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**User-Side Subsidies for Shared-Ride
Taxis in Kinston, North Carolina**

Final Report
October 1980

Service and Methods Demonstration Program



U.S. DEPARTMENT OF TRANSPORTATION
Urban Mass Transportation Administration and
Research and Special Programs Administration
Transportation Systems Center

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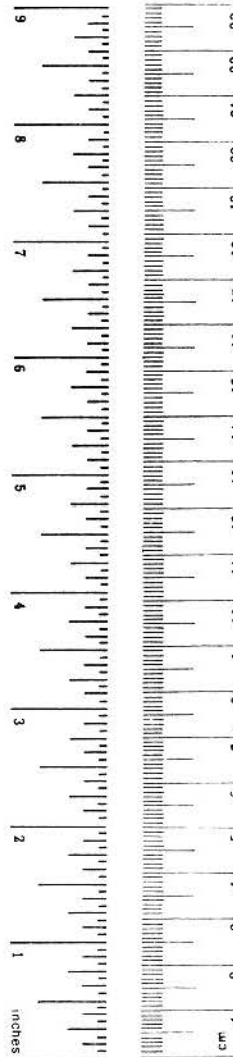
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16. Abstract <p>The Kinston User-Side Subsidy Demonstration began operation in September, 1977. This was one of four simultaneous demonstrations of the user-side subsidy concepts conducted under the UMTA Service and Methods Demonstration Program, and involved the provision of reduced fare conventional taxi service to the elderly and handicapped with the primary objective of increasing their mobility. Eligible individuals who registered with the subsidy program were able to purchase tickets for regular taxi rides within Kinston for one-half of their face value (i.e., a 50% subsidy). After tickets were used by registrants to pay for rides, taxi operators redeemed them for full face value.</p> <p>This report summarizes the findings of the independent evaluation of the Kinston project that was sponsored by the U.S. Department of Transportation. In Kinston, user-side subsidies were found to be administratively feasible and were utilized almost exclusively by the most mobility-disadvantaged segments of the eligible population. These individuals, who typically had low incomes and/or few travel alternatives, used the project to increase their frequency of total tripmaking by 3-4 percent, and to make some trips by taxi that otherwise would have been made by a less preferred mode (e.g. walking). The resulting changes in taxi-use frequency caused some changes in the supply of taxi service, though these were concentrated among firms that carried a large proportion of elderly and handicapped riders prior to the demonstration. Overall, the Kinston project provides evidence that user-side subsidies can be a viable and practical technique for facilitating the mobility of the elderly and handicapped.</p>					
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Approximate Conversions to Metric Measures

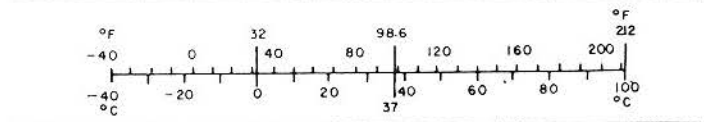
Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exact). For other exact conversions and more detailed tables, see NBS Misc. Publ. 280, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10-280.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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This evaluation of the Kinston User-Side Subsidy Demonstration Project was prepared in the Boston, Massachusetts offices of Charles River Associates Incorporated (CRA) for the Transportation Systems Center (TSC) of the U.S. Department of Transportation (DOT) under Contract Number DOT-TSC-1406, as part of the Service and Methods Demonstration (SMD) Program, sponsored by the Urban Mass Transportation Administration (UMTA). Michael Nelson served as CRA's evaluation manager and principal investigator. Bruce Spear of TSC served as technical advisor and monitor for the evaluation, while Lynn Sahaj was the UMTA project manager.

Many individuals contributed to the development of this evaluation report. Within CRA, Michael Nelson directed the evaluation and was the principal author of this report. Jane Piro supervised data processing, conducted data analyses, and contributed draft material throughout the report. Stephen Hendrick conducted or was responsible for data processing, while Jean Belding organized and edited the final report. Other major CRA contributors included Priscilla Gebre-Medhin, Terence McKiernan, Janet Fearon, and Kathryn Davenport, publications; Jean Fried, graphic arts; Ruth Epstein and Ruthellen O'Brien, secretarial; and Peter Caradonna, data processing. The efforts of all of these individuals were supervised by Daniel Brand, CRA's officer-in-charge of work conducted for the SMD program, who provided overall guidance and many helpful suggestions.

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1

EXECUTIVE SUMMARY

INTRODUCTION

The Kinston User-Side Subsidy Demonstration Project began operation in September 1977 and involved the provision of reduced-fare conventional taxi service to the elderly and handicapped. To be eligible for the subsidy program, called KITE (Kinston's Independent Transportation for the Elderly), a person had to be at least 65 years of age and/or handicapped, and be a resident of Kinston. Eligible individuals who registered with the program were able to purchase tickets for regular taxi rides within Kinston for one-half of their face value (i.e., a 50 percent subsidy). After tickets were used by registrants to pay for rides, taxi operators redeemed them for full face value.

The principal goal of this project was to demonstrate the effectiveness of user-side subsidies as a means to improve the mobility of the elderly and handicapped.* This demonstration was conducted simultaneously with demonstrations in Montgomery, Alabama, Lawrence, Massachusetts, and Danville,

*A project innovation of secondary importance involved a change in the regulations governing the practice of sharing taxi rides. In the predemonstration environment, Kinston taxicab operators offered shared-ride service, although a city ordinance required that the first passenger give consent. While the demonstration fare discount involved no changes in the preexisting zonal fare system, and applied equally to shared and exclusive rides, the city's taxicab code was changed for the demonstration so that ride-sharing could take place without the permission of the first passenger.

Illinois, which examined variations of the user-side subsidy concept in different settings. This type of subsidy has drawn interest among policy makers because it places the travel decision -- i.e., whether or not to travel and by what mode -- in the hands of the consumer. In contrast with conventional "provider-side" subsidies users can choose among service providers. Operators only receive benefits under the subsidy to the extent that they are responsive to the travel needs of the public and offer levels of service that are competitive with alternatives. It is therefore hypothesized that user-side subsidies may provide strong incentives for the efficient provision of transportation services. Funding agencies, on the other hand, have considerable flexibility concerning the types of individuals and/or trips that are to be subsidized.

By reducing the price of taxicab travel, the user-side subsidy program could be expected to lead to increased rates of tripmaking, and to increased temporal and spatial travel opportunities, by making some taxicab trips feasible that would previously have been beyond budget limitations. Alternatively, participants could choose to continue old travel habits with reduced expenditures and thus use the subsidy to reduce their cost of transportation.

If the effective reduction in price led to increased use of taxis, the productivity of taxi operations could improve. This improvement could be further enhanced by the formal adoption of ride-sharing as part of the project. This, in turn, could stimulate changes in the supply of transportation services provided. Broader, external effects (e.g., on social service agencies) could result from the program and its effects on travel behavior.

The purpose of this evaluation is to determine the extent to which and the reasons why any of these effects occurred in Kinston as a result of this user-side subsidy program. This enables the circumstances under which the concept could most beneficially be applied elsewhere to be determined. In addition, since the application of the user-side subsidy concept itself is a major innovation, evaluation of results must include an assessment of the operational and administrative feasibility of the concept in general, and how it may vary in different settings.

SITE DESCRIPTION

Kinston is a particularly appropriate site for a project that reduces the cost of travel, since no low-cost conventional transit is available there. It is a predominantly rural community situated on the North Carolina central coastal plain with a 1977 population of approximately 25,000. Particularly relevant in a demonstration of this type is the fact that Kinston has a relatively small land area (8.89 square miles in 1977), implying short intracity travel distances for which taxis may be a viable alternative. The city also has a low median income and automobile ownership rate, indicating a

large population that may be dependent on taxis. Estimates of the total number of project-eligible individuals (i.e., Kinston residents who are 65 or older and/or handicapped) range from 2,500 to nearly 4,200, with most of the uncertainty stemming from a lack of reliable data concerning nonelderly handicapped persons.

At the beginning of the demonstration, Kinston had a large number (eight) of relatively small taxi companies that operated a total of 41 licensed vehicles. In this system, drivers may be considered "owner-operators," and either purchase their own vehicles or lease them from a company. Consequently, individual drivers have considerable independence in setting operating and service policies. While all of the companies routinely carry elderly and handicapped clients, virtually none of them offer or have been involved with any programs tailored to this clientele, and none of their cabs were equipped with wheelchair lifts.

Prior to the demonstration, specialized transportation services for the elderly and handicapped were available to a limited extent through the programs of special service agencies. At least one of these providers operated a lift-equipped van.

DEMONSTRATION IMPLEMENTATION AND OPERATIONS

ADMINISTRATIVE ACTIVITIES

Administrative activities undertaken to support the implementation and operation of the demonstration can be classified into three distinct phases: preoperational planning, administrative support, and implementation of the ticket distribution/redemption system. Prior to formal initiation of the preoperational planning phase in June 1977, other administrative activities were also undertaken, including changing the Kinston taxi ordinance to allow ride-sharing without the permission of the first passenger and obtaining letters of intent to participate in the program and abide by its administrative procedures from taxi operators. No noteworthy problems or obstacles were encountered in carrying out these tasks. The project appeared to be well-received by all interested parties. The sole exception was the decision of two small firms not to participate in the program. These firms did not perceive that many of their clients would use the program and therefore felt that the potential benefits from joining the program were minimal. The remaining six firms agreed to participate in the program without any major reservations.

