)	4 (8.9)	2 (4.4)	4 (8.9)	1 (2.2)	1 (2,2)	22 (48.9)	45 (17.2)
FT.WORTH	2 (6.7)	0 (0.0)	2 (2.7)	3 (10.0)	0 (0.0)	1 (3.3)	22 (73.3)	30 (11.5)
HUNTSVILLE	16 (51.6)	3 (9.7)	1 (3.2)	6 (19.4)	0 (0.0)	3 (9.7)	2 (6.5)	31 (11.8)
CONROE	7 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	7 (2.7)
WILLIS	6 (75.0)	0 (0.0)	1 (12.5)	0 (0.0)	1 (12.5)	0 (0.0)	0 (0.0)	8 (3.1)
NEW WAVERLY	10 (90.9)	1 (9.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	11 (4.2)
HOUSTON	21 (26.3)	2 (2.5)	16 (20.0)	10 (12.5)	0 (0.0)	3 (3.8)	28 (35.0)	80 (30.5)
GALVESTON	8 (50.0)	0 (0.0)	1 (6.3)	0 (0.0)	1 (6.3)	1 (6.3)	5 (31.3)	16 (6.1)
AUSTIN	9 (26.5)	5 (14.7)	6 (17.6)	6 (17.6)	2 (5.9)	2 (5.9)	4 (11.8)	34 (13.0)
Total	90 (34.4)	15 (5.7)	29 (11.1)	29 (11.1)	5 (1.9)	11 (4.2)	83 (31.6)	262 (100.0)

Another category of transit dependents include those residents in non-urbanized geographically defined communities where no public transit exists. This group is characterized by its dependency on the private automobile or other private forms of transportation, and--in the case of the elderly and poor--low automobile ownership. This group is one with the most critical and often neglected needs. Few, if any, efforts have been directed toward providing greater insight into the demands of these groups. In most cases, intercity transportation is unavailable or limited to certain hours which may or may not coincide with the particular needs of this group. Their lower socioeconomic status restricts access to recreational, health, educational, and sociocultural facilities in their own towns or cities, in the county and throughout the region.

The last category is composed primarily of youth and/or elderly. In both urbanized and non-urbanized areas, some of the members of this group require direct and personal transit service. Their needs are considerably more specialized than other types of transit dependent groups by virtue of their ages.

It should be noted that traditional transportation planning has concentrated on more generalized systems of service delivery. The subgroups within the respective categories suggest that such services are inadequate and the lack of differentiation of service group needs have dire consequences for low income transit dependent groups. Murin advises that "effective transportation service requires adaptation to each

clientele's social and economic conditions" (Murin, 1971).

When respondents in this survey were asked to rank the severity of their transportation needs, most indicated that inadequate finance was the most serious problem. The percentage of poor persons, however, varied from city to city. Even in urban areas, many low income persons found this to be a problem for them. Transportation routes are limited, according to the comments of a majority of urban residents, and little public transportation exists for travel from the inner city to suburban jobs.

It should be stressed that many of the transportation problems mentioned in this section have been created by population dispersion, a general reliance on the private automobile, the decentralization of employment opportunities, and the lack of employment opportunities in small towns such as are included in our subsample. Even where problems do not exist, low transit ridership suggests the need to examine more closely the perceptions and attitudes of minority groups toward public transportation. One indication of the relative importance of public transit is the way in which individuals perceive it in relation to their mobility needs. An attempt will be made to analyze the views of black respondents in the final section of this study.

Chapter IV

ATTITUDES AND PERCEPTIONS REGARDING THE RELATIVE IMPORTANCE OF PUBLIC TRANSPORTATION

The nature of existing transit service delivery and the relative importance of public transportation are key concerns of this investigation. As a means of exploring these issues, an attempt has been made to assess attitudes and perceptions of minority group respondents as distinguished by several separate but interrelated components. These components are variously described as conative, cognitive, and affective. Using Harding (1969) analogy of the classification or categorization of attitudes and perceptions, the conative components include beliefs about "what should be done" to increase public transit patronage or what improvements should be made. The cognitive components are the perceptions, attitudes, beliefs, and expectations that the individual holds with regard to public transit service; and the affective components include both the general favorability or unfavorability of the attitude or specific feelings that give the attitude its affective coloring.

These three components are incorporated into the major items utilized to measure attitudes and perceptions on the relative importance of public transportation to a select group of black respondents in urbanized and non-urbanized areas of Texas. The items included in the survey instrument were designed to measure perceptions regarding the overall quality of transit

service, ranging from environmental factors such as cleanliness, odors, comfort, courteousness of drivers; to the general nature of existing service delivery; to road conditions. Items regarding favorability and unfavorability included certain variables believed to be factors influencing the users as well as non-users of public transportation. Other measures were used to elicit opinions on special issues concerning automobile travel and what decisions respondents would make when faced with a shortage of resources such as oil, fuel, and gasoline.

In exploring the quality of transit service, respondents were requested to rate transit vehicles on a four-point scale where "1" equaled the most favorable factor or high quality and moving progressively (in terms of a decrease in quality) to "4" which equaled the least favorable factor. Although none of the items elicited a particularly high average score, three of the factors were rated as having considerably higher quality than others (see: Table 15). Table 15 includes average ratings of the responses of public transit users only. "Temperature/ humidity" was a factor of the highest quality, with an average rating of 1.3 by user groups; "crowdedness", with a rating of 1.9 was not considered to be a problem; while such factors as cleanliness, courteousness of drivers, and odors were factors which received an average (2.0 - 2.9) to low quality (3.0 - 4.0) rating by public transit user groups.

The data in Table 15 reflect what may be perceived as situational determinants of travel behavior. At a glance, they do not appear to be effective in inducing greater ridership

despite the favorable attitudes expressed toward these factors by respondents. It is suspected that their lack of significance is related more to the fact that non-transit users have not been sufficiently exposed to the quality of public transit service provided by transportation systems in urban area. A large proportion of the auto-commuting individuals indicated that they had never used public transportation. This would suggest that any negative attitudes they hold could not be changed unless there is a more in-depth examination of these non-users groups. Some of the comments included in the Appendices will provide some insights into the attitudes which appear to influence the travel behavior of non-user groups.

In the urban areas of our sample where public transportation systems exist, we sought to probe deeper into reasons for not using public transit as a primary mode of travel. "Preference for the private automobile" dominated the responses of groups in all urban areas, including Houston, Galveston, Austin, Dallas, and Fort Worth. When asked to explain their preferences further, a desire for convenience and a desire for greater freedom of movement appeared to be a common denominator or a motivating factor in "choice-of-mode" decision-making.

In non-urbanized areas without public transportation systems, there was less attachment to the automobile, but greater dependence on it. A majority of all respondents in Huntsville, Willis, Conroe, and New Waverly--particularly those with lower incomes--expressed positive attitudes toward forms of public transportation.

Table 15

Perceptions on the Quality of Service According to Responses of Public Transit Users (Average Ratings)

ITEM	Low Quality	Moderate Quality	High Quality
Temperature/Humidity (N=234)	2.4	1.9	1.3
Crowdedness (N=225)	2.8	2.6	1.9
Noisiness (N=231)	3.0	2.8	3.2
Cleanliness (N=230)	2.6	2.6	2.0
Courteousness of Drivers (N=232)	2.8	2.9	2.7
Odors (N=230)	2.9	2.7	2.9

Quality Ranking:
1. Low Quality: 3.0 - 4.0
2. Moderate Quality: 2.0 - 2.9
3. High Quality: Under 2.0

Probing further, it was found that respondents in urbanized areas ranked the quality of road surface as average, with Dallas having the best road surface for driving as judged by respondents. In non-urbanized areas, low quality road surface -- while not affecting their decisions relative to choice of mode -- created some problems for individuals living in outlying areas of the towns. Road surface and driving conditions during bad weather were factors which appeared to severely restrict the mobility of low income persons, particularly elderly individuals living outside the city limits. Poor road surface adversely affected transportation for public school children. In a number of these small communities, located on the periphery of county seats, the conditions of the roads -- both publicly- maintained and privately-maintained roads in the rural communities of Huntsville, New Waverly, and Willis -- make movement extremely difficult in inclemate weather. Some county roads are unpaved and become somewhat difficult to use during rainy seasons of the year. The problem is compounded by high levels of home ownership and the low income status of minority groups in these areas. Many individuals are elderly and on fixed income. Although some have been assisted by specific property tax exemptions, few can afford to pay for the upkeep of roads providing right-of-way on their property. The thumbnail sketches developed by the interviewers provide a more in-depth portrayal of the plight of the rural (poor) minority transit rider.

Table 16

A Distribution of Responses on Major Reasons for Non-Use of Public Transit by Percentage Rank, 1977

Major Reason for Non-use of Transit	AUSTIN		HOUSTON		GALVESTON		DALLAS		FORT WORTH	
	Rank	%yes	Rank	%yes	Rank	%yes	Rank	%yes	Rank	%yes
Takes too long	3	11.0	2	41.6	2	12.2	2	10.8	4	8.0
Transit stop not close	5	6.0	6	21.7	4	6.1	3	8.1	2	16.0
Runs too infrequently	3	11.0	4	34.3	5	2.0	4	6.8	5	6.0
Doesn't cross desired destination	2	18.0	3	39.2	4	6.1	4	6.8	3	12.0
Prefer automobile	1	52.0	1	57.8	1	26.5	1	29.7	1	50.0
Transit too uncomfortable	4	8.0	6	21.7	3	8.2	5	4.1	5	6.0
Do not like crowds	7	4.0	5	24.1	3	8.2	7	1.4	7	0.0
Too dangerous	8	2.0	7	14.5	2	12.2	8	0.0	7	0.0
Too expensive	9	1.0	8	11.4	3	8.2	7	1.4	6	2.0
No public transit in area	6	5.0	9	6.0	5	2.0	6	2.7	6	2.0

The major reasons given by respondents for not using public transit are outlined in Table 16. Preference for the private automobile ranked first in all urban areas. However, other reasons also figured prominently among the responses given, including "doesn't cross desired destination" or "the lack of crosstown busing," "runs too infrequently," transit too uncomfortable" and "transit stop not close." These reasons varied in terms of the percentage of responses by city, with the exception of the overwhelming preference for the automobile. In Houston, for instance, the second most important reason for not using public transportation was that "it takes too long." Respondents in Galveston and Dallas also ranked this reasons as the second most important reasons for not using public transportation.

As shown in Table 17, black respondents in Huntsville and Conroe had less access to automobiles than those in other cities. More than half of the respondents in these non-urbanized areas were transit dependents. A proportion of this group indicated that they depended on relatives and friends for transportation; others indicated their inability to afford automobiles; and still others stated that they were unable to drive or had physical impairments which prevented them from being certified to drive.

It appears that these groups deserve careful consideration because of the limited travel options available to them.