PREOPERATIONAL PLANNING

During the preoperational planning phase, the project staff was organized. These individuals then undertook a variety of planning activities, including development of specific eligibility criteria and registration procedures,

designing and obtaining identification cards for project users, establishing procedures for ticket distribution to registrants and ticket processing and reimbursement for participating taxi operators, designing a publicity and outreach program, and identifying local registration sites. Procedures for reporting and investigating complaints, monitoring ticket usage, and organizing monthly ridership data were also established.

ADMINISTRATIVE SUPPORT

In the administrative support phase, beginning in September 1977, activities related to project registration/monitoring and program promotion were undertaken. Project registration consisted of a brief personal interview to ensure that the eligibility criteria were met. Registrants were then given an identification card that entitled them to purchase the tickets used for payment of taxi fares for half of their face value.

To protect the project somewhat from high costs caused by excessive use, individuals were limited in the number of discount tickets they could purchase (initially \$20 per month face value, the equivalent of approximately 14 taxi rides). To ensure that the limit was not violated, the project staff maintained records of purchases by each registrant and checked those records when new purchases were made. In this manner, it was virtually impossible for an individual to exceed the purchase limit without the knowledge of the project staff.

Shortly after the project began, however, it became apparent that some registrants needed to use taxis more frequently than the budget limit would allow. Because of these needs, an informal policy of granting waivers to the budget limits was adopted by the project staff, though it was not fully taken advantage of by project registrants because it was not publicized.

Formal program promotion activities in this second phase included extensive marketing and outreach. Beginning in September 1977, a major advertising effort was undertaken to encourage all eligible citizens of Kinston to register with the program. Organizations and agencies with elderly and/or handicapped clients and members were asked to assist in registration, and provisions were made for those who could not register in person. Local churches were contacted, as well as the offices of numerous local agencies that were in some way involved with elderly and/or handicapped clients. Letter and telephone campaigns were also conducted.

After the first month of project operation, public relations activities continued at a lower level of effort, primarily involving contacts with social service agencies and periodic media announcements. Also, the staff distributed posters and pamphlets and gave informal talks about the program. Finally, cab drivers themselves were used in an attempt to attract eligible individuals to register. Although the drivers reacted enthusiastically to the plan, very few new registrants were recruited in this manner.

Despite the high level of promotion and direct marketing activity, the majority of individuals who decided to register for the program did so after hearing about it from a friend or relative. Project staff promotions and social service agencies were other significant information sources.

TICKET DISTRIBUTION/REDEMPTION

In the ticket distribution/redemption phase, the user-side subsidy itself was administered. At the time of purchase by project registrants, tickets were coded with the user's identification number. When a registrant paid for a taxi trip using the tickets, the identification card had to be shown to prove that the tickets were valid. This discouraged unauthorized individuals from trying to take advantage of the subsidy. The cab driver then recorded the trip in a log book, which was turned in periodically with the tickets for reimbursement by the city. These returns were then checked and processed by the project staff.

ADMINISTRATIVE COSTS

The administrative actions described above required to implement and manage the Kinston user-side subsidy demonstration entailed a considerable effort on the part of the project staff. A number of nonlabor expenses, such as advertising costs and office rental, were also incurred. These project management costs can be divided into those associated with the specific phases of administrative activity described above, those that are essentially overhead, and those that formed the subsidy payments themselves, as follows.

<u>Activity</u>	<u>Cost (1977 Dollars)</u>						
	<u>Initial</u>	<u>Fixed Per Month</u>	<u>Additional Per Registration</u>	<u>Additional Per Ride</u>			
Phase I (Preoperational Planning)	\$1,856						
Phase II (Administrative Support)	\$4,841	+	\$ 150	+	\$3.85		
Phase III (Ticket Distribution/ Redemption System)					\$0.29		
Overhead			\$ 200				
Subsidy	--		--		\$0.63		
TOTAL	\$6,697	+	\$ 350 month	+	\$3.85 registrant	+	\$0.92 ride

These costs amount to \$30,000 to \$40,000 per year (e.g., at the typical rates of 10 new registrants and 3000 project rides per month, annual costs would be estimated at $12 \times (350 + 3.85 \times 10 + .92 \times 3000)$, or \$37,782). These costs were covered during the demonstration by a combination of funding from the UMTA demonstration grant and in-kind donations by the City of Kinston.

As of August 1980, it was anticipated that the demonstration grant would be depleted on or about March 1981. The City of Kinston has filed an application with the State of North Carolina to obtain federal funds for nonurbanized areas available under Section 18 of the Urban Mass Transportation Act of 1964 (as amended) to continue the KITE program beyond that time.

DEMONSTRATION IMPACTS

In the following sections, the effects of the KITE program on taxi level-of-service attributes, users, taxi operators, and social service agencies are described.

LEVEL-OF-SERVICE CHANGES

This demonstration had the potential to affect a variety of transportation supply attributes. The most important single change, and indeed the focus of the entire demonstration, involved the potential 50 percent reduction in taxi fares for all elderly and/or handicapped residents within Kinston. Also, as outlined above, restrictions on ride-sharing were removed as part of the demonstration, though this had little practical significance since ride-sharing was already a common practice. The only other effect of the program on level of service appears to have been a small reduction in driver assistance offered to project passengers at their destinations. This was caused, at least in part, by the need for drivers to record information about project trips in a log book and carefully keep track of project tickets once they were received. Overall, taxi operators did not perceive significant differences between the attractiveness of project and nonproject rides, and made no effort to differentiate the service they offered to project and nonproject riders.

USER IMPACTS AND TRAVEL BEHAVIOR CHANGES

The Kinston user-side subsidy project was able to serve a substantial number of elderly and handicapped clients, though these individuals constituted less than 20 percent of the estimated eligible population. However, since the majority (54 percent) of nonregistrants had drivers' licenses, and nearly 80 percent of nonregistrants had at least one vehicle in their household, the

penetration of the project into the mobility-disadvantaged segment for which it was primarily targeted was much greater. Indeed, there was little more that could have been done to attract additional registrants, as over 70 percent of all nonparticipants indicated that they relied on other ride sources, and only 16.5 percent were not aware of the project.

After an initial wave of registrations, new registrants consisted largely of individuals who just became eligible for the program and those whose attitude toward the program was affected by exogenous changes. The 1979 gasoline shortage, in particular, appeared to cause many individuals who were regular auto users to register for the program as insurance against disruptions to their own mobility.

Patterns of project usage in Kinston were very similar to those of project registration. Registrants having the lowest income and fewest travel alternatives made the greatest use of taxi discounts. For example, the percentage of registrants with household incomes of less than \$3,000 per year was highest (69.9 percent) for the most frequent project users (i.e., those averaging 10 to 60 project trips per month). This percentage decreased monotonically with lower levels of project usage to 48.2 percent for registered nonusers (i.e., registrants who averaged zero project trips per month). Likewise, less than 8 percent of the most frequent project users had at least one vehicle in their household, while nearly 30 percent of registered nonusers had at least one. Overall, there is compelling evidence that the project subsidies were utilized by the most mobility-disadvantaged segment of the population.

Project rides consisted primarily of shopping/personal business (58 percent) and medical (20 percent) trips. Also, a number of nonelderly handicapped individuals took advantage of the ticket purchase limit waiver and used the project regularly for work trips. It is particularly important to note that all registrants who used wheelchairs were able to travel in the project's conventional taxis, and some were among the most frequent project users (10 to 60 project trips per month).

The changes in travel behavior produced by the Kinston demonstration can usefully be categorized into effects on overall travel frequency, trip purpose, destination, and timing. The frequency of all trips by all modes made by project registrants increased by approximately 3.5 percent or .8 trips/registrant/month. Project-induced trips accounted for 13.7 percent of all project taxi rides and consisted primarily of shopping/personal business and medical trips. A total of 6 percent of project taxi trips would have been made previously by walking or riding as a passenger in some other automobile, while no major changes in trip destination or timing took place. The modest increase in total tripmaking corresponds to an increase in mobility that represents attainment of the project's primary objective. Despite the travel frequency changes, however, most of the subsidy payments

accrued as income transfers to registrants, since at least 80 percent of project taxi trips would have been made even in the absence of the subsidy program.

TAXI OPERATOR IMPACTS

The changes in frequency of taxi use attributable to new trips (13.7 percent) and mode changes (6 percent) among project registrants in Kinston amounted to 19.7 percent of project trips (3.3 percent of all taxi trips) and contributed to at least some significant changes in the supply of taxi service. However, since there was a considerable amount of customer/driver loyalty, these impacts tended to be concentrated among those firms that carried a large proportion of elderly and handicapped riders prior to the demonstration. For those firms, the increase in ridership associated with the project translated into a corresponding increase in revenue. Since project trips required essentially the same effort on the part of taxi operators as nonproject trips, and tended to occur at off-peak times of the day, the revenue increases associated with the project yielded an increase in profits. This contributed to the decisions of at least two drivers to reduce their operating hours and at least three drivers to discontinue their affiliations with established companies and begin to provide service independently. Other operators made no significant changes in their service in response to the program.

IMPACTS ON SOCIAL SERVICE AGENCIES

Overall, the Kinston user-side subsidy demonstration did not produce a significant response among local social service agencies. Despite the obvious potential for involvement of social service agencies with a program of this type, the role of those agencies consisted primarily of promotion and client referrals, with no funding assistance. This is due at least in part to the limited financial flexibility of Kinston's social service agencies, and to the low relative importance of transportation services to those agencies exhibited by a general lack of in-house transportation programs. Also, factors such as specialized service requirements, potential geographical discrimination among agency clients, and low out-of-pocket costs for those agencies providing in-house services may have contributed to the lack of agency response to the user-side subsidy program.

CONCLUSIONS

User-side subsidies have been shown in Kinston to be a locally acceptable and easily administered method of producing beneficial travel behavior changes among the most mobility-disadvantaged segments of the population. The

Kinston program demonstrated the administrative feasibility of the concept by enlisting and maintaining the support of a majority of taxi operators. The fact that approximately 90 percent of the taxi vehicles in Kinston participated in the program is ample evidence that the handling of tickets and associated administrative functions needed to maintain accountability were not a significant concern for taxi operators.

Likewise, most eligible individuals were able to register for and use the project discount without any significant problems. Project marketing/outreach utilized a multifaceted campaign that may have been unnecessarily extensive, but it ensured that virtually all eligible individuals were aware of the subsidy program. It also minimized the inconvenience to project registrants associated with program participation and administrative requirements.

Project registrants and users tended to have the lowest incomes and fewest available travel alternatives in comparison with other segments of the population that were eligible for the subsidy. Project discounts enabled these individuals to enhance their mobility by making additional trips, representing attainment of the project's primary objective. The discounts also enabled some registrants to make previous trips by a more preferred mode (i.e., taxi).

Local acceptance of the user-side subsidy concept in this case is demonstrated both by the lack of obstacles encountered in initial implementation and by the local efforts to continue the program after the depletion of demonstration funding. Overall, the Kinston project provides considerable evidence that user-side subsidies can be a viable and practical technique for facilitating the mobility of the elderly and handicapped in a variety of settings.

2

DEMONSTRATION BACKGROUND AND OBJECTIVES

INTRODUCTION

The mobility needs of the elderly and handicapped have become increasingly important in transportation planning and financing at all levels of government. This is particularly evident in major cities, where "full accessibility" to conventional bus and rail service by handicapped individuals has become a significant source of controversy. In smaller cities, however, the mobility problems may be even more acute, though not as widely discussed, since no form of low-cost public transportation may be available. This may place severe constraints on the mobility of the elderly and handicapped, as it often forces them to rely on relatives or friends for rides, pay higher fares for local taxi or ambulance service, or not travel at all.

Public solutions to this problem often take the form of specialized services provided for the elderly and handicapped. Through vehicle purchase or contractual arrangement, agencies may provide low-fare transportation services. However, because of the relatively small number of vehicles typically employed, these services may be limited to certain times, destinations, or trip purposes. Furthermore, the restriction of service to use by a particular clientele may lead to low vehicle utilization (passengers per vehicle-hour), and consequent high unit costs. Overall, when a subsidy is given to the service provider without regard to patronage or user satisfaction, there are few incentives to improve economic efficiency or service quality. It is these perceived deficiencies in the performance of specialized services that provided the primary motivation for this demonstration project.

PROJECT INNOVATIONS

In contrast to the conventional "provider-side" subsidy approach, the demonstration project conducted in Kinston focused on the concept of "user-side" subsidies for conventional, privately operated door-to-door shared-ride taxi service to bring about improved mobility for elderly and handicapped individuals. Instead of providing an operator with a guaranteed subsidy to cover the cost of service, user-side subsidies involve the direct reimbursement to individuals of some or all of the costs of their local trips. This type of subsidy has drawn interest among policy makers because it places the travel decision -- i.e., whether or not to travel and by what mode -- in the hands of the consumer. Operators cannot take the subsidy for granted, and only receive benefits under the subsidy to the extent that they carefully sense the travel needs of the public and offer levels of service that are competitive with alternatives. It is therefore hypothesized that user-side subsidies may provide greater incentives for the efficient provision of transportation services, while providing funding agencies with a good deal of flexibility concerning the types of individuals and/or trips that are to be subsidized.

Kinston was a particularly appropriate site for a demonstration that reduced the cost of travel since no low-cost conventional transit was available there. The application of a public subsidy to provide discounts for the use of conventional private taxicab service in Kinston was the major innovation involved in this demonstration.

A project innovation of secondary importance involved a change in the regulations governing the practice of sharing taxi rides. Before the demonstration began, Kinston taxicab operators offered shared-ride service, although a city ordinance required that the first passenger give consent. Fares were calculated from a system of zones and were the same for exclusive and shared rides. While the demonstration fare discount involved no changes in the preexisting zonal system and applied equally to shared and exclusive rides, the city's taxicab code was changed for the demonstration so that shared-riding could take place without the permission of the first passenger. Regardless of its other effects and/or merits, this change was needed for Kinston's taxi service to qualify as a form of mass transit that is eligible for federal subsidies.

PROJECT OBJECTIVES AND EVALUATION ISSUES

The principal goal of this project was to demonstrate the effectiveness of user-side subsidies as a means to improve the mobility of the elderly and handicapped. This goal corresponds directly to a stated objective of the Service and Methods Demonstration Program and is significant in the context

of local priorities as well. By reducing the price of taxicab travel, the user-side subsidy program could be expected to lead to increased rates of tripmaking, or to increased temporal and spatial travel alternatives, by making some taxicab trips feasible that would previously have been beyond budget limitations. Alternatively, participants could choose to continue old travel habits with reduced expenditures and thus use the subsidy to reduce the cost of transportation.

If the effective reduction in price led to increased use of taxis, the productivity of taxi operations could improve. This improvement could be further enhanced by the formal adoption of ride-sharing as part of the project. This, in turn, could stimulate changes in the supply of transportation services provided. Broader, external effects (e.g., on social service agencies) could also result from the program and its effects on travel behavior.

Overall, the purpose of this evaluation is to enhance the understanding of operational issues and factors that determined the impacts of this user-side subsidy program, and, consequently, the circumstances under which this concept could most beneficially be applied elsewhere. Specific research issues addressed in this effort are described in detail below, and fall into the following general categories:

- The operational and administrative feasibility of the user-side subsidy concept as demonstrated in the project;
- The impact of the user-side subsidy on the mobility of the target group;
- The impact of the user-side subsidy on the supply of transportation services; and
- The impact of the user-side subsidy on social service agencies.

CONCEPT FEASIBILITY

In large part, the feasibility of the user-side subsidy concept depends upon the acceptance and cooperation of taxi operators. This particular demonstration involved the participation of a relatively large number of taxi operators, each of whom was required to collect travel discount tickets, log project trips, and wait for reimbursement. The ability of the subsidy program to forge a practical working relationship between private sector transport suppliers leery of government intervention and the requirements of the concept for regulatory adherence and accountability is an important evaluation issue.

The subsidy manager, in this case the City of Kinston, must account for project usage (subject to various auditing and verification checks), resolve all billing inconsistencies, and see to the timely repayment of suppliers. In addition, the manager has the responsibility of screening and registering users, answering their complaints, and enforcing the rules and restrictions of the program. The potential for fraud is of particular concern in the administration of user-side subsidies.

Overall, the cost and complexity of administering a transportation subsidy program in which reimbursements to providers are based on an accounting of trips made by eligible users is expected to be significant. Such administrative requirements may be as important as the direct (e.g., travel behavior) impacts resulting from the subsidies themselves when the applicability of this concept is considered in other settings.

MOBILITY OF PROJECT USERS

The user-side subsidy concept is targeted at a population segment whose ability to travel when and where they desire is often severely limited by their economic situation or physical condition. Elderly and handicapped individuals generally have less income and fewer transportation alternatives than the general public, and often require physical assistance. Taxis may be particularly beneficial for these individuals, as they offer the door-to-door service quality of automobiles and entail a minimal effort or wait on the part of the rider. The sole exception to this may be wheelchair-confined individuals, who may find it difficult or impossible to utilize vehicles such as conventional taxicabs that are not specially equipped to board and transport severely handicapped patrons.

Overall, the amount and character of travel by the elderly and handicapped may change in a number of important ways when they are provided with user-side subsidies. Evaluation of this effect focuses on three fundamental issues: 1) the attractiveness of the service to the target group; 2) the beneficiaries of the service; and 3) the types of benefits that accrue to users.

The first issue involves the extent to which the user-side subsidy program was sufficiently desirable to attract target individuals to register. Unlike other potential demonstrations, where the project service would constitute a new and untried alternative, Kinston residents had access to the project mode, taxi, at regular fare in the predemonstration environment. This familiarity may have reduced the need for the project to provide introductory or explanatory information to potential users, and it may have enhanced registration in comparison to the provision of a totally new service. However, many people may not have found it in their interest to make use of the project, and it is of interest to see how they differed from project registrants. Nonparticipation may reflect a lack of need for taxi service

in general due to the availability of travel alternatives, or a lack of need for subsidies (e.g., high incomes). Other factors, such as aversion to taxi service, may also be significant, and their importance must be established. Another reason for nonparticipation, lack of information, is particularly important in assessing the transferability of the concept to other sites.

The second issue involves the extent to which different types of registered individuals made use of the project. Users with different characteristics may have had dramatically different rates of project utilization. It may be possible to draw inferences from the characteristics of users and nonusers to make projections of the potential demand for subsidized service at other sites.

The third issue focuses on the various ways in which users derived benefits from the project. The subsidy may allow more trips to be made by taxi than would have been made without the subsidy. These may be new trips or trips that would have been made using a different mode. Alternatively, if the same number of taxi trips were made, an income effect may result. The subsidy may also permit travel to more preferred destinations or for additional trip purposes. Furthermore, with an improvement in available travel alternatives, individuals may have greater discretion over the scheduling of trips and travel at more convenient times of the day, week, or month. Since improved mobility for the elderly and handicapped is the primary objective of this demonstration, a detailed assessment of these diverse effects is particularly important.