Table 17

Major Reasons for Non-Use of Automobile and Traffic Conditions by City/Town

ITEM	Austin		Huntsville		New Waverly		Conroe		Houston		Willis		Galveston		Dallas		Fort Worth	
	Rank	%yes	Rank	%yes	Rank	%yes	Rank	%yes	Rank	%yes	Rank	%yes	Rank	%yes	Rank	%yes	Rank	%yes
Major Reason for Non-Use of Auto																		
Don't have access	1	20	1	53.1	1	25.0	1	55.6	1	16.9	1	30.0	1	38.8	1	31.1	2	20.0
Auto too expensive	3	7	2	49.0	2	20.0	2	27.8	3	9.6	2	25.0	3	20.4	2	27.0	3	6.0
Too much traffic	4	4	4	16.3	4	0.0	4	16.7	4	8.4	3	10.0	5	6.1	4	12.2	4	4.0
Do not like traveling in auto	6	0	5	10.2	4	0.0	5	11.1	6	2.4	4	5.0	5	6.1	6	2.7	5	2.0
Can not drive	2	13	3	20.4	3	10.0	3	22.2	2	12.0	3	10.0	2	22.4	3	23.0	1	24.0
Other	5	1	6	4.1	4	0.0	5	11.1	5	7.2	5	0.0	4	8.2	5	10.8	3	6.0
Traffic Conditions																		
Automobile driving conditions are good	2	49	2	57.1	1	65.0	2	50.0	3	21.7	2	60.0	2	51.0	3	36.5	2	64.0
Ability to get to places is good	1	63	1	65.3	2	60.0	1	61.1	1	35.5	1	65.0	1	55.1	2	39.2	1	68.0
Have to search for parking	4	36	4	16.3	4	5.0	3	11.1	2	28.3	4	0.0	4	14.3	4	16.2	4	24.0
Quality of road surfaces are generally smooth	3	41	3	30.6	3	30.0	4	5.6	4	10.2	3	30.0	3	22.4	1	41.9	3	34.0

*Subtract percent "yes" from 100 percent to get negative answers.

They join the proportion of users in larger urban areas who are unable to drive, or cannot afford to purchase automobiles; and the physically disabled or handicapped. These same groups find their mobility restricted. Even access to basic medical, social/welfare, and recreational services is limited. Evidence of this was found in a typical comment from an elderly woman living outside of the city limits near Huntsville. When asked about travel to social functions, including religious services, she stated:

> "I have only attended my church twice this year (1977) because I have to depend upon my children who live in other parts of the State to visit me. When they come, they will take me to church. Many of my friends have passed (deceased), and I have not been able to pay my respects to them."

She also described her plight relative to getting transportation to purchase basic necessities such as medicine, groceries, and clothing. Her reply went this way:

> "I buy most of my clothes by mail order. When I can get a ride to town, I try to buy as much as I can. I do not have too many neighbors, but some of my friends are more thoughtful than others. Usually, they will come by, every now and then, and see if I need something from town..."

Because of the low economic status of some residents, many felt that automobiles were too expensive. Over 27 percent of the respondents in Conroe; 27 percent in Dallas; 20.4 percent in Galveston; 49 percent in Huntsville; and 20 percent in New Waverly and Fort Worth, respectively, indicated that the prices for automobiles were too high for their income levels. Table 17 provides data on the level of transit dependency and how the extent of such dependency varies from one city to another.

Table 18

Attitudes Toward Selected Factors Which Might Influence Decisions Regarding Public Transit Use

ITEM	Austin		Huntsville		New Waverly		Conroe		Houston		Willis		Galveston		Dallas		Fort Worth	
	R	%yes	R	%yes	R	%yes	R	%yes	R	%yes	R	%yes	R	%yes	R	%yes	R	%yes
Would be willing to reduce because of gas shortage																		
Car use for work	3	77.0	2	77.6	3	75.0	1	83.3	3	44.0	3	65.0	3	42.9	2	27.0	4	28.0
Car for recreational/ and business trips	4	73.0	1	79.6	4	70.0	1	83.3	2	46.4	4	55.0	1	49.0	4	23.0	1	34.0
Take bus to work	2	78.0	3	71.4	2	80.0	2	77.8	5	39.2	2	70.0	4	40.8	4	23.0	3	30.0
Take bus to recreational & business trips	5	72.0	4	67.3	1	85.0	2	77.8	4	43.4	3	65.0	1	49.0	3	25.7	2	32.0
Form carpool to work	1	81.0	6	44.9	2	80.0	3	72.2	1	51.2	1	80.0	3	42.9	1	35.1	5	24.0
Take trip beyond county or area	6	55.0	5	65.3	5	50.0	5	16.7	6	37.3	4	55.0	2	46.9	6	13.5	4	28.0
Walk or use bike	7	48.0	7	32.7	6	25.0	4	27.8	7	34.9	5	20.0	5	32.7	5	20.3	6	22.0
Other	8	5.0	8	4.1	7	0.0	6	0.0	8	3.6	6	0.0	6	0.0	7	0.0	7	14.0
Improvement of the transit would increase use to:																		
Work	1	63.0	3	34.7	2	40.0	2	38.9	1	24.7	2	15.0	3	18.4	1	17.6	2	12.0
Business or shopping trip	2	41.0	1	55.1	1	45.0	1	55.6	2	19.3	1	20.0	1	26.5	3	13.5	1	16.0

Table 18 (Continued)

ITEM	Austin R	Austin %yes	Huntsville R	Huntsville %yes	New Waverly R	New Waverly %yes	Conroe R	Conroe %yes	Houston R	Houston %yes	Willis R	Willis %yes	Galveston R	Galveston %yes	Dallas R	Dallas %yes	Fort Worth R	Fort Worth %yes
School	4	35.0	4	10.2	3	10.0	3	16.7	4	12.0	3	10.0	4	10.2	4	12.2	2	12.0
Other purposes	3	36.0	2	51.0	2	40.0	1	55.6	3	16.9	1	20.0	2	22.4	2	16.2	1	16.0
Which trip is Important																		
Importance of work	2	32.0	2	69.4	1	80.0	1	66.7	1	60.2	1	70.0	1	55.1	1	40.5	3	24.0
Importance of Business or shopping	3	11.0	1	77.6	2	45.0	2	61.1	2	37.3	2	40.0	2	46.9	4	16.2	1	36.0
Importance of school	4	10.0	3	8.2	3	0.0	3	11.1	3	19.3	3	15.0	4	16.3	3	17.6	4	14.0
Other trips	5	1.0	3	8.2	3	0.0	4	0.0	5	9.6	4	0.0	3	32.7	2	25.7	2	30.0
Importance of all the above	1	61.0	4	2.0	3	0.0	4	0.0	4	11.4	4	0.0	5	4.1	5	6.8	5	6.0

Improvements and Support for Public Transportation

Table 18 contains information on specific items relative to factors which may influence changes in attitudes, whether people want public transportation improved, the general pattern of use, and whether people will support a public transportation system.

Respondents were asked to respond to the question: "In recent years, we have heard a lot about the shortage of certain resources such as oil, fuel, gasoline, etc. It appears that these apparent shortages will limit the use of certain modes of transportation, would you be willing to...(take several options?"). An examination of responses to this question reveals that in the case of a severe shortage of resources such as gasoline and oil, minority transit groups would be more willing to reduce the use of their automobiles for business and recreation trips and "to form carpools to work" than to abandon the automobile altogether. The next option was to use public transit.

When urbanized and non-urbanized areas were compared, a high level of interest is found in reducing the use of the automobile for work-related trips. Even in areas where public transit systems do not exist, a majority appeared to be willing to reduce their dependence on the automobile in the event of an energy crisis. And, although there were some variations in the percentage of responses supporting the various options or alternatives, there appeared to be a general consensus that some

options should be considered for dealing with any shortage of energy resources.

In view of the facts just given, respondents were asked to express their attitudes concerning transportation improvements. Most of the survey group considered it important that public transportation facilities be improved. If improved, a substantial proportion of the individuals interviewed stated that they would use it for various trip purposes. Improvement in existing facilities or, in the smaller cities, the development of a public transportation system, are potential actions which could serve as incentives for greater reliance on forms of public transportation. Minority transit riders are apparently more willing to use public transit for work-related trips, business and shopping purposes, even in areas with public transit systems. In terms of priority, the journey-to-work trip is most important. Other priorities, in the order of their importance, include business, shopping, and school. These "compulsory" trips were listed by residents in urbanized and non-urbanized areas.

The general comments made by a majority of the respondents were even more indicative of the willingness of some to work toward improving facilities for public transportation. In non-urbanized areas there was a strong desire for developing forms of public transportation; in urban areas, the emphasis was on improving the existing system and developing other alternative models of travel such as light rail. Some representative comments are included in the appendices as a means of conveying feelings about the importance of public transportation which may have been

lost in the translation from interview to statistical analysis. Of all comments given, those by low income minority transit dependents were the most reflective of the state of existing public transit systems. It should be noted that there may be an imbalance between negative and positive comments. This is intentional because of the necessity to portray the environmental and social conditions to which the "captive rider" is exposed; and to recognize that, whether real or imaginary, the problems adversely affect the mobility status of the respondents and their attitudes toward transit in general.

The final concern of this study relates to a rather brief discussion of the effects of socioeconomic status on public transit use.

Effects of Socioeconomic Status

Any attempt to consider the specific transportation needs of minority groups must necessarily acknowledge the problem of the lack of adequate income. While this study does not dwell specifically on the relationship between socioeconomic status and public transit patronage, it is important to emphasize that income is an important variable in the whole panorama of public transportation development and implementation. If public transit systems are to be supported, a substantial number of persons with higher incomes will have to support it or rural transportation programs will have to receive operating assistance from DOT.

The level of transit dependency among minority groups can best be understood by understanding the nature and consequences of their socioeconomic status as measured by income level,

education, and occupation. Since an earlier chapter discussed the demographic contours of the survey population, this last section will focus on the impact of low income status upon the mobility needs of the poor.

The problems of transportation for low income groups are essentially those associated with income and accessibility. In urbanized and non-urbanized areas there are individuals that are severely constrained in their mobility requirements because of lack of available service or inadequate incomes to meet their transportation needs. All minority group members are not public transit dependents. The largest proportion of them, however, in the inner city and outlying areas in counties in the State are highly dependent upon public transportation.

In the beginning of this report, the assertion was made that low income groups, lacking access to automobiles and adequate incomes, encounter mobility gaps by virtue of the lack of automobile ownership and sufficient incomes to support their transportation needs. To test the validity of this assumption, data on selected socioeconomic variables were correlated with "mode of travel." The findings reveal that of the total number of persons using public transit for the journey-to-work, most had household incomes of less than $7,000 per year. Over 62 percent of the respondents in Dallas; 40 percent of the respondents in Fort Worth; 46.5 percent of those in Houston; 44.2 percent in Galveston; and 33 percent in Austin fell within this income category. These data clearly suggest that inadequate income is one of the constraints faced by low income minority

transit groups. A distribution of respondents who patronize public transportation (bus) by household income is shown in Table 19.