TRANSPORT SUPPLY

In contrast to conventional transit service, where regular service over a fixed route can generally be provided even in the presence of significant variations in demand, the quality of taxi service is sensitive to the relationship between the number of taxicabs available, and the number and characteristics of individual service requests made at any given time. Therefore, any changes in travel behavior that occur because of the subsidy program may have significant effects on the taxi industry. These effects may involve the overall taxi market structure in Kinston, or the operations and profitability of individual firms.

The overall market structure could be affected if the project leads to a change in the number or relative size of firms in the market. Also it is important to determine whether firms participating in the project experience greater or lesser benefits than those that do not. If the level of service to nonproject riders drops as a result of a firm's participation in the project, nonproject riders could shift to nonparticipating firms. It is of particular interest to examine whether firms shift into or out of the project market over time, whether project or nonproject firms increase or decrease in

size during the project, and whether these shifts parallel trends in subsidized or nonsubsidized ridership.

The subsidy program could affect the structure and profitability of the individual firm in several ways. If ridership grows, taxi firms may have to increase their effort in vehicle dispatching or maintenance. Company managers may also initiate new service or operating policies to alter their competitive position in the elderly and handicapped travel market. Such changes could include increases or decreases in the wait-time experienced by target-market individuals, improved service at particular trip generators, and advertising directed at potential project riders. If these changes result in cost increases, taxi firms could seek greater rents from drivers, eventually leading some drivers to shift from one firm to another or start new firms for themselves.

For individual operators participating in the project, general improvements in service productivity (and hence profitability) should occur as overall demand tends to increase and the ride-sharing policy is more fully taken advantage of. These improvements may be tempered somewhat if project-induced trips require extra resources (e.g., driver assistance), involve destination areas not routinely served by taxi, or yield lower gratuities. If productivity and profitability do increase, operators may expand vehicle utilization by working longer hours or hiring additional drivers. It is of considerable interest to establish whether such changes were made in Kinston as a result of the demonstration project.

SOCIAL SERVICE AGENCIES

Because the demonstration project was designed to benefit many of the clients of social service agencies, these organizations might be expected to participate in the implementation and operation of the user-side subsidy program. Most social service agencies in Kinston do not provide transportation services. For these agencies, coordination of transportation needs with the user-side subsidy project could lead to increased agency participation in the short run, and growth in the number and variety of programs offered by the agency in the longer run. For agencies that do offer transportation services, the user-side subsidy program may offer the opportunity for significant cost reductions, as well as increases in agency participation. Changes in the cost, attendance, or scope of agency service programs associated with the project are therefore of considerable interest.

If the project produces substantial benefits for agencies or their clients, those agencies might provide funds for continuation of the project beyond the demonstration stage. While some incentives may exist for noncooperation with the project (e.g., promotional advantages of agency-managed transportation services, or problems involved in interagency coordination), the extent to

which social service agencies respond and become involved should indicate the potential for agency benefits resulting from user-side subsidy programs.

EVALUATION OVERVIEW

The information and analysis presented throughout this report is based on a series of data collection efforts designed to monitor all of the potential effects of the demonstration project described above. For the most part, the data collection was structured in a "before and after" framework to identify changes that took place with the implementation of the demonstration. The before and after observations have been supplemented by monitoring exogenous events and indicators of site activity to facilitate the interpretation of before/after changes, and enhance the credibility of findings. Specific evaluation activities included the following:

1. Site data collections;
2. Registration interviews;
3. Taxi on-board surveys;
4. Taxi operator profiles;
5. Social service agency profiles;
6. A follow-up survey of project registrants;
7. A survey of nonregistrants;
8. Tabulation of taxi ticket returns; and
9. Administrative cost accounting.

A description of each of these activities, along with survey instruments and sampling plans as appropriate, are presented in Appendix A.

ORGANIZATIONAL ROLES

Organizations involved in the Kinston User-Side Subsidy Demonstration Project and its evaluation are described below.

URBAN MASS TRANSPORTATION ADMINISTRATION (UMTA)

SMD project sponsor with overall supervisory and management responsibility.

URBAN INSTITUTE

Provided preliminary design of the user-side subsidy project under contract to UMTA, along with technical assistance and support during the project planning and implementation phases.

NORTH CAROLINA DEPARTMENT OF ADMINISTRATION

Assigned state Clearinghouse Number for A-95 review of project and notified appropriate state agencies.

NEUSE RIVER COUNCIL OF GOVERNMENTS

Completed A-95 Clearinghouse review of project, and found it consistent with regional objectives and plans and programs of the various local governments concerned. Endorsed project.

CITY OF KINSTON

Service and Methods Demonstration grant recipient, also referred to as the grantee.

KINSTON DEPARTMENT OF TRANSPORTATION

Delegated responsibility by the Mayor of Kinston for overall project administration. In charge of project and subsidy management, user registration, and data collections used to support monitoring and evaluation activities.

TRANSPORTATION SYSTEMS CENTER (TSC)

Supervisor of project evaluation.

CHARLES RIVER ASSOCIATES (CRA)

Assumed overall responsibility for monitoring and evaluating the demonstration project under contract to TSC.

3

DEMONSTRATION SETTING

Evaluation of the effects of the Kinston user-side subsidy demonstration requires a thorough understanding of the project's environment. Important background conditions, including geographic, demographic, and transportation characteristics, must be understood to allow interpretation of changes that took place after implementation of the demonstration. Therefore, in this chapter the predemonstration setting is described in detail, along with exogenous changes in key characteristics that took place during the project.

SITE DESCRIPTION

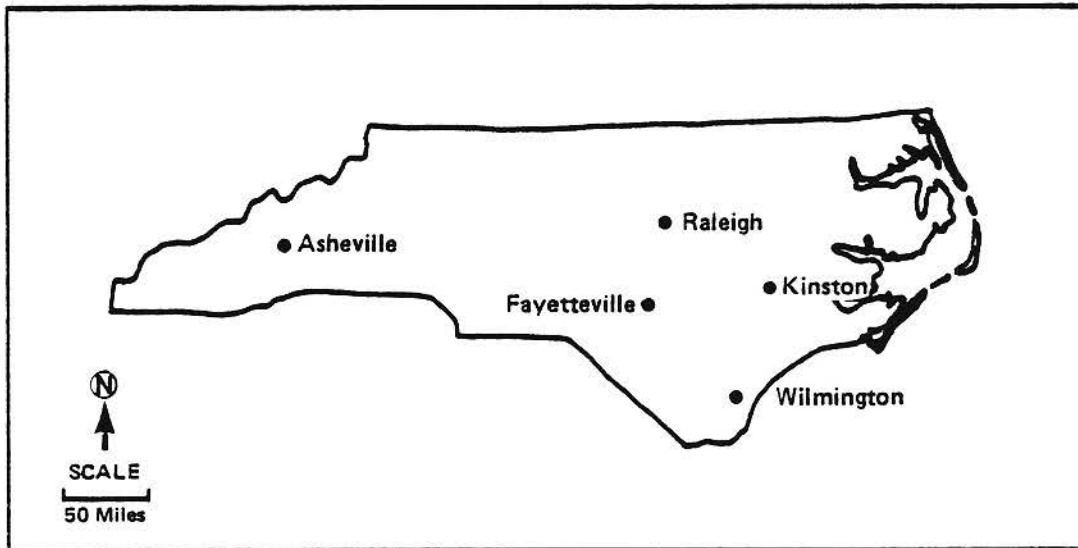
PREDEMONSTRATION

Kinston is situated on the North Carolina central coastal plain. It is a predominantly rural community that serves as the county seat for Lenoir County. Kinston's 1977 population was estimated to be 25,000, with a land area of 8.89 square miles. Kinston's median income of \$6,913 (1970) is considerably below that of the nation, although greater than the median income in the surrounding agricultural areas.

Figure 3-1 shows the location of Kinston in relation to the rest of North Carolina. The nearest Standard Metropolitan Statistical Area is Wilmington (population 107,000), approximately 60 miles from Kinston. However, commuting to Wilmington is virtually nonexistent.

Figure 3-1

LOCATION OF KINSTON, N.C.



LAND USE

Table 3-1 provides a summary of land use in the Kinston area and shows changes in land use from 1960 to 1971. During this period, the city grew by approximately 25 percent in total area, principally through annexation of undeveloped land. Services (e.g., personal, professional, repair) showed the greatest increased land utilization, expanding by 366 percent. Most of the residential and commercial expansion occurred to the northwest and west of the city (see Figure 3-2), and the city is planning to continue expansion in this direction. Development is also occurring south of the Neuse River, but estimates of the costs of expanding city services and facilities across the river are prohibitive.

One additional factor affecting land use is flooding. Floods occur frequently in North Carolina, affecting some part of the state virtually every year. Kinston is particularly vulnerable, due to its relatively flat topography. Because of the threat of flooding, much of the land within two miles of the river has remained undeveloped.

ECONOMIC BASE

Kinston performs a classic central place function servicing the surrounding agricultural areas. The breakdown of local employment as of December 1975 was as follows:

<u>Occupation</u>	<u>Percent of Employment</u>
Agriculture	1.4
Construction	10.4
Manufacturing	24.6
Transportation-Utilities	4.1
Commercial	37.5
Health-School-Religion	16.0
Professional-Public Admin.	6.0
	<u>100.0</u>
Total Number of Employees	8,605

The commercial sector is the largest in the local economy, although employment in manufacturing is also significant and has experienced the greatest growth in recent years. Since the city's economy is largely dependent on tobacco farms, the unemployment rate varies with the season. In recent years, it has typically fluctuated between 6.5 and 9 percent of the work force.

Table 3-1

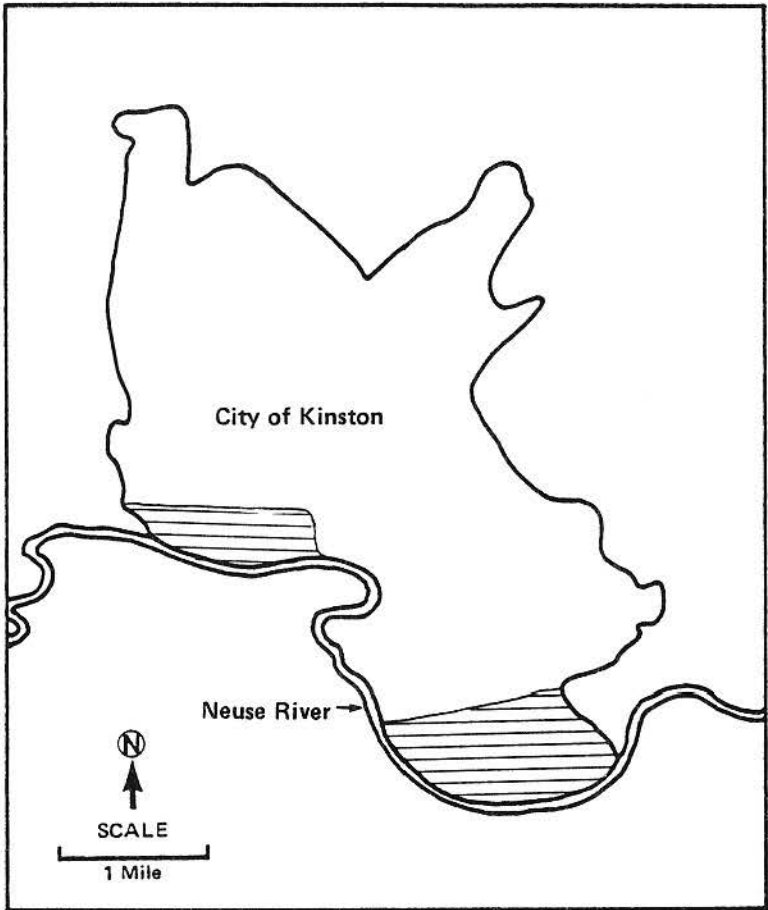
KINSTON LAND USE,
1960 and 1971
(Acres)

	<u>1960</u>	<u>1971</u>	<u>Change</u>
Residential	1251.6	1736.2	+484.6
Manufacturing (light)	27.1	42.6	+ 15.5
Manufacturing	--	8.8	+ 8.8
Transportation, Communications and Utilities	668.7	784.0	+115.3
Trade	138.6	201.2	+ 62.6
Services	60.9	283.6	+222.7
Cultural, Entertainment and Recreation	113.9	164.5	+ 50.6
Resource Production and Extraction	--	22.0	+ 22.0
Undeveloped Land and Water Areas	<u>996.4</u>	<u>854.0</u>	<u>-142.4</u>
Total Acreage	3257.2	4096.9	+839.7

SOURCE: City of Kinston, Application for Federal Assistance (December 15, 1976), p. 32.

Figure 3-2

MAP OF THE CITY OF KINSTON AND THE NEUSE RIVER



LEGEND:

 Underdeveloped flood plain area

CLIMATE

Temperatures in Kinston, as well as the entire eastern coastal plain, are modified by the proximity of the Atlantic Ocean. This effect raises the average winter temperature (e.g., January = 42.9°F) and reduces slightly the average summer temperature (e.g., July = 79.3°F).

There are no distinct wet and dry seasons in North Carolina, although there is some seasonal variation in average precipitation. Rainfall is normally greatest in the summer, with July the wettest month (average = 6.83 inches). Since the rain at this time comes mostly with thunderstorms and convective showers, it is also more variable than during other seasons. Daily showers are not uncommon, nor are periods of one or two weeks without rain.

DEMOGRAPHIC COMPOSITION

As shown in Table 3-2, Kinston's 1970 population of 22,309 represented a drop of 10.1 percent from 1960. However, this trend has reversed in the 1970s. Kinston's estimated 1977 population of 25,000 is 12 percent above the 1970 level, and typical of the growth in nonmetropolitan towns across the nation during the 1970s. Since 1970 American metropolitan regions have grown less rapidly than the nation, losing population to nonmetropolitan areas through net outmigration. According to estimates made by the Bureau of the Census, this outmigration amounted to 1.8 million persons nationwide between March 1970 and March 1974. Kinston is one of many nonmetropolitan areas growing as a consequence of this phenomenon.

Kinston comprises a relatively small area, implying short intracity travel distances.* The city also has a low median income and automobile ownership rate, indicating a large population that may be dependent on taxis.

Within the City of Kinston, there tend to be distinct geographical distributions for different demographic groups. For example, the city's black population (approximately 45 percent of the total population) resides largely in the southern part of Kinston (see Figure 3-3), while median family income tends to be greatest in the north (Figure 3-4).

Of particular importance in this demonstration are the elderly and handicapped residents of Kinston. According to the 1970 Census, 9.8 percent (2,193 individuals) of Kinston's 1970 population was over 55 years of age.

*Kinston's 1977 land area of 8.89 square miles represented an increase of 46 percent over the 1970 area. However, following the pattern of the 1960s, this expansion consisted primarily of annexation of undeveloped land and did not affect the locations of most trip origins and destinations.

Table 3-2

CHARACTERISTICS OF KINSTON, 1970

Population	22,309*
Area (Square Miles)	6.08*
Density (Persons per square mile)	3,786*
Age Distribution	
(Percent below 18)	NA
(Percent above 65)	9.8**
Median Years Schooling	10.7**
Income (Median Family Income)	6,913**
Income Distribution	
(Percent below \$5,000)	34.9+
(Percent above \$15,000)	7.7+
Number of Persons in Labor Force	8,605**
Employment Profile	
(Percent employed in manufacturing)	23.6+
(Percent employed in trade)	18.9+
(Percent employed in services)	17.1+
(Percent employed in government)	16.9+
(Percent white collar professionals)	18.0+
Modal Split (Percent workers using public transit for worktrip)	1.6+,++
Auto Ownership (Percent households with one or more autos)	77.5+
Growth Rate (Percent change in population, 1950-1970)	-10.1*

*City of Kinston Application for Federal Assistance (December 15, 1976).

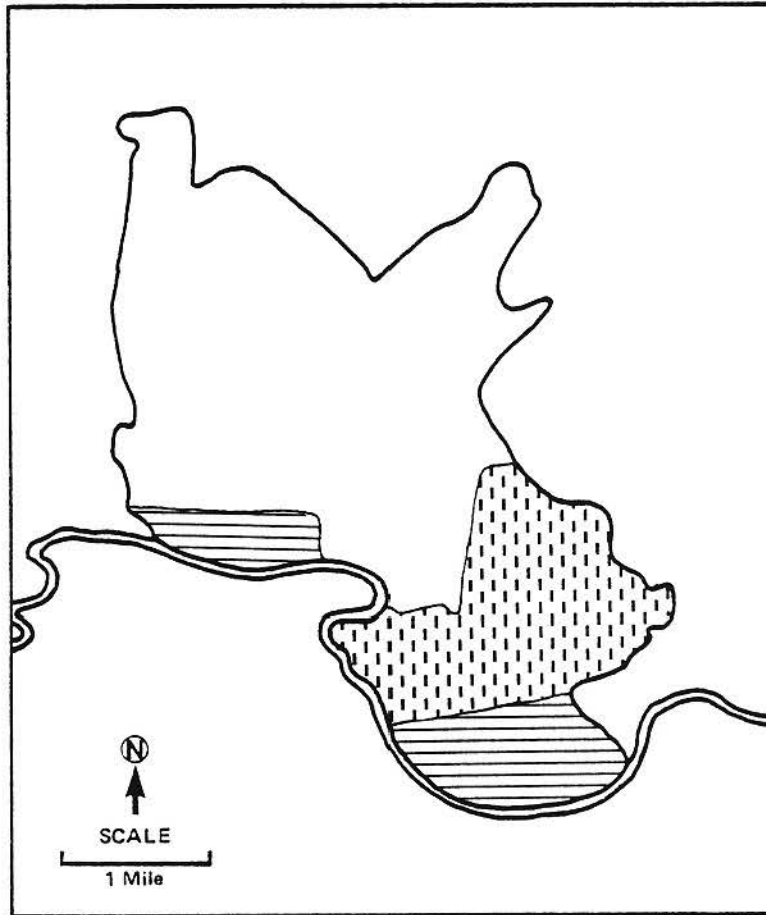
**Kinston Housing Authority Vital Statistics, compiled primarily from 1970 Census data (December 16, 1975).

+U.S. Department of Commerce, City and County Data Book (1973). Figure is for Lenoir County, of which Kinston comprises 40.4 percent of the population.

++This figure, calculated from data for all of Lenoir County, reflects worktrips made by intercity bus (Carolina Trailways).