Unlike other disadvantaged groups in need of public transportation, low income persons, particularly the working poor, experience other difficulties in trying to get to work. The data reveal that in some urban areas, particularly Houston and Fort Worth, existing public transportation networks provide unsatisfactory linkages between the job sites and residences of the poor, forming a barrier to their employment on jobs in suburban areas. Some respondents expressed extreme dissatisfaction with transportation routes in general and the lack of crosstown busing in particular. As an explanatory note, transportation service routes are generally determined by demand levels for service, private and public. Many inner city neighborhoods are in a constant state of flux because of highway construction, deteriorated structures that are being demolished, and the out-migration of more affluent individuals. At any point when these activities are at a peak, the level of service demand may fluctuate to the point where transportation service routes are discontinued. Unless there are on-going surveys which update information about the travel needs of the poor (off-board rather than on-board surveys) and adjust bus routes to shifts in residences and job sites, there will continue to be gaps in transit service delivery.

Table 19

A Distribution of Respondents who Use "Bus"
To Go Places By Total Household Income-Yes

CITY	Under $4,999	$5,000-$6,999	$7,000-$9,999	$10,000-$14,999	$15,000-$20,000	Over $20,000	No Response
DALLAS	40.5	21.6	5.4	4.1	2.7	2.7	23.0
FORT WORTH	22.0	18.0	6.0	4.0	6.0	16.0	28.0
HOUSTON	32.0	14.5	16.3	9.6	11.4	10.2	6.0
GALVESTON	32.0	12.2	8.2	8.2	10.2	4.1	25.1
AUSTIN	28.0	20.0	13.0	13.0	6.0	2.0	18.0

One cannot ignore the fact that unemployment, retirement, and disability are also crucial conditions which create transit dependency. The very nature of these conditions imply certain physical constraints which inhibit the free movement of people in urbanized and non-urbanized areas. The problem is much more severe in rural areas because of large numbers of elderly persons on fixed incomes.

A further examination of the data show that although there are variations in the percentage of minority groups using public transit in urban areas by income level, generally the lower the income, the higher the level of dependency on public transportation.

Table 20 shows a distribution of responses on public transportation patronage for urbanized areas by educational level. The data in both Table 19 and Table 20 combine to support the thesis that low income people use public transit more than middle and upper income persons. This generalization, however, is not held constant when educational level is considered. There is a wider distribution of public transit patronage among the various educational levels in most of the sample areas. This pattern may be attributed to some underemployment among the survey population (including part-time workers), unemployed persons, the elderly and handicapped and/or retired and disabled individuals on fixed incomes.

The data for higher income groups include some "voluntary" and "involuntary" carpooling and the use of vans and minibuses in urban areas.

Table 20

Public Transit Patronage by Educational Level

CITY	No School	Grade School	Some High School	High School Grad	Some College	College Grade	Grad School
DALLAS	17.6	31.1	12.2	18.9	14.9	1.4	3.9
FORT WORTH	4.0	20.0	30.0	32.0	8.0	6.0	0.0
HOUSTON	6.0	18.7	10.8	27.7	16.3	8.4	12.1
GALVESTON	10.2	14.3	22.4	22.4	24.5	4.1	2.1
AUSTIN	0.0	6.0	31.0	37.0	21.0	4.0	1.0

For paratransit patrons, the distribution of use by income levels includes all groups, with greater patronage among the lower to lower middle classes. The data on para-transit use for some cities parallel that of public transit patronage. Also, the travel patterns by income levels are highly similar when urbanized and non-urbanized areas are compared with one another. (Table 21).

More upper income persons in Houston and Fort Worth ($20,000 and over) used taxicabs than in other cities and towns. Some indicated that they used taxicabs to and from Houston Intercontinental Airport and the Dallas-Fort Worth Regional Airport rather than Air Coaches and other modes of travel such as limousines. In Houston, residents complained about the length of time they had to wait for service to and from the airport. A few indicated that they had missed flights because of slow service to the airport.

The aforementioned constraints and other observations round out the selected factors which appear to inhibit mobility among a select group of minority respondents in Texas. Although we did not treat all variables in this section, it should be noted that the narrative responses of the respondents reflected problems such as inaccessibility to public transportation, inadequate incomes, the lack of crosstown public transit service, the lack of automobile ownership, and the absence of appropriate linkages between residential locations containing heavy concentrations of black citizens and suburban employment opportunities for semi-skilled and unskilled workers. To be sure, expressways

Table 21

Paratransit Patronage and Household Income

CITY	Under $4,999	$5,000-$6,999	$7,000-$9,999	$10,000-$14,999	$15,000-$20,000	Over $20,000	No Response
DALLAS	40.5	21.6	5.4	4.1	2.7	2.7	23.0
FORT WORTH	22.0	18.0	6.0	4.0	6.0	16.0	28.0
HUNTSVILLE	44.9	18.4	6.1	14.3	6.1	6.1	4.1
CONROE	27.8	38.9	16.7	5.6	0.0	0.0	11.0
WILLIS	35.0	20.0	5.0	25.0	0.0	10.0	5.0
NEW WAVERLY	25.0	25.0	20.0	10.0	0.0	5.0	15.0
HOUSTON	14.5	6.0	9.6	16.3	11.4	10.2	32.0
GALVESTON	12.2	2.0	8.2	8.2	10.2	4.1	55.1
AUSTIN	13.0	20.0	13.0	28.0	6.0	2.0	18.0

that provide access to the Central Business District (CBD) increase the potential for poor people to shop downtown, but inhibit the ability of these same low income persons to reach job sites throughout the metropolitan area.

In non-urbanized areas, the problem of restricted mobility is prevalent. The reasons for such restrictive movement, however, are not necessarily the same as in urbanized areas. To the suburban and rural poor, having access to public transportation service is more important by virtue of their dependency on private automobiles which many cannot afford to own. In instances where people in rural areas work in other parts of the county, the journey-to-work is most important because they not only lack sufficient incomes to pay for automobiles but their options for employment within cities and towns are also limited because of declining job opportunities in the core areas.

This chapter concludes the study designed to evaluate the relative importance of public transit for minority groups in selected cities and towns of Texas. Specific observations, guidelines, and recommendations have been included in the preliminary section at the beginning of this report.

FOOTNOTES

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APPENDIX A. Study Design, Methodology, and Bibliography

Manifestations of the transportation problem in urban and suburban areas are broad and diverse in nature, including traffic congestion, inadequacy of service or inaccessibility, high automobile ownership for a select constituency; low automobile ownership for a large segment of the working and non-working population; rising costs and financial difficulties, and even the absence of physical relationship among the several methods of transportation (Owen, 1966). This proposal will attempt to examine more closely perceptual measures relative to patronage of transit systems and service needs of low-income minority groups. It has been well documented that widespread automobile ownership and expanded highway systems coupled with residential and industrial relocation from central city to suburbia are problems faced by transportation planners. The lack of an effective, flexible system of transportation in metropolitan areas has served to stimulate increased automobile usage. Increasingly, it has become necessary to have access to an automobile to get to suburban employment, since public transit networks generally do not extend to outlying areas on the periphery where most jobs are being relocated. It is our contention that low-income minority groups tend to have less income and poorer access to automobiles than other groups do. It is further assumed that this inaccessibility not only blocks entry into the labor force, but also forces those who do work to settle for lower-paying, seasonal, frictional, and/or part-time employment,

creating a "mobility gap" which further contributes to their dependency state.

Typical urban public transportation research has been concerned with demand-responsiveness, trip characteristics, modal choices and other travel attributes, psychological needs and attitudinal assessment relative to users and non-users of public transit facilities. Such research, both analytical and experiemental, has concentrated on ways and means of persuading automobile users to abandon the automobile and patronize more fully public transportation (Neilson, Voorhees, and Fowlers, 1972).

Problems experienced by minority group transit riders have been adequately discussed by previous researchers. Falcocchio, Pignataro, and others, for instance, examine the transportation problems of inner city poor residents found in Model Cities target areas. The scope of the study was to identify transportation constraints that inhibit mobility. This proposal is not as much concerned with blockages to mobility as it is with how low income groups view public transit facilities in terms of their importance. Falcocchio and others (1972) found that mode utilization for work travel was found to be related not only to income levels (and consequently car ownership) but also to the location of a work site. They concluded that the utilization of a car to reach work sites in areas well served by transit is considerably less than for those areas where transit is not so efficient (Falcocchio, et., 1972).

An interpretive review of consumer attitudes toward transit service is provided by Wachs (1976). The evidence presented in previous studies appear to support concentration of investment in certain types of transit improvements. Wachs contends that in order to make use of the resources available, it is important to identify the characteristics of transit service that appear to be effective in increasing public transportation patronage.

References in the Wach study as well as the Perloff and Connell (1976) study generally emphasize consumer reactions to service improvements in primary linehaul systems rather than responses to secondary neighborhood-serving systems. This research seeks to capitalize on the weaknesses in these studies and others by examining relative importance of transit service to low income minority transit dependent groups in the light of both primary/secondary transit service systems. It will explore the extent to which situational variables (e.g., car ownership and the quality of transit service) are related to transit usage, and those hidden persuasive factors which might influence attitudes toward public transit use.

Other studies, indirectly related to the proposed inquiry, have also examined variables such as relieving traffic congestion, reducing travel time, optimizing the use of existing roadways, and marketing techniques. Still other studies have tended to concentrate more on social, environmental, and cost considerations associated with transportation planning and the

attitudes toward public transportation (Lede', 1975). Conspicuous in their absence from all of these studies are references to specialized needs of differentiated groups such as low-income transit dependent groups, including minorities, or an attempt to quantify, in measurable fashion, certain needs in terms of their unique character or to recognize the inadequacy of planning without special reference to the needs of select segments of the population. While some studies have devoted some attention to the modes of transportation used in the journey-to-work or developed inventories and models for delineating and predicting travel demand and response, few have examined perceptual qualities or behaviorally-based values as they relate to the importance, use or non-use of public transit services. Without adequate quantitative data and qualitative insights into the perceptions of minority target groups that public transportation now serves or hopes to penetrate in the future, it is difficult--if not impossible--to marshal primary and secondary system resources optimally to achieved planned objectives and to enhance the profit position of urban transportation networks. There is also the prevailing notion that if a transit system is to satisfy the needs of the areas it serves, it must be capable of meeting the mobility needs of both generalized and specialized publics. This proposal confines its inquiry to one such specialized group, namely, minority transit riders in selected Texas cities. It seeks to conduct a direct assessment of the problems relative to the incidence of low-income and low automobile ownership

among minority group transit riders and to determine the extent to which they perceive public transportation to be important. A deliberate effort will be made to quantify the importance of service delivery to this group as manifested by their actual and perceived travel needs.