Figure 3-3

GEOGRAPHICAL DISTRIBUTION OF NON-WHITE
POPULATION IN KINSTON

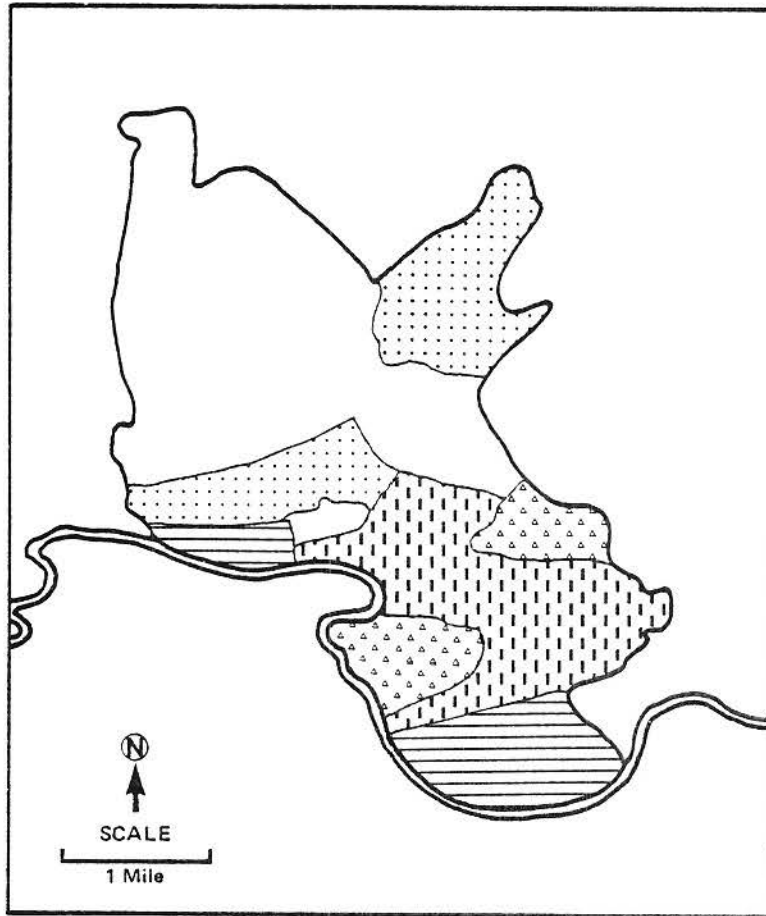


LEGEND:

-  Greater than 80% non-white
-  Less than 25% non-white
-  Underdeveloped flood plain area

Figure 3-4

MEDIAN FAMILY INCOME IN KINSTON



LEGEND:

-  Under \$3,000
-  \$3,000 - \$4,000
-  \$6,000 - \$10,000
-  Greater than \$10,000
-  Underdeveloped flood plain area

The same percentage applied to Kinston's estimated 1977 population of 25,000 implies that there were 2,450 elderly individuals in Kinston at the start of the project.

Within the city, the elderly tend to reside in two major concentrations (see Figure 3-5). One is located in the southern part of Kinston, an area populated predominantly by blacks, while the other is situated in the central part of the city, a section consisting primarily of whites. Median family income is generally less than \$6,000 in the elderly concentrations, except for two subareas within the concentration in the central part of the city populated predominantly by whites.

Figure 3-5 also shows the locations of various shopping and medical centers, which are likely to be major trip attractors, in relation to the residential locations and concentrations of Kinston's elderly population. Several major generators of elderly travel (G1 and G2) are relatively far from the city's major medical facility, Lenoir Memorial Hospital (A1). Since the hospital is located directly north of Kinston, and most elderly residents live in the southern and central parts of the city, the trip to the hospital for some elderly individuals is as long as three miles. On the other hand, most of Kinston's elderly live within one mile of many social service agencies (A2) and major shopping areas (A3).

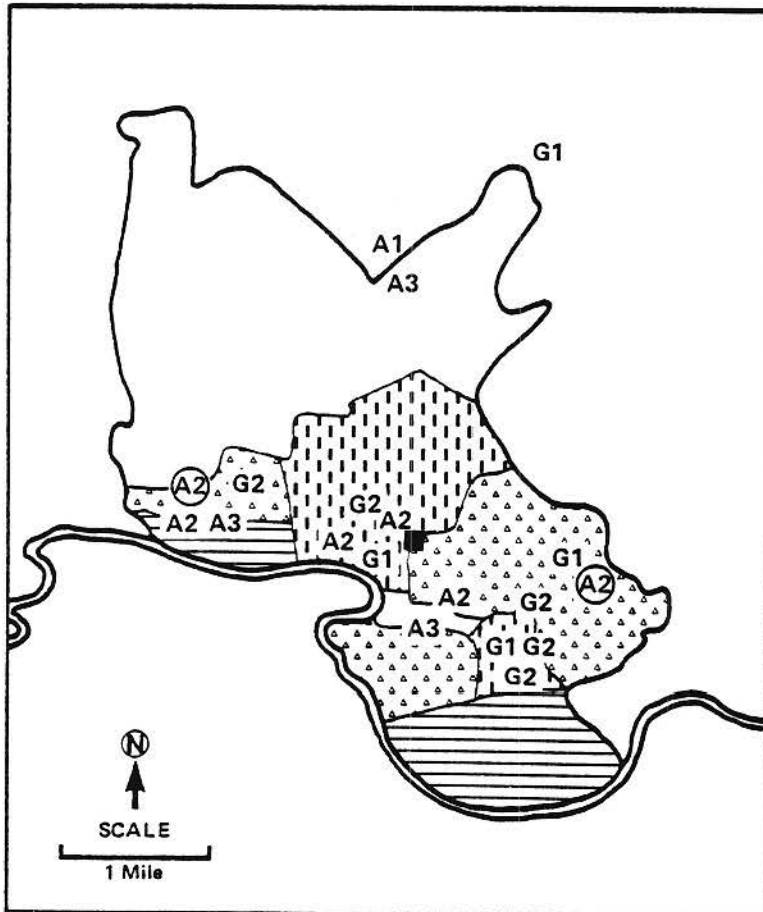
Reliable data concerning nonelderly-handicapped persons living in Kinston are not available. However, it is possible to derive an estimate of the total number of these individuals by applying the ratio of nonelderly-handicapped/elderly found at other sites to the estimated elderly population of Kinston. Using this method, and the nonelderly-handicapped/elderly ratio found in the 1970 Census in Montgomery, Alabama, it is estimated that 1,702 nonelderly-handicapped persons resided in Kinston in 1977. Based on this figure, the total population of Kinston that was eligible for the project in 1977 is estimated to be 4,152. This contrasts somewhat with the demonstration project staff's estimate of 2,500 eligible individuals and should be used with appropriate caution since the Census definition of handicapped may be less restrictive than the criteria used to establish travel handicaps for project eligibility purposes (see Chapter 4).

POLITICAL/INSTITUTIONAL ENVIRONMENT




The City of Kinston is governed by a council-manager form of government, with a Mayor and five City Councillors elected at large. The City Council is particularly sensitive to the needs of the city's large black and elderly voting bloc and has supported the demonstration project. The current Mayor, who has been in office since 1963, has also supported the user-side subsidy program.

Figure 3-5

LOCATION OF THE ELDERLY, AND MAJOR TRIP GENERATORS AND ATTRACTORS IN KINSTON



LEGEND:

-  Less than 7% elderly
-  7-14% elderly
-  Greater than 14% elderly
-  Underdeveloped flood plain area

- G1 Public housing
- G2 Private nursing home
- A1 Medical facility
- A2 Social service agency
-  Social service agency primarily serving the handicapped
- A3 Shopping facilities
-  Kinston Towers

SITE CHANGES DURING PROJECT

In order to distinguish the impacts of the taxi subsidy program from external, unrelated shifts, it is necessary to account for various changes in background conditions that occurred during the project. Exogenous influences may have effects similar to those of the subsidy program (e.g., on travel behavior) which would serve to invalidate conclusions drawn solely on the basis of "before and after" comparisons. External changes in site conditions that have the potential to influence observed project results are detailed below.

ECONOMIC BASE

A number of indicators of economic activity during the demonstration project have been collected, and are presented in Table 3-3. These indicators tend to show that there was at least modest economic growth in Kinston during the demonstration. Savings and loan resources grew steadily during the demonstration period, increasing 47.6 percent from March 1977 to May 1979. Retail sales increased by 24.1 percent from March 1977 to March 1979, well above the corresponding increase in the cost of living. Telephones in service and airport activity also increased during the period, while the issuance of new building permits declined somewhat. School enrollment had decreased slightly as of September 1978, but then increased again almost back to its original level.

CLIMATE

Weather data are compiled on a daily basis by the National Climatic Center in North Carolina and are presented in Table 3-4. During the period immediately preceding the demonstration project, from June to September 1977, Kinston experienced a significant drought. Then, during October, the first full month of project operation, precipitation was 4.37 inches above normal. From August through October 1978, Kinston experienced a similar, though less severe, drought, and from January through May 1979, precipitation was slightly above normal.

Temperatures have remained fairly close to normal throughout the project period, with few exceptions. The winter of 1977/78 was slightly colder than usual, especially in the month of February, when the average temperature for the month was 10.8 degrees below normal.