Review of Related Literature

The inadequacy of public transit services in cities serving various groups has been discussed in numerous publications. Demand-oriented studies, job accessibility, mobility patterns, user preferences, behavioral views of transportation attributes, consumer preferences and attitudes represent points of interest reflected in previous literature. Studies which concentrate on low-income transit dependent groups in general and minority groups in particular provide the basic framework out of which our research interest originates. The body of knowledge already developed is generally restrictive when transit service to minority groups are treated as subsidiary systems. Most studies fail to reflect the essence of the problem relative to perceived importance of transit service delivery for specialized groups. One exception to what appears to be a "void" in existing literature is the research completed by Perloff and Connell (1975). They examine subsidiary transit services in an effort to introduce greater flexibility in urban development and planning. The authors emphasize the necessity of planning primary/secondary systems and initiating subsidiary

transit programs for three population groups, including those with specialized needs (individuals generally characterized by low mobility and transit dependency), community interests, and group affiliations. Using selected case studies, Perloff and others attempted to develop a framework for examining subsidiary systems in the context of regional planning. They concluded that the "overall potential impact of subsidiary transit systems on city life is unknown, but their capacity to serve communities and groups who have not been well served by the primary systems seems evident." The weaknesses in the Perloff study appear to be inherent in a lack of in-depth analysis relative to the population groups mentioned as potential users of subsidiary systems, particularly groups with specialized needs such as minorities. Omitted from the study also were specifics regarding operational considerations and information needed to plan such systems.

The inadequacies of the primary system in American cities in serving various groups, particularly groups who are disadvantaged in some sense (the old, the poor--especially minorities, the handicapped and aged), have been highlighted in previous literature. Gurin acknowledged that transportation planners are beginning to learn that different population groups have different travel needs. In his study on "Improving Job Access for the Poor," Gurin (1973) concludes that access to good transportation alone is not, by itself, necessary and insufficient to eliminate unemployment and poverty. Further, he states that work-access improvement programs for poor urban

residents will only be of assistance to people with job information, marketable labor skills, and the knowledge and consequence required to travel. The portion of his study which appears to be relevant to the proposed research involves some of the variables used in his study of the urban poor. He examined the needs likely to be faced by poor people; described likely urban travelers and their motivations; the suitability of modes of transportation and the availability and inadequacy of transit services.

Falcocchio, Pignataro, and McShane (1973) join the array of researchers in measuring the effect of transportation accessibility on inner city unemployment. The study provides empirical evidence relative to transportation service to job sites and attempts to show how service delivery influences the employment potential of low-income workers. This study, like others, fails to examine the perceptions of transit dependent groups relative to their mobility needs. It does, however, make suggestions on evaluating the worth of a capital or operating expenditure for improving transportation accessibility because of the potential for more efficient utilization of resources in the quest for "optimum" transportation improvements. It seems feasible to also look more at human motivations which guide the behavior of users, including both value preferences, vis-a-vis, the relative importance of transit service to select groups in the society -- mainly the "dependent users."

Murin's study on mass transit policy planning devotes a full chapter to transportation and job decentralization relative

to urban disadvantaged groups. Focusing on service groups with the "most critical and neglected needs," he reminds the reader that in most urban areas the mobility problem of the poor is not due to the absence of public transportation. Murin (1966) sees the problem related more to the changing nature of the urban area in which the minority poor live and work. "Living in a central city neighborhood well serviced by public transportation to the central business district is less of an advantage for lower income groups than it once was...because traditional public transportation systems are not structured to provide adequate "reverse commuting" service (Murin, 1966).

Curry (1966), Notess (1966) and Roberts (1966) devote considerable attention to providing transportation to latent demand groups with limited mobility in areas found throughout the metropolitan region. Notess, in particular, confines his inquiry to travel in the black ghetto in his survey of households in Buffalo, New York. He attempts to assess effectiveness of journey-to-work programs and determine the importance of public transportation to people living in central cities. The responses revealed that there were among unemployed workers without cars significant factors that inhibited them from commuting by bus to a good suburban job.

Navin and Gustafson (1973) analyze the similarities and differences in preferences for transit service by selected elements of the national population. They conducted a comparison of selected attitudinal surveys of consumer preferences in an effort to determine consumer attitudes toward public transit.

They concluded that conventional transit has been traditionally designed to satisfy the work trip, thus serving a select population through a generalized transit system. The routes and schedules are fixed and difficult to comprehend. Regular travelers experience little difficulty in their travel needs, but the non-worker, low-income, unemployed persons has different travel needs. The authors advocate more flexibility in routes and schedules so that specialized tripmakers may be accommodated. In addition, Navin and Gustafson (1973) also state that certain segments of the population have indicated that there are differences in preferences for some, suggesting that the modal choice models should be sensitive to the socioeconomic and demographic characteristics of the trip-maker (Navin and Gustafson, 1973).

Other studies on consumer attitudes toward public transportation systems have also been conducted. For the most part, writers have concentrated on particular metropolitan areas, and specific transportation system concepts (Navin, et. al., 1973). McMillan and Assael (1968) as well as Paine and others (1967) conducted inquiries into the nature and effectiveness of conventional bus services in large cities. As indicated by Navin and Gustafson (1973), local demand responsive transit were the major concerns of Golob and others in 1971.Costantino (1974), Golob (1973), Dobson (1974), and Golob and Sheth (1974) conducted a series of studies for General Motors Corporation on behavioral aspects of transportation in relation to user preferences, attitudinal and perceptual attributes of transportation alternatives. Each of

these studies was limited to particular localities or cities or they were more or less case studies of demand-responsive transportation systems.

Tehan and Wachs (1972), however, devoted full attention to psychological considerations in the planning of urban mass transportation systems. Although the document reflects a general review of recent psychological literature, its major focus is on human attributes and motivational aspects of users of transit systems. In our view, the significance of this research lies in its relevance to the marketing aspects of public transportation and its potential for analyzing the more basic factors inherent in evaluating the importance of transit service to all groups.

Transportation officials at all levels of government have demonstrated an interest in acquiring specific information about latent demand groups in urban areas. One study was sponsored by the Urban Mass Transportation Administration (UMTA, 1973). It was undertaken so that the Department of Transportation (DOT) and UMTA might enhance planning efforts for meeting the transit needs of the handicapped and elderly. Utilizing mostly existing sources of information, the study examined such variables as present usage, availability, needs, and gaps in existing transportation coverage. In addition, alternative approaches were postulated and the effects of these same approaches were estimated, including such items as costs, extra users, and related phenomena. Major findings

of the study indicated that there were differences among marketing areas. The study referred to three major types of areas: the rural nonmetropolitan area, the transit-oriented areas, and automobile-oriented areas. The UMTA study, like Perloff and O'Connell, tend to suggest the need for subsidiary systems so that specialized needs of groups such as the elderly, handicapped, low-income workers, and minority groups might be more effectively served by public transportation (UMTA, 1973).

Saltzman, Kidder, and Solomon (1973), Falcocchio, et. al (1973) along with O'Farrell and Markham (1974) examined transportation accessibility and transport mode choice among various population segments. The study by Saltzman and others discuss transit planning for the transportation-disadvantaged in a small town. They contend that high auto ownership rates and low population densities have resulted in a large scale elimination of public transit systems in small towns. "This trend," according to Saltzman, et. al., "exacerbates the mobility problem of the transportation-disadvantaged: the poor, the elderly, the handicapped, and the young. Falcocchio, Pignataro, and McShane (1973) presents "empirical evidence on the manner in which transportation service to job sites influences the employment potential of low-income workers who inhabit the inner city." The investigation differs from previous studies cited in this proposal. Its main emphasis relates to developing estimates of unemployment reduction attributable to proposed accessibility improvements before project implementation. It does not

specifically address such human behavioral elements as perception of the quality of service delivery, but does make reference to the availability of appropriate transport services linking low-income areas and employment centers as an aspect of a rather complex problem associated with a reduction in the disparity between unemployment rates of ghetto residents and the general population (Falcocchio, et. al., 1973).

Attitudinal and situational variables influencing mode of choice comprised the research interest of Hartgen (1974). The major hypothesis examined and substantiated by the findings of the study was that "mode choice is determined primarily by situational constraints such as auto ownership and income and by the quality of alternative modes. He further investigates structure of the mode process with respect to applicability of certain choice criterion forms; psychological weighting of modal attributes in the choice criterion; strength of certain discriminant functional forms; and the relative weight of certain economic and attitudinal variables in predicting mode choice (Hartgen, 1974).

Numerous other studies have explored problematic situations relative to the travel needs and travel behavior of low-income transit dependent groups. Studies reflecting both low-income transit problems and needs peculiar to minority groups have been cited in the bibliography contained in the Appendices.

Study Objectives

The major objectives of the study include: (1) To determine the travel characteristics and other factors which influence the perceptions of minority transit users in selected Texas cities; (2) To determine the specific work-related and non-work related transportation needs of minority transit dependent groups and to assess the nature of the transportation constraints that inhibit free mobility; the nature of existing service delivery and related attitudinal and demographic characteristics; (3) to assess the relative importance of public transit service in terms of the physical and socioeconomic (financial) positions of minority transit riders; and (4) to seek to measure or quantify the impact of low economic status and low automobile ownership on mobility.

Implementation (Application)

It is felt that the findings of the study can be translated into existing and potential planning methodology for the development of new transit plans in cities; for incorporation into existing public transit service plans by local, regional, and state transportation agencies. Data on low-income minority group transit riders can be utilized by the State department of Highways and Public Transportation, local and regional transit agencies in the management of transportation programs; in explaining policy underlying proposals currently pending state action, and in explaining reasons why certain policies should be abandoned or altered

or strengthened.

The organization logically responsible for application of the results of the study will be the State Department of Highways and Public Transportation. A final report outlining major findings of the study will be developed in suitable fashion and disseminated to interested agencies and institutions. The study will be prepared in a format designed to assure maximum utility to decision-makers and practitioners in the field. Abbreviated versions of the findings, designed for wider distribution in a brochure format which would summarize the nature and reliability of the survey, will be prepared for dissemination to academic and research institutions, professional organizations and associations affiliated with the transportation field, municipal departments and other government agencies, and interested private and public agencies and organizations.

Benefits

Optimistically, an evaluation of the importance of transit service to minority groups and perceived travel needs could, over time, lead to more effective planning and, hence, an increase in public transit ridership as a result of more in-depth understanding of low income transit dependent groups. If there is an increase in ridership as a result of more effective service delivery (based on increased understanding

of travel needs and habits of these groups), the probability of a decline in costs associated with transit service increases. Also, an increase in the need for public transit service for the work-related trip and external fiscal benefits of travel may accrue. Specific benefits which can emanate from the survey effort may include: (1) employment-related benefits; (2) the reduced costs for providing public transit services for low-income dependent groups, resulting from an increase in ridership; (3) informal transit benefits to future planning efforts; and (4) the general benefits, of data on latent demand groups, widely diffused, which accrue to general transportation planning methodology for transportation agencies as a whole.

Work Plan (Research Design and Methodology)

The study design will involve a two-part research effort designed to explore specific variables relative to the perceived importance of public transit to the mobility efforts of low-income minority transit dependent groups. The primary approach to the problem will consist of a survey of minority transit riders in selected Texas cities to determine their actual characteristics and transit travel patterns; relative importance of transit service to their means of mobility inside and outside the metropolitan area; and to quantify attitudes relative to public transit of users and non-users. The latter emphasis differs from previous efforts reflected

in the extensive literature review of projects undertaken to provide policy-relevant data on low income transit dependent groups, including the poor, aged, handicapped, and minorities. We will not concentrate on one single group (users vs. non-users), but will seek to compare and delineate those hidden persuasive attributes which tend to shed light on the importance, values, and benefits of public transit as a particular travel mode for these select groups.

Further, we propose to specify both internal and external conditions which may adversely affect travel behavior. This approach appears justifiable when one considers that some variables are not subject to policy-maker control by virtue of external circumstances impinging upon the attitudes and behavior patterns of the population to be affected. It is our intent to examine the external conditions identified in previous research as relevant to the frame of reference which we have established for this research. The following variables serve as examples: City size and location, racial mix (percent minority), current level of patronage, demographic make-up of population (employment-occupational-industrial variables), and other factors such as trip-maker constraints in analyzing labor force participation.

The sample population will be drawn from four (4) Texas cities, and it will vary in size according to population. The sample size and actual sample selection will be made by the

Urban Resources Center in conjunction with the Houston Urban Project Office of the State Department of Highways and Public Transportation. The estimated total number of surveys will approximate at least ten percent of the population for cities selected.

The survey questionnaire will be divided into two parts. The first part of the survey instrument will include such items as perceived importance of transportation, choice of mode, mode utilization, perceived quality of current service, and priority of trip purposes for the total sample population. The second part of the questionnaire will primarily address such variables as (1) conditions for increased public transit use; (2) level of present usage of public transit; (3) availability, needs, and gaps, in existing public transportation services; (4) travel needs, characteristics of minority transit riders, and travel behavior as manifested in mobility patterns and trip purposes; and (5) those characteristics of transit service considered most effective in attracting users to transit modes and the characteristics least important, including variables such as travel time, reliability, convenience, comfort, safety, cost, and amenity of transit service.

The major hypothesis to be tested is: The minority low-income transit riders are constrained in their mobility by both their economic predicament, the multiplicity of the nature of their travel behavior, and certain characteristics

of the public transit system. It is further hypothesized that low-income minority groups are dependent on a unimodal system of transportation (automobile versus bus), and that the former is not economically accessible to them by virtue of their low income status.

Methodology. Within the framework outlined above, the measurement devices to be used in the study will include general multiple-choice items, paired comparisons and semantic scaling, and attitudinal items designed to measure user and non-user preferences, perceived importance of public transit service. The paired comparison technique will be used to establish a scale of preferences for transit rider characteristics, and behavioral elements; whereas, the scaling technique will be used to measure travel alternatives, and a thematic-apperception technique for determining opinions concerning overall adequacy of existing public transit services, as perceived by the respondents. Several matrices will be developed and related to minority transit rider characteristics. An outline of the methodology underlying both techniques is discussed in Vitt, et. al. (1970), Mosteller (1951) and Torgerson (1967).

A clustering sampling technique will be used to identify survey respondents in the respective cities. Within each cluster, a systematic random selection process will be used to identify survey respondents.

Varied statistical techniques will be used in the quantification of the items included in the survey instrument. Several alternative statistical techniques may be employed in the analysis and interpretation of data. These may include use of a Binomial test which will provide the various values which might occur under the hypothesis, and/or the Friedman two-way analysis of variance by ranks (Seigel, 1956) and/or the Spearman Rank Correlation Coefficient to indicate disparities between rankings of value items.

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Appendix B: Questions Used in Investigation by Variables

QUESTIONS USED IN THE INVESTIGATION

Travel Characteristics and Other Factors

Question 1 How do you go places when you leave the house?

1 Own car (or spouse drives)
2 By Bus
3 Walk
4 Take a taxi
5 Ride with friend or relative (private car)
6 Agency transportation
7 No response
8 DK/Refusal

Question 8 How would you rate your overall satisfaction with the transportation in this city/county?

1 Excellent
2 Good
3 Fair
4 Poor
9 DK/Refusal

Question 9 Does your household own a car?

1 Yes
2 No

Question 10 How many cars (including trucks, motorcycles, etc.) are owned by your household?

0 None
1 One
2 Two
3 Three
4 Four or more
9 DK/Refusal

Transportation Problems

Question 2 To what extent is getting to where you want to go for normal activities a problem for you?

1 Major problem
2 Moderate problem
3 Minor problem
4 No problem
8 No Response
9 DK/Refusal

Question 3 What is nature of problem?

1 Health/Mobility
2 Eyesight poor
3 Cost of transportation
4 Don't like to depend on others
5 Bus routes not suitable
6 No public transportation
7 Other, specify
8 No response
9 DK/Refusal

Attitudinal and Perceptual Factors

Question 7 Do you have any public transportation in this city/county?

1 Yes
2 No
9 DK/Refusal

Question 11 How acceptable or unacceptable to you are the following forms of transportation?

1 Car
2 Bus for visiting
3 Bus for recreation
4 Bus at night or in bad weather
5 Walking
6 Taxi
7 Other, specify

As a rider, how would you rate the transit vehicles in this city (town)/county on the following comfort factors?

Question 20 Temperature-humidity

1 Usually comfortable
2 Occasionally uncomfortable
3 Often uncomfortable
4 Usually uncomfortable
5 DK/Refusal

Question 21 Crowdedness (peak hours)

1 Almost always get a seat
2 Occasionally have to stand at least part of the way
3 Usually have to stand all the way
9 DK/Refusal

Question 22 Noisiness

1 Quiet
2 Mostly quiet
3 Fairly noisy
4 Very noisy
9 DK/Refusal

Question 23 Cleanliness

1 Clean
2 Mostly clean
3 Fairly dirty
4 Very dirty
9 DK/Refusal

Question 24 Courteousness of Drivers

1 Usually very courteous
2 Fairly courteous
3 Unpleasant
9 DK/Refusal

Question 25 Odors

1 No problem
2 Occasionally bothersome fumes or odors
3 Usually unpleasant
9 DK/Refusal

How would you rate the following factors as reasons why you have not used public transit for travel within this city (town)/county in the last month?

Question 26 Takes too long

1 Major reason
2 Minor reason
3 Not a reason

Question 27 Transit stop not close enough

1 Major reason
2 Minor reason
3 Not a reason

Question 28 Transit runs too infrequently

1 Major reason
2 Minor reason
3 Not a reason

Question 29 Routes do not go to desired destination

1 Major reason
2 Minor reason
3 Not a reason

Question 30 Prefer convenience of auto

1 Major reason
2 Minor reason
3 Not a reason

Question 31 Transit vehicles too uncomfortable and unpleasant

1 Major reason
2 Minor reason
3 Not a reason

Question 32 Don't like crowds

1 Major reason
2 Minor reason
3 Not a reason

Question 34 Too expensive

1 Major reason
2 Minor reason
3 Not a reason

Question 35 No public transit in area

1 Major reason
2 Minor reason
3 Not a reason

Question 36 Other, specify: _____

1 Major reason
2 Minor reason
3 Not a reason

Question 37 How would you rate your overall satisfaction with automobile driving conditions within the city (town)/ county?

1 Excellent
2 Good
3 Fair
4 Poor
9 DK/Refusal

Question 38 Thinking of all types of trips (work, recreation, shopping, etc.) how would you rate your overall ability to get to the places you want to go within this city (town)/county?

1 Excellent
2 Good
3 Fair
4 Poor
5 DK/Refusal

Question 39 How would you rate each of the following factors as reasons for your non-use of automobiles for travel within the city (town)/county?

Question 39a Don't have access

1 Major reason
2 Minor reason
3 Not a reason

Question 39b Too expensive

1 Major reason
2 Minor reason
3 Not a reason

Question 39c Too much traffic

1 Major reason
2 Minor reason
3 Not a reason

Question 39d Don't like traveling in auto

1 Major reason
2 Minor reason
3 Not a reason

Question 39e Can't drive; too old/too young/unable to drive

1 Major reason
2 Minor reason
3 Not a reason

Question 39f Other, specify: _____

1 Major reason
2 Minor reason
3 Not a reason

Importance of Transit

Question 12 How important are the following when or if you consider using a particular type of transportation?

Low cost

1 Important
2 Unimportant
3 DK/NR

Being available on time

1 Important
2 Unimportant
3 DK/NR

Short waiting time

1 Important
2 Unimportant
3 DK/NR

Vehicle comfort

1 Important
2 Unimportant
3 DK/NR

Privacy from other people

1 Important
2 Unimportant
3 DK/NR

Short riding time

1 Important
2 Unimportant
3 DK/NR

Vehicle safety

1 Important
2 Unimportant
3 DK/NR

Question 13 Have you used any form of public transit in the last three months?

1 Yes
2 No

Question 14 How often have you used public transit in the last month?

0 Not at all
1 Once
2 Twice
3 Three times or more

Transportation Costs

Question 15 What is the approximate amount you spend on transportation each month?

1 Less than $5.00
2 $5.00 - 6.99
3 $7.00 - 8.99
4 $9.00 - 10.99
5 $11.00 - 12.99
6 $13.00 - 14.99
7 $15.00 and over
8 No Response
9 DK/Refusal

Question 16 What does this cost include

Car payment

1 Yes
2 No

Car repairs

1 Yes
2 No

Gas, Oil

1 Yes
2 No

Bus fares

1 Yes
2 No

Taxi

1 Yes
2 No

Other

1 Yes
2 No

DK/Refusal

1 Yes
2 No

Question 17 Which of the following keeps the cost of transportation down for you?

Bus Pass

1 Yes
2 No

Someone helps me pay car expenses

1 Yes
2 No

Someone takes me places

1 Yes
2 No

Church bus or other

1 Yes
2 No

Private forms of transportation

1 Yes
2 No

Other, specify: _____

1 Yes
2 No

Question 18 Do you have enough funds to meet your transportation needs?

1 Yes
2 No

Non-Work Related Transit Needs

Question 4 Which of the following present a transportation problem for you?