DEMOGRAPHIC COMPOSITION

During the project the land area of Kinston increased by less than 2 percent, from 8.89 square miles in 1977 to 9.01 square miles in 1979. During this time, it is estimated that the population of Kinston increased to 27,600, a

Table 3-3

KINSTON ECONOMIC INDICATORS, 1977-1979

	<u>March 1977</u>	<u>June 1977</u>	<u>September 1977</u>	<u>December 1977</u>	<u>March 1978</u>	<u>June 1978</u>	<u>September 1978</u>	<u>December 1978</u>	<u>March 1978</u>	<u>May* 1979</u>
Savings & Loan Resources (thousands of dollars)	169,681	174,195	186,753	195,991	211,204	220,923	227,593	242,633	246,717	250,450
Phones In Service	30,694	31,088	31,550	31,740	31,834	32,359	32,641	32,886	32,995	32,772
Airport Activity										
Passengers On	3,988	4,794	4,237	4,864	4,618	4,803	4,551	4,559	4,434	4,802
Passengers Off	3,855	4,700	3,940	4,308	4,885	4,487	3,971	4,144	3,989	4,249
Kinston School Enrollment	5,743	5,777	5,389	5,635	5,737	NA	5,259	5,525	5,696	5,716
Building Permits	482	416	426	382	486	503	389	315	429	421
Retail Sales (thousands of dollars)	17,930	18,306	17,263	21,921	NA	21,056	19,804	24,770	22,259	NA

SOURCE: News from Kinston/Lenoir County Chamber of Commerce.

*Publication of economic indicators discontinued in May 1979.

Table 3-4

KINSTON WEATHER DATA, 1977-1979

	Mean Temperature (°F)	+/-Normal (°F)	Precipitation (in.)	+/- Normal (in.)
<u>1977</u>				
July	80.1	0.8	1.85	-4.98
August	77.8	-0.8	5.54	-0.37
September	73.8	0.6	3.91	-0.86
October	57.6	-5.5	7.07	4.37
November	54.6	1.8	3.34	0.34
December	43.3	-0.4	4.46	1.24
<u>1978</u>				
January	36.8	-6.1	6.67	3.27
February	33.7	-10.8	1.20	-2.47
March	48.5	-3.5	4.20	0.50
April	60.4	-1.2	6.45	3.47
May	65.8	-3.8	5.24	1.13
June	73.8	-2.5	4.03	-1.37
July	77.1	-2.2	7.50	0.67
August	78.5	-0.1	4.26	-1.65
September	71.9	-1.3	1.27	-3.50
October	59.0	-4.1	1.24	-1.46
November	56.7	3.9	5.00	2.00
December	44.6	0.9	2.41	-0.81
<u>1979</u>				
January	40.1	-2.8	5.26	1.86
February	38.7	-5.8	5.20	1.53
March	52.0	0.0	3.18	-0.52
April	61.6	0.0	3.79	0.81
May	67.1	-2.5	5.91	1.80
June	70.4	-5.9	4.76	-0.64
July	76.5	-2.8	5.86	-0.97
August	77.3	-1.3	3.18	-2.73
September	72.9	-0.3	10.03	5.26
October	60.3	-2.8	1.56	-1.14
November	56.0	3.2	3.40	0.40

SOURCE: National Oceanic and Atmospheric Administration, "Climatological Data; North Carolina," 1977-1979.

10 percent increase over the predemonstration population of 25,000. Using the predemonstration proportion of eligible individuals in the population, it is estimated that the number of individuals who were eligible for the project increased from 4,152 in 1977 to 4,584 in 1979. It should be noted that this may overstate somewhat the true growth in the number of project-eligible individuals in the population because much of the recent population growth may be attributable to an influx of younger families.

In addition to the change in the number of project-eligible individuals, it is known that at least one major change has occurred in the geographical distribution of their residences. The City of Kinston used a \$500,000 grant under the 1974 Housing and Community Development Act for an urban development project involving removal of dilapidated housing. As a result of this project, in December 1978, the Kinston Housing Authority completed construction of and opened Kinston Towers, a high-rise complex of 150 units of public housing for the elderly. This complex is located in the central part of the city, as shown in Figure 3-5.

TRANSPORTATION CHARACTERISTICS

TAXI

PREDEMONSTRATION

Public transportation in Kinston is provided almost entirely by taxis, since Kinston has no local bus service. Fares are calculated using a zone system which divides Kinston into four parts. At the beginning of the demonstration, travel within one zone cost \$1.00 and each additional zone cost \$.25. Group rides (two or more passengers with the same origin and destination) were charged an extra \$.10 per person. Since there is no taxicab regulation in Lenoir County outside the City of Kinston, operators set their own fees for trips that leave the city.

Within Kinston, the level of regulation of taxicabs is low in comparison with many American cities. The city requires that each taxicab be separately licensed and meet basic safety and insurance liability requirements. Taxicab drivers must also be checked and approved by the city.* The city controls entry to the market by issuing "franchises" for operation. Each franchise permits the operation of one taxi vehicle and can be acquired from the city for a total fee of approximately \$35. Private resale of franchises is not

*Some taxi firms have complained about the length and difficulty of this process, which often takes six to eight weeks.

allowed. At the beginning of the demonstration, Kinston had a large number (eight) of relatively small taxi companies that operated a total of 41 licensed vehicles (see Table 3-5). When a company owns several franchises,* the owner typically rents franchises to drivers. Drivers may also own their own franchises. In this system, drivers may be considered "owner-operators" and either purchase their own vehicles or lease them from the company. Company membership entitles the operator to certain amenities, such as use of the company's good name and access to established clientele through the dispatching service, for which the company is compensated, generally under contract. Operators may take advantage of the company's ability to obtain reduced rates on such operating expense items as gas, oil, and insurance. Operators owning vehicles may also make selective use of company maintenance facilities for certain repairs they may not be able to do on their own.

The franchise system gives considerable independence to franchise holders. In fact, several of the companies operate almost as collectives, with only nominal management. On the other hand, one company (Eagle Cab) retains all of its franchises and uses employee drivers.

This example serves to illustrate the divergent practices of different firms in Kinston prior to the demonstration project. For the six firms that initially agreed to participate in the project, important characteristics that define the unique features of each firm's operations and provide a baseline for identification of any changes during the project are described below. These include the following:

- Vehicles and facilities;
- Staffing;
- Operating policies;
- Service policies; and
- Financial data.

This information is derived from interviews of taxi operators conducted in July 1977.

VEHICLES AND FACILITIES. Manhattan Cab Company is the largest in Kinston, operating fourteen cabs. At the beginning of the demonstration, three cabs were owned by the company, and eleven by the drivers. Most of these cabs were less than three years old, and several were new in 1977. The company

*A total of 54 franchises were in circulation prior to the demonstration.

Table 3-5

NUMBER OF VEHICLES OPERATED BY KINSTON TAXI FIRMS
PRIOR TO DEMONSTRATION

<u>Participating Firms</u>	<u>Number of Vehicles</u>
City Taxi	4
Eagle Cab	5
Manhattan Cab	14
Smith Cab	1
Sutton Cab	7
Union Taxi	7
Subtotal	<u>38</u>
<u>Nonparticipating Firms</u>	
Safeway	1
Eastend	2
Subtotal	<u>3</u>
TOTAL	41

SOURCE: Interviews with taxi operators, July 1977.

had a well-furnished three-room office, and planned to construct another room. Manhattan had no maintenance facilities of its own, but made special arrangements with a local garage.

Union Taxi operated seven cabs, dating from 1971 to 1973, and all driver-owned. Union had a single-room office and no maintenance facilities.

Sutton Cab Company had seven cabs, all driver-owned. The company had a three-room office and no maintenance facilities.

Eagle Cab Company had five franchises and five cabs, all company-owned. Eagle's headquarters consisted of a two-room office and a garage. Although the garage had no lift, Eagle was able to do most of its own maintenance.

City operated four cabs, three driver-owned and one leased. City had a small one-room office and had made special arrangements for maintenance.

Smith Cab Company operated one cab, which the owner of the company drove. Mr. Smith did his own dispatching with a mobile phone mounted in the cab. He maintained no office or repair facilities.

The participating taxicab companies in Kinston all had base dispatching radios and radio-equipped cabs (with the exception of Smith Cab Company which used only the mobile phone). None of the cabs were equipped with meters, since Kinston used a zone system to calculate fares. Also, none of the cabs were equipped with wheelchair lifts.

STAFFING. Manhattan Cab Company had sixteen drivers, three of whom leased cabs from the company, eleven of whom owned their cabs, and two of whom worked part-time for franchise holders. Manhattan also employed three full-time and two part-time dispatchers and an owner/manager who divided her time among a number of businesses.

Union Cab Company had seven drivers, all of whom owned their cabs. The drivers alternated dispatching duties, with each driver dispatching one day a week. One of the drivers performed managerial duties, for which he received no additional compensation. Instead of paying a fixed franchise fee, the Union drivers divided overhead costs evenly among themselves.

Sutton Cab had seven full-time drivers and an additional six or seven part-time drivers. Six of the full-time drivers owned franchises and one, Mr. Sutton, owned two franchises and two cabs. The company also had two full-time and four part-time dispatchers. The owner-drivers were charged a fixed franchise fee and sometimes chose to hire part-time drivers for their cabs on a commission basis.

Eagle Cab had three full-time and four part-time drivers. None of these drivers owned cabs or franchises, and all received a commission. Eagle also employed four part-time dispatchers and one full-time mechanic, and an owner/manager who did some driving.

City Taxi had four drivers, three of whom owned their cabs, and one who leased a cab from the company. City also employed one full-time and one part-time dispatcher. City drivers divided overhead costs evenly among themselves instead of paying a fixed franchise fee.

Smith Cab employed only Mr. Smith as manager, dispatcher, and driver.

OPERATING POLICIES. Operating policies include dispatching hours, operating hours, the method of assigning trips to drivers, and the method of scheduling driver hours. Two of the participating cab companies, Manhattan and Eagle, operated 24 hours per day, seven days per week. Union and Sutton operated 18 hours per day, from 5:00 a.m. to 11:00 p.m., and in addition, Sutton remained open until 2:00 a.m. on weekends. City Taxi operated from 8:00 a.m. to 10:00 p.m., while Smith Cab operated from 7:30 a.m. to 11:00 p.m., both seven days per week. Smith, Sutton, and Eagle all allowed their drivers to choose their own hours.