1 Shopping for groceries
2 Other shopping
3 Traveling to work
4 Getting to doctor
5 Visiting

6 Getting to church or other group activities
7 Other, specify: _____
8 No Response
9 DK/Refusal

Question 5 What is your usual way of traveling to work?

1 Car (own)
2 Car (rider/pool)
3 Bus
4 Taxi
5 Walk
6 Motorcycle/scooter
7 No Response
9 DK/Refusal

Question 6 How do you travel to places other than work?

1 Car (own)
2 Car (rider/pool)
3 Bus
4 Bicycle
5 Taxi
6 Walk
7 Motorcycle
8 No Response
9 DK/Refusal

Transportation Needs

Question 19 How serious are your transportation needs - rank in order of severity - 3 most severe.

____ Inadequate financial resources for unmet transportation needs
____ Lack of available public transportation in city/county.
____ Other, specify: _____
____ No Response
____ DK/Refusal

Special Issues on Automobile Travel

Question 47 How difficult is it usually to find parking at your destination (Peak/off peak)

1 Many places available
2 Few places available
3 Usually have to search for a place
4 Other, specify: _____
5 DK/Refusal

Question 48 How would you rate the quality of the road surfaces over which you ride within this city (town)/ county?

1 Generally smooth
2 Occasionally bumpy
3 Frequently bumpy
4 Very bumpy
5 DK/Refusal

Question 49 If there were a shortage of certain resources such as oil, fuel, gas, etc. would you be willing to:

Reduce the use of your car for travel to work?

1 Yes
2 No

Reduce the use of car for business and recreational activities?

1 Yes
2 No

Take bus to work

1 Yes
2 No

Take bus for business and recreational activities?

1 Yes
2 No

Form carpool for travel to work?

1 Yes
2 No

Take trips beyond this county or area?

1 Yes
2 No

Walk or use bicycle for transportation?

1 Yes
2 No

Other, Specify: _____

If the present transit system were expanded or improved, would you ride the bus rather than drive your car?

Question 58 To work?

1 Frequent
2 Occasionally
3 Seldom
4 Never

Question 59 For business or shopping?

1 Frequent
2 Occasionally
3 Seldom
4 Never

Question 60 To school?

1 Frequent
2 Occasionally
3 Seldom
4 Never

Question 61 For other trip purposes?

1 Frequent
2 Occasionally
3 Seldom
4 Never

Which of the following trips would you say is the most important?

Question 62 Work

1 Yes
2 No

Question 63 Business or shopping

1 Yes
2 No

Question 64 School

1 Yes
2 No

Question 65 Other

1 Yes
2 No

Question 66 All of these

1 Yes
2 No

Demographical Information

Question 1 Total of persons residing in household?

Question 2 What age group are household members?

Question 3 How many adult members are gainfully employed?

Question 4 Total household income per year (before taxes)?

Question 5 Do you rent or own the dwelling in which you live?

Question 6 What type of dwelling unit do you live in?

Question 7 How many years have you lived in this city?

Question 8 Do you like the area?

Question 9 Do you plan to move?

Question 10 What is highest educational level reached?

Question 11 What is occupation?

Question 12 What is sex of respondent?

Question 13 What is age of respondent?

Appendix C: Sample Comments of Respondents and Statistical Information

Figure 1

ATTITUDES EXPRESSED BY USERS AND NON-USERS
OF PUBLIC TRANSPORTATION
(Sample of Responses)

USER COMMENTS	NON-USER COMMENTS
1.1 Transportation Needs & Problems	1.1 Transportation Needs & Problems
I find the buses somewhat cool (comfort factor)	The planners of public transportation are not interested in getting any ideas from folks like us--low income people--certainly not blacks...
Can't relax because of noise on buses during school hours and radios blasting or loud talk... The students walk all over you. (Noisiness)	I need to be able to go where I want to without problems. The buses don't run on the right routes...(Accessibility)
It's hard to get good jobs because public transportation is not convenient in my neighborhood. If you found a job in Mesquite, for instance, you cannot get there by bus from where I live... (Accessibility)	The buses are not convenient...need to have better ways of getting to the doctor, shopping, etc...(Convenience)
The bus service is good if you are going downtown. But, how many of us poor people work downtown?...Private homes are in outer areas, mostly the suburbs...	I would not be able to work if I depended on public transportation. I live in Oak Cliff but work in North Dallas. The buses run too infrequent for me to try to ride them. I depend on my own car...(Automobile dominance/dependency)
The bus service is awful...You have to go downtown to transfer to areas close to where you live...	I spend most of my money on transportation because we don't have public buses in this town. This is bad...I only get a Social Security check. (Cost)
They built freeways for "uppity" people... not common people like myself. Whites moved to the suburbs and they built... built, built...just freeways. Finally, somebody thought...buy a few buses so we can get the maids out here in our area, but let them go downtown so they can leave part of the money in the stores there.	We don't even have good taxi service here. If you call a cab and live too far out, the driver may not come because of bad, unpaved

Figure 1 (Continued)

USER COMMENTS	NON-USER COMMENTS
A real game, you know...(A scenario on inconvenience and lack of accessibility)	roads. If it is a rainy day, you waste your time calling a taxi...
The buses don't go where I want to go.	In rural areas like ours, you can't get to jobs, your children may miss school if the roads are muddy because the school bus can't get here. If the weather is cold, I cannot get to town, and I may not see people for months. (Lack of access; feeling of isolation).
The service is not as good as it once was. New buses are put on the better routes like in the Galleria/Greenway/Post-Oak Area. Transportation planning in Houston is to satisfy the rich...not a service for the poor who need it...	We need a good public transit system in this county (Walker) because of the good health clinics and hospitals in Houston and Galveston. We could get better care if we go to the doctors and things there (Health-related needs)
I think public transportation is reasonably convenient. I just have too many places to go for it to be my only means of travel.	My car is always available when I need it. The buses run on fixed schedules in Dallas and Fort Worth. When I have to get around in either place, I just drive my little car...
No convenient bus stops...no shelters for waiting.	We really need some public transit to get around here. The old people really suffer (Transit dependency).
Takes too long.	
A lot of talking, but no real planning for public transportation in Houston.	
The overall performance of public transportation in Fort Worth is poor...not quite as bad as some other cities, though...	
Public Transportation is acceptable, if they would make it serve people rather than spending money on all of these feas...(feasibility studies...)	

Figure 1 (Continued)

1.2 Attitudes Expressed about the Statement: "I would use public transportation if..."

It was absolutely necessary.

Better service was available.

The schedules were more convenient, and if more middle class people used it.

If there was a public transportation system in this town.

If I could get to work more conveniently.

Somebody should start a small bus service in this town.

They were clean...roaches ride the buses with me...

There was less traffic congestion so buses could move faster.

My employer paid all or part of the cost.

The buses were safer.

Better service was available.

Bus routes were closer.

They had more express service.

The cost for running my automobile keeps climbing.

It was dependable.

It did not take too long to get where I wanted to go.

There were bus shelters in all parts of the city and not just in rich areas like near Rice University and the Medical Center.

Someone could explain to me...where to catch a bus in this city.

Houston could come up with a balanced transportation system, including light rail...With the kind of lousy planning and rhetoric we have had recently, who needs public transportation and the transit administrator?

They adjust bus service so it serves all neighborhoods...

The costs were cheaper than running my car.

If I had enough money...I ride with friends sometimes, but it's free. I cannot afford the high rates of transportation.

They made persons aware of certain benefits, and provided more personal touch to services...like having stops in front of houses rather than on dark corners or having buses to carry groups shopping on certain days of the week.

If they up-date services by having route changes when job locations change; and have bus drivers with better attitudes.

Table 22

A Quantitative Analysis of Socioeconomic Variables
for Urban/Non-Urbanized Areas of Texas (1977)

ITEM	URBAN										NON-URBAN							
	Austin		Dallas		Ft. Worth		Galveston		Houston		Conroe		Huntsville		New Waverly		Willis	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professional/Tech. (Ed. Level)																		
No Schooling	-	-	-	-	-	-	-	-	1	3.4	-	-	-	-	-	-	-	-
Grade School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Some High School	-	-	-	-	-	-	-	-	1	3.4	-	-	-	-	-	-	-	-
High School Grad.	-	-	1	33.3	-	-	1	20.0	2	6.9	1	10.0	1	25.0	-	-	-	-
Some College	4	57.1	1	33.3	-	-	2	40.0	6	20.7	-	-	1	25.0	-	-	-	-
College Grad.	2	28.6	-	-	1	10.0	1	20.0	6	20.7	-	-	2	50.0	1	10.0	-	-
Graduate School	1	14.3	-	-	-	-	1	20.0	9	31.0	-	-	-	-	-	-	-	-
Professional/Tech.	-	-	1	33.3	-	-	-	-	4	13.8	-	-	-	-	-	-	-	-
Professional/Tech. (Income)																		
Under $4,999	-	-	-	-	-	-	-	-	2	6.9	-	-	-	-	-	-	-	-
$ 5,000 - $ 6,999	-	-	-	-	-	-	-	-	-	-	1	10.0	-	-	-	-	-	-
$ 7,000 - $ 9,999	-	-	1	33.3	-	-	-	-	2	6.9	-	-	-	-	-	-	-	-
$10,000 - $14,999	5	71.4	-	-	1	10.0	-	-	8	27.6	-	-	2	50.0	1	10.0	-	-
$15,000 - $20,000	-	-	1	33.3	-	-	1	20.0	2	6.9	-	-	1	25.0	-	-	-	-
Over $20,000	1	14.3	-	-	-	-	1	20.0	10	34.5	-	-	-	-	-	-	-	-
No Response	1	14.3	1	33.3	-	-	3	60.0	5	17.2	-	-	1	25.0	-	-	-	-
Managerial/Admin. (Ed. Level)																		
No Schooling	-	-	1	33.3	-	-	1	10.0	1	12.5	-	-	-	-	-	-	-	-
Grade School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Some High School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(Table 22 Continued)

ITEM	URBAN										NON-URBAN							
	Austin		Dallas		Ft. Worth		Galveston		Houston		Conroe		Huntsville		New Waverly		Willis	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
High School Grad	1	50.0	-	-	-	-	1	10.0	3	37.5	-	-	1	33.3	-	-	-	-
Some College	-	-	1	33.3	-	-	-	-	2	25.0	-	-	-	-	-	-	-	-
College Grad.	1	50.0	-	-	-	-	-	-	1	12.5	-	-	1	33.3	-	-	-	-
Graduate School	-	-	1	33.3	-	-	-	-	1	12.5	-	-	-	-	-	-	-	-
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	1	33.3	-	-	-	-
Managerial/Admin. (Income)																		
Under $4,999	-	-	1	33.3	-	-	-	-	1	12.5	-	-	1	33.3	-	-	-	-
$ 5,000 - $ 6,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$ 7,000 - $ 9,999	1	50.0	1	33.3	-	-	-	-	1	12.5	-	-	-	-	-	-	-	-
$10,000 - $14,999	1	50.0	1	33.3	-	-	-	-	2	25.0	-	-	1	33.3	-	-	-	-
$15,000 - $20,000	-	-	-	-	-	-	1	10.0	3	37.5	-	-	-	-	-	-	-	-
Over $20,000	-	-	-	-	-	-	-	-	-	-	-	-	1	33.3	-	-	-	-
No Response	-	-	-	-	-	-	-	-	1	12.5	-	-	-	-	-	-	-	-
Clerical (Ed. Level)																		
No Schooling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grade School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Some High School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
High School Grad.	3	35.0	2	50.0	-	-	-	-	4	33.3	-	-	-	-	-	-	-	-
Some College	9	75.0	2	50.0	-	-	-	-	3	25.0	-	-	1	10.0	-	-	-	-
College Grad.	-	-	-	-	1	10.0	-	-	3	25.0	-	-	-	-	-	-	-	-
Graduate School	-	-	-	-	-	-	-	-	2	16.7	-	-	-	-	-	-	-	-
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clerical (Income)																		
Under $4,999	-	-	-	-	-	-	-	-	2	16.7	-	-	-	-	-	-	-	-
$ 5,000 - $ 6,999	1	8.3	1	25.0	1	10.0	-	-	-	-	-	-	-	-	-	-	-	-
$ 7,000 - $ 9,999	2	16.7	1	25.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$10,000 - $14,999	3	25.0	-	-	-	-	-	-	1	8.3	-	-	1	10.0	-	-	-	-

(Table 22 Continued)

	URBAN										NON-URBAN							
	Austin		Dallas		Ft. Worth		Galveston		Houston		Conroe		Huntsville		New Waverly		Willis	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
$15,000 - $20,000	4	33.3	-	-	-	-	-	-	4	33.3	-	-	-	-	-	-	-	-
Over $20,000	1	8.3	1	25.0	-	-	-	-	3	25.0	-	-	-	-	-	-	-	-
No Response	1	8.3	1	25.0	-	-	-	-	2	16.7	-	-	-	-	-	-	-	-
Craftsmen (Ed. Level)																		
No Schooling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grade School	-	-	-	-	1	10.0	-	-	1	12.5	-	-	-	-	-	-	-	-
Some High School	-	-	-	-	-	-	-	-	1	12.5	1	10.0	1	10.0	-	-	1	50.0
High School Grad.	3	10.0	-	-	-	-	3	75.0	3	37.5	-	-	-	-	-	-	1	50.0
Some College	-	-	-	-	-	-	1	25.0	3	37.5	-	-	-	-	-	-	-	-
College Grad.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Graduate School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Under $4,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$ 5,000 - $ 6,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	50.0
$ 7,000 - $ 9,999	1	33.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$10,000 - $14,999	2	66.7	-	-	-	-	1	25.0	-	-	1	10.0	1	10.0	-	-	1	50.0
$15,000 - $20,000	-	-	-	-	-	-	1	25.0	3	37.5	-	-	-	-	-	-	-	-
Over $20,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No Response	-	-	-	-	1	10.0	2	50.0	5	62.5	-	-	-	-	-	-	-	-
Equipment Operators (Ed. Level)																		
No Schooling	-	-	-	-	-	-	-	-	-	-	1	50.0	-	-	-	-	1	10.0
Grade School	-	-	2	50.0	1	33.3	1	25.0	-	-	-	-	-	-	-	-	-	-
Some High School	-	-	-	-	-	-	1	25.0	3	37.5	1	50.0	-	-	1	33.3	-	-
High School Grad.	1	10.0	2	50.0	2	66.7	-	-	5	62.5	-		-	-	2	66.7	-	-
Some College	-	-	-	-	-	-	2	50.0	-	-	-	-	-	-	-	-	-	-

Table 22 (Continued)

ITEM	URBAN										NON-URBAN							
	Austin		Dallas		Ft. Worth		Galveston		Houston		Conroe		Huntsville		New Waverly		Willis	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
College Grad.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Graduate School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Equipment Operators (Ed. Level)																		
Under $4,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$ 5,000 - $ 6,999	-	-	2	50.0	2	66.7	-	-	-	-	1	50.0	-	-	2	66.7	-	-
$ 7,000 - $ 9,999	-	-	-	-	-	-	1	25.0	1	12.5	1	50.0	-	-	1	33.3	-	-
$10,000 - $14,999	-	-	-	-	-	-	1	25.0	4	50.0	-	-	-	-	-	-	1	10.0
$15,000 - $20,000	-	-	-	-	1	33.3	-	-	-	-	-	-	-	-	-	-	-	-
Over $20,000	-	-	-	-	-	-	-	-	1	12.5	-	-	-	-	-	-	-	-
No Response	1	10.0	2	50.0	-	-	2	50.0	2	25.0	-	-	-	-	-	-	-	-
Laborers (Ed. Level)																		
No Schooling	-	-	-	-	-	-	-	-	1	10.0	1	10.0	-	-	-	-	-	-
Grade School	1	6.7	1	10.0	-	-	-	-	1	10.0	-	-	1	12.5	-	-	-	-
Some High School	8	53.3	-	-	2	66.7	-	-	4	40.0	-	-	1	12.5	-	-	-	-
High School Grad.	5	33.3	-	-	1	33.3	1	50.0	4	40.0	-	-	4	50.0	-	-	4	80.0
Some College	-	-	-	-	-	-	1	50.0	-	-	-	-	2	25.0	-	-	-	-
College Grad.	1	6.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	20.0
Graduate School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Laborers (Income)																		
Under $4,999	3	20.0	-	-	1	33.3	1	50.0	1	10.0	-	-	3	37.5	-	-	-	-
$ 5,000 - $ 6,999	6	40.0	1	10.0	-	-	-	-	1	10.0	-	-	2	25.0	-	-	1	20.0
$ 7,000 - $ 9,999	1	6.7	-	-	-	-	-	-	-	-	-	-	2	25.0	-	-	1	20.0
$10,000 - $14,999	3	20.0	-	-	-	-	1	50.0	4	40.0	-	-	-	-	-	-	2	40.0
$15,000 - $20,000	-	-	-	-	-	-	-	-	2	20.0	-	-	-	-	-	-	-	-

Table 22 (Continued)

ITEM	URBAN										NON-URBAN							
	Austin		Dallas		Ft. Worth		Galveston		Houston		Conroe		Huntsville		New Waverly		Willis	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Over $20,000	-	-	-	-	-	-	-	-	-	-	-	-	1	12.5	-	-	1	20.0
No Response	2	13.3	-	-	2	66.7	-	-	2	20.0	1	10.0	-	-	-	-	-	-
Service Workers (Ed. Level)																		
No Schooling	-	-	1	25.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grade School	-	-	-	-	-	-	1	50.0	1	6.7	-	-	-	-	-	-	-	-
Some High School	5	27.8	-	-	-	-	-	-	1	6.7	-	-	2	66.7	-	-	-	-
High School Grad.	9	50.0	1	25.0	2	10.0	1	50.0	7	46.7	-	-	-	-	3	75.0	-	-
Some College	4	22.2	2	50.0	-	-	-	-	5	33.3	-	-	1	33.3	1	25.0	1	100.0
College Grad.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Graduate School	-	-	-	-	-	-	-	-	1	6.7	-	-	-	-	-	-	-	-
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Service Workers (Income)																		
Under $ 4,999	-	-	1	25.0	-	-	-	-	3	20.0	-	-	2	66.7	-	-	-	-
$ 5,000 - $ 6,999	4	22.2	-	-	-	-	-	-	1	6.7	-	-	1	33.3	1	25.0	-	-
$ 7,000 - $ 9,999	4	22.2	-	-	1	50.0	1	50.0	3	13.3	-	-	-	-	2	50.0	-	-
$10,000 - $14,999	6	33.3	2	50.0	-	-	-	-	3	20.0	-	-	-	-	1	25.0	1	100.0
$15,000 - $20,000	1	5.6	-	-	-	-	-	-	2	13.3	-	-	-	-	-	-	-	-
Over $20,000	-	-	-	-	-	-	-	-	1	6.7	-	-	-	-	-	-	-	-
No Response	3	16.7	1	25.0	1	50.0	1	50.0	3	20.0	-	-	-	-	-	-	-	-
Homemaker (Ed. Level)																		
No Schooling	-	-	-	-	1	16.7	-	-	-	-	1	50.0	-	-	-	-	-	-
Grade School	-	-	1	25.0	2	33.3	2	40.0	4	33.3	-	-	1	20.0	-	-	-	-
Some High School	2	25.0	2	50.0	2	33.3	-	-	1	8.3	1	50.0	2	40.0	-	-	-	-
High School Grad	6	75.0	1	25.0	-	-	1	20.0	5	41.7	-	-	2	40.0	-	-	-	-
Some College	-	-	-	-	1	16.7	2	40.0	1	8.3	-	-	-	-	-	-	-	-

Table 22 (Continued)

ITEM	URBAN										NON-URBAN							
	Austin		Dallas		Ft. Worth		Galveston		Houston		Conroe		Huntsville		New Waverly		Willis	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Over $20,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	100.0
No Response	2	25.0	2	66.7	2	66.7	-	-	2	33.3	-	-	-	-	-	-	-	-
Retired (Ed. Level)																		
No Schooling	-	-	3	15.0	1	9.1	1	12.5	-	-	1	12.5	2	13.3	-	-	1	20.0
Grade School	5	62.5	11	55.0	2	18.2	2	25.0	15	62.3	5	62.5	3	20.0	1	100.0	3	60.0
Some High School	2	25.0	3	15.0	3	27.3	4	50.0	1	4.2	-	-	5	33.3	-	-	-	-
High School Grad.	1	12.5	1	5.0	3	9.1	-	-	4	16.7	-	-	5	33.3	-	-	-	-
Some College	-	-	1	5.0	1	9.1	-	-	2	8.3	2	25.0	-	-	-	-	-	-
College Grad.	-	-	-	-	1	-	1	12.5	-	-	-	-	-	-	-	-	-	-
Graduate School	-	-	1	5.0	-	-	-	-	2	8.3	-	-	-	-	-	-	1	20.0
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Retired (Income)																		
Under $4,999	3	37.5	15	75.0	4	36.4	1	12.5	4	16.7	5	62.5	10	66.7	-	-	3	60.0
$ 5,000 - $ 6,999	2	25.0	3	15.0	4	36.4	-	-	-	-	3	37.5	5	33.3	1	100.0	2	40.0
$ 7,000 - $ 9,999	-	-	-	-	-	-	1	12.5	4	16.7	-	-	-	-	-	-	-	-
$10,000 - $14,999	2	25.0	-	-	-	-	1	12.5	1	4.2	-	-	-	-	-	-	-	-
$15,000 - $20,000	-	-	-	-	1	9.1	-	-	2	8.2	-	-	-	-	-	-	-	-
Over $20,000	-	-	1	5.0	-	-	-	-	1	4.2	-	-	-	-	-	-	-	-
No Response	1	12.5	1	5.0	2	18.2	5	62.5	1	4.2	-	-	-	-	-	-	-	-
Other (Ed. Level)																		
No Schooling	-	-	3	15.0	-	-	1	12.5	-	-	1	12.5	-	-	-	-	-	-
Grade School	5	62.5	11	55.0	1	25.0	2	25.0	4	33.3	5	62.5	1	33.3	1	100.0	-	-
Some High School	2	25.0	3	15.0	1	25.0	4	50.0	1	8.3	-	-	1	33.3	-	-	-	-
High School Grad.	1	12.5	1	5.0	1	25.0	-	-	2	16.7	-	-	-	-	-	-	2	100.0
Some College	-	-	1	5.0	1	25.0	-	-	4	33.3	2	25.0	-	-	-	-	-	-
College Grad.	-	-	-	-	-	-	1	12.5	1	8.3	-	-	1	33.3	-	-	-	-
Graduate School	-	-	1	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Professional/Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 22 (Continued)

ITEM	URBAN										NON-URBAN							
	Austin		Dallas		Ft. Worth		Galveston		Houston		Conroe		Huntsville		New Waverly		Willis	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
College Grad.	-	-	-	-	-	-	-	-	1	8.3	-	-	-	-	-	-	-	-
Graduate School	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Homemaker (Income)																		
Under $4,999	1	12.5	1	25.0	2	33.3	-	-	-	-	-	-	2	40.0	-	-	-	-
$ 5,000 - $ 6,999	2	25.0	1	25.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$ 7,000 - $ 9,999	-	-	-	-	-	-	-	-	2	16.7	1	50.0	1	20.0	-	-	-	-
$10,000 - $14,999	3	37.5	-	-	1	16.7	-	-	-	-	-	-	2	40.0	-	-	-	-
$15,000 - $20,000	-	-	-	-	-	-	1	20.0	-	-	-	-	-	-	-	-	-	-
Over $20,000	-	-	-	-	-	-	1	20.0	1	8.3	-	-	-	-	-	-	-	-
No Response	2	25.0	2	50.0	3	50.0	3	60.0	5	41.7	1	50.0	-	-	-	-	-	-
Student (Ed. Level)																		
No Schooling	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grade School	-	-	-	-	-	-	-	-	1	16.7	-	-	-	-	-	-	-	-
Some High School	5	62.5	1	33.3	3	100.0	-	-	1	16.7	-	-	-	-	-	-	-	-
High School Grad.	-	-	1	33.3	-	-	-	-	1	16.7	-	-	-	-	-	-	-	-
Some College	3	37.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	100.0
College Grad.	-	-	1	33.3	-	-	-	-	2	33.3	-	-	-	-	-	-	-	-
Graduate School	-	-	-	-	-	-	-	-	1	16.7	-	-	-	-	-	-	-	-
Professional-Tech.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Student (Income)																		
Under $ 4,999	-	-	-	-	-	-	-	-	1	16.7	-	-	-	-	-	-	-	-
$ 5,000 - $ 6,999	3	37.5	-	-	1	33.3	-	-	2	33.3	-	-	-	-	-	-	-	-
$ 7,000 - $ 9,999	2	25.0	-	-	-	-	-	-	1	16.7	-	-	-	-	-	-	-	-
$10,000 - $14,999	1	12.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$15,000 - $20,000	-	-	1	33.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 22 (Continued)

ITEM	URBAN										NON-URBAN							
	Austin		Dallas		Ft. Worth		Galveston		Houston		Conroe		Huntsville		New Waverly		Willis	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Other (Income)																		
Under $4,999	3	37.5	15	75.0	1	25.0	1	12.5	3	25.0	5	62.5	1	33.3	-	-	2	100.0
$ 5,000 - $ 6,999	2	25.0	3	15.0	1	25.0	-	-	-	-	3	37.5	1	33.3	1	100.0	-	-
$ 7,000 - $ 9,999	-	-	-	-	-	-	1	12.5	2	16.7	-	-	-	-	-	-	-	-
$10,000 - $14,999	2	25.0	-	-	-	-	1	12.5	-	-	-	-	-	-	-	-	-	-
$15,000 - $20,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Over $20,000	1	12.5	1	5.0	-	-	-	-	-	-	-	-	1	33.3	-	-	-	-
No Response	-	-	1	5.0	2	50.0	5	62.5	7	58.3	-	-	-	-	-	-	-	-

Table 23

Selected Characteristics of Four Metropolitan Areas of Texas

Metropolitan* Cities of Texas	Small Town Areas	Population	County	County Population	County Auto Reg. No.	1970 Census Data Percent Black	County Retail Sales (in millions)	1970 Wholesale Sales (in millions)	County Manufactured Value (in millions)	1970 County Income Total (in millions)	Number Employed	County Tax Value (in millions)	County 1970 Economic Index	Location	Physical Features
AUSTIN	*Temple	40,000	Bell	148,600 (1973)	60,421	16.5	$259,070	$ 96,053	$ 79,300	$328,107	25,669	219,612,693	0.363	Central	Level to hilly
AUSTIN	*Killeen	40,700	Bell	148,600 (1973)	60,421	9.9	259,070	96,053	79,300	328,107	25,669	219,612,693	0.363	Central	Level to hilly
AUSTIN	Bryan	35,911	Brazos	64,500 (1973)	27,584	19.8	126,224	36,646	27,800	164,267	20,948	82,196,593	0.203	South-east	Rich bottom soil; sandy
DALLAS	Cleburne	17,800	Johnson	52,500 (1973)	25,792	5.7	89,767	10,955	44,800	124,338	8,210	82,380,936	0.168	North	Many soil types; hilly and rolling
DALLAS	* Corsicana	21,300	Navarro	31,600 (1973)	16,074	21.2	76,716	40,839	37,600	82,430	7,027	68,772,425	0.213	North-central	Level blackland; Rolling
DALLAS	Duncan-ville	22,000	Dallas	1350,800 (1973)	273,247	N/A	3,669,908	7,222,826	2,464,700	5,199,041	622,944	3,592,292,490	13.806	North-central	Flat
DALLAS	Greenville	23,650	Hunt	47,200 (1973)	22,781	17.9	100,528	30,094	55,800	134,009	12,466	100,375,345	0.358	North	Level to rolling
DALLAS	Euless	25,200	Tarrant	714,600 (1973)	409,120	N/A	1,756,771	1,565,564	1,346,100	2,405,701	235,548	1,407,252	6.016	North	Level to rolling
DALLAS	Marshall	29,445	Harri-son	44,200 (1973)	18,924	34.9	76,762	24,129	125,900	126,839	12,698	117,313,049	0.790	North-east	Hilly; rolling

Table 23 (Continued)

Metropolitan* Cities of Texas	Small Town Areas	Population	County	County Population	County Auto Reg. No.	1970 Census Data Percent Black	County Retail Sales (in millions)	1970 Wholesale Sales (in millions)	County Manufactured Value (in millions)	1970 County Income Total (in millions)	Number Employed	County Tax Value (in millions)	County 1970 Economic Index	Location	Physical Features
DALLAS	Plano	38,300	Collin	79,500 (1973)	38,350	4.9	$ 116,604	$ 31,177	$ 52,500	$ 173,571	11,903	209,642,449	0.249	North-central	Heavy b black soil; level to rolling
HOUSTON	Bay City	15,000	Matagorda	27,600 (1973)	11,495	23.6	51,427	30,302	N/A	75,579	4,747	125,112,613	0.489	Coastal	Flat; creeks
HOUSTON	LaMarque	17,000	Galveston	117,600 (1973)	79,634	16.6	337,586	83,340	687,500	489,049	45,479	643,898,481	1.964	On coast Island	Partly island; partly coastal; sandy
HOUSTON	Groves	18,300	Jefferson	241,700 (1973)	120,813	N/A	578,239	432,825	723,000	783,467	83,821	551,438,582	4.084	South-east	Grassy plain
HOUSTON	*Conroe	19,000	Montgomery	71,200 (1973)	29,948	21.4	97,460	11,429	34,600	111,194	8,564	334,518,195	0.281	South-east	Rolling; 3/4 Timber
HOUSTON	*Huntsville	20,000	Walker	34,300 (1973)	9,783	20.6	54,658	6,476	12,900	74,554	8,303	57,831,172	0.065	South-east	Rolling hills
HOUSTON	*Nacogdoches	25,200	Nacogdoches	41,600 (1973)	14,878	24.1	70,038	18,222	42,200	102,316	10,587	77,994,710	0.240	East	Hilly; 2/3 Forest
HOUSTON	Lufkin	26,553	Angelina	53,900 (1973)	23,426	28.0	110,323	119,538	149,600	142,797	16,473	75,884,398	0.410	East	Rolling hilly

Table 23 (Continued)

Metropolitan* Cities of Texas	Small Town Areas	Population	County	County Population	County Auto Reg. No.	1970 Census Data Percent Black	County Retail Sales (in millions)	1970 Whole-sale Sales (in millions)	County Manu-factured Value (in millions)	1970 County Income Total (in millions)	Number Employed	County Tax Value (in millions)	County 1970 Economic Index	Location	Physical Features
HOUSTON	Texas City	42,000	Galves-ton	177,600 (1973)	79,634	20.8	337,586	83,340	687,500	489,049	45,479	643,898,481	1.964	On coast; Island	Part Is-land; part coastal
HOUSTON	Victoria	46,000	Victor-ia	55,800 (1973)	27,521	8.4	132,940	82,441	103,300	150,652	14,315	181,691,949	0.550	South	Rolling
HOUSTON	Baytown	50,000	Harria	32,800 (1973)	13,599	4.8	53,689	6,482,975	24,200	6,272,750	4,349	95,685,755	17.481	Southeast	Level
SAN ANTONIO	Kerrville	16,492	Kerr	20,900 (1973)	10,740	5.7	48,267	11,514	2,400	61,740	4,792	51,622,707	0.088	South-west central	Hills
SAN ANTONIO	Seguin	17,000	Guada-lupe	37,300 (1973)	16,716	14.4	58,148	25,656	9,400	80,891	7,043	76,739,091	0.161	South Central	Level to rolling
SAN ANTONIO	Beeville	17,000	Bee	24,000 (1973)	8,979	3.1	34,550	N/A	800	57,172	3,511	62,232,170	0.161	South East	Level to Rolling
SAN ANTONIO	San Marcos	22,030	Hays	33,700 (1973)	11,827	4.0	47,939	6,316	8,100	72,232	7,018	58,001,540	0.089	South Central	Partly hills; black-land