The participating operators all assigned trips to the nearest available cab, and used a wait list only when no cab was nearby. Taxi users often ask for particular drivers by name, and dispatchers always attempted to accommodate such requests. All the operators maintained dispatcher logs, and Union also kept driver logs.

Despite legal opportunities for street-hail pickups and cabstand service, The participating taxicab companies all obtained a very high percentage of their business over the phone, with the estimates of most operators ranging between 90 and 95 percent.* Exact ridership statistics are not available, although some estimates were obtained from the operators. Sutton estimated that it received 200 calls per day, Eagle estimated 175 per day, and Smith estimated 18 per day. One of Manhattan's 14 full-time drivers estimated that he personally carried 200 riders per week and one of Union's 7 drivers estimated 150 per week. All the full-time drivers estimated their average mileage at between 300 and 1,000 miles per week.

*Confirmed in taxi on-board survey, August 1977.

SERVICE POLICIES. Service policies include company approaches to subscription service, reservation service, ride-sharing and market segmentation, as well as marketing strategies and special policies directed toward elderly and handicapped users. Subscription service and reservation service were well-established practices in Kinston before the demonstration. Only Sutton, City, and Smith reported no subscription service, and Sutton would have provided such service on request. Group riding (i.e., parties of more than one rider traveling together) and ride-sharing (i.e., separate parties being served simultaneously by a single cab) were also well-established, though the extent of these practices varied somewhat. Sutton practiced ride-sharing extensively, while Union employed a policy of providing direct service whenever possible.

Manhattan Cab Company held several large special service contracts, including one with McLean Trucking Company, one with the city to provide service for handicapped children, and several with area hotels. None of the other companies were involved with programs designed specifically for elderly or handicapped people, but all carried wheelchairs and often helped elderly people with steps and packages.*

Elderly people comprised a significant percentage of ridership for all the companies.** However, the Kinston taxi industry was segmented to a certain extent along racial lines. Approximately 90 percent of taxi rides in Kinston were made by blacks+ and the majority of taxi firms were black-owned. Union Cab, the only white-owned taxi company in Kinston, carried a disproportionate share of the city's white taxi users. Still, some 60 percent of Union's customers were black.++ All companies stated that they would carry anyone who called for service.

Most of the operators had very limited marketing efforts. Union, Sutton, City, and Eagle advertised primarily in the Yellow Pages, and Eagle also advertised occasionally in school newspapers. Manhattan and Smith conducted a small amount of radio advertising and Manhattan distributed promotional items such as calendars. None of the advertising was directed specifically towards potential elderly and handicapped riders.

*At least one driver (for Sutton Cab Company) went into stores and made purchases for elderly customers at no extra charge.

**Approximately 12 percent of all riders were found to be elderly in the August 1977 taxi on-board survey.

+Taxi on-board survey, August 1977.

++Taxi on-board survey, August 1977.

FINANCIAL DATA. Accurate financial data for most companies are not available, since owner-operators typically do not maintain detailed records. Informal estimates of average revenue per cab varied from \$120 to \$360/week, and estimates of average profit for an owner-driver varied from \$75 to \$150/week. These estimates must be regarded as tentative, since they were not derived rigorously. Overall, prior to the demonstration, the Kinston taxi industry appeared to be financially healthy and viable.

TRANSPORTATION CHANGES DURING THE PROJECT

During the demonstration project in Kinston there were major changes concerning both the level of fares and the number of taxi companies in operation. Fare increases were granted twice during the project. In June 1978 the City Council granted a fare increase of \$0.25 per zone, so that fares varied from \$1.25 to \$2.00. In June 1979, fares were increased again due to the gasoline shortage, bringing the range up to \$1.50 to \$2.25. At that time, the additional charge for group riders was also raised from \$0.10 to \$0.20.

In April 1978, Lassiter Taxi entered the taxi market and joined the demonstration project. In October 1978, Lenoir Cab became the second new firm to enter the taxi market, and they also joined the demonstration project. In February 1979 Sutton Cab ceased operation and the remaining interests were taken over by one of the Sutton drivers. The firm continued to operate in the demonstration project under the name of Dove Cab. Descriptions of these firms and exogenous or partly exogenous changes in the characteristics of the other preexisting firms are presented below.*

VEHICLES AND FACILITIES. Lassiter Taxi owned and operated a single cab. Like Smith, Lassiter had no office, and used a telephone in the cab to take customer service requests. Mr. Lassiter had previously been a driver for Sutton Cab.

Lenoir Cab began operations in October 1978 with two vehicles and an office located at the intercity bus station in Kinston, from which they receive a great deal of business. When Sutton Cab ceased operating in February 1979, some of their cabs transferred to Lenoir, so that Lenoir had seven vehicles (four owned, three owner-operated or subleased), and Dove, who took over

*Gathered during taxi operator interviews, July 1979. Relationships between these changes and the effects of the demonstration project itself are explored in Chapter 7 of this report.

from Sutton, had two (both owned). The two Dove cabs were both equipped with telephones, and therefore did not need an office, though they continued to use the Sutton cabstand.

Union Taxi was the only other firm that changed facilities during the project. In July 1978, they moved their office to a new location where there was room to do minor maintenance work.

STAFFING. Lassiter employed one part-time driver in addition to the owner, who drove full-time. Lenoir employed three full-time and four part-time drivers, and the owner's wife served as full-time dispatcher. Dove Cab employed two full-time drivers. However, because their cabs were equipped with telephones, Dove needed no dispatcher. During the demonstration, a part-time driver was hired by Union, and Eagle hired its fourth full-time driver.

OPERATING POLICIES. Lassiter operated between 6 a.m. and 8 p.m. six days per week, Lenoir between 5 a.m. and 11 p.m., and Dove between 6 a.m. and 11 p.m. The new firms assigned trips in a manner similar to the other firms, i.e., they dispatched the nearest cab or the first cab in the queue to the caller unless the caller requested a specific driver. The new firms also obtained most of their business over the phone except for Lenoir, which received much of their business from people at the bus station where the office is located.

During the demonstration, Smith Cab reduced its operating hours. Mr. Smith now operates until 9:00 p.m. instead of 11:00 p.m. and no longer operates on Sundays except for regular church trips.

SERVICE POLICIES. Group rides, ride-sharing, subscription service and reservation service remained common practices in Kinston during the demonstration. All of the new firms except Dove Cab offered subscription service, and Dove would provide it if requested. The three new firms served mainly the black population, but again would carry anyone who called. The new firms also advertised primarily in the Yellow Pages.

FINANCIAL DATA. Accurate financial data for the individual companies continued to be unavailable during the demonstration, since owner-operators do not maintain detailed records. However, it is known that fares, revenues, and operating costs increased during the demonstration. The most obvious of

these increases was in the price of gasoline. Regular gasoline cost \$0.63 per gallon when the demonstration started in September 1977, and the price had not increased significantly one year later. However, by September 1979, the price had reached \$0.94 per gallon, an increase of 50 percent, and by January 1980, the price was over \$1.00. Other operating costs also increased significantly, including wages to dispatchers, auto parts, and maintenance fees.

Any or all of these changes in the operating characteristics and procedures of taxi firms in Kinston had the potential to affect the same transportation system indicators as the demonstration, and therefore may play an essential role in the interpretation of changes observed after the beginning of the project.

SOCIAL SERVICE AGENCY TRANSPORTATION

To a limited extent, specialized transportation services for the elderly and handicapped are available through the programs of social service agencies. A total of 15 agencies provided social services in Kinston prior to the demonstration (see Table 3-6), the seven largest of which were selected for detailed investigation (see Appendix B). These agencies tend to be located in areas with higher concentrations of elderly residents (see Figure 3-6) although they encompass a broad range of activities and clients.

Before the demonstration, a limited number of transportation services were provided by these seven agencies (see Appendix B, Table B-2). Greene Lamp, Inc. was the major provider of specialized transportation services, operating five 15-passenger vans, one of which was equipped with a wheelchair lift. Emergency transportation services were available through Lenoir Memorial Hospital's fleet of ambulances. The Lenoir County Department of Social Services and Division of Vocational Rehabilitation had transportation programs, but did not operate their own vehicles. In addition, three agencies that were not investigated in detail, the Mental Health Adapt Center, Casswell Institution, and Mrs. Hill's Developmental Home, operated three vans, three buses, and one van, respectively, none of which were lift-equipped to serve mentally retarded adults.

Eligibility requirements for transportation services usually differed from requirements for primary agency services. For example, Greene Lamp provided transportation only to those with low incomes, unless the agency was reimbursed. The other agencies tended to furnish services to participants in particular programs, or with special travel needs. In the case of Lenoir Memorial Hospital ambulance transportation, anybody who called in was eligible, but a doctor's authorization was required to leave the hospital by that mode. Generally, the persons served by agency transportation had low

Table 3-6

KINSTON SOCIAL SERVICE AGENCIES

Casswell Institution

*N.C. Division of Vocation Rehabilitation

*Greene Lamp, Incorporated

Guardian Care Nursing Home

*Kinston Recreation Department

*Lenoir County Department of Social Services

Lenoir County Health Department

Lenoir County Library

*Lenoir Memorial Hospital

*Lions Industries for the Blind

Mental Health Adapt Center

Mrs. Hills Developmental Home

Oak Manor Nursing Home

Salvation Army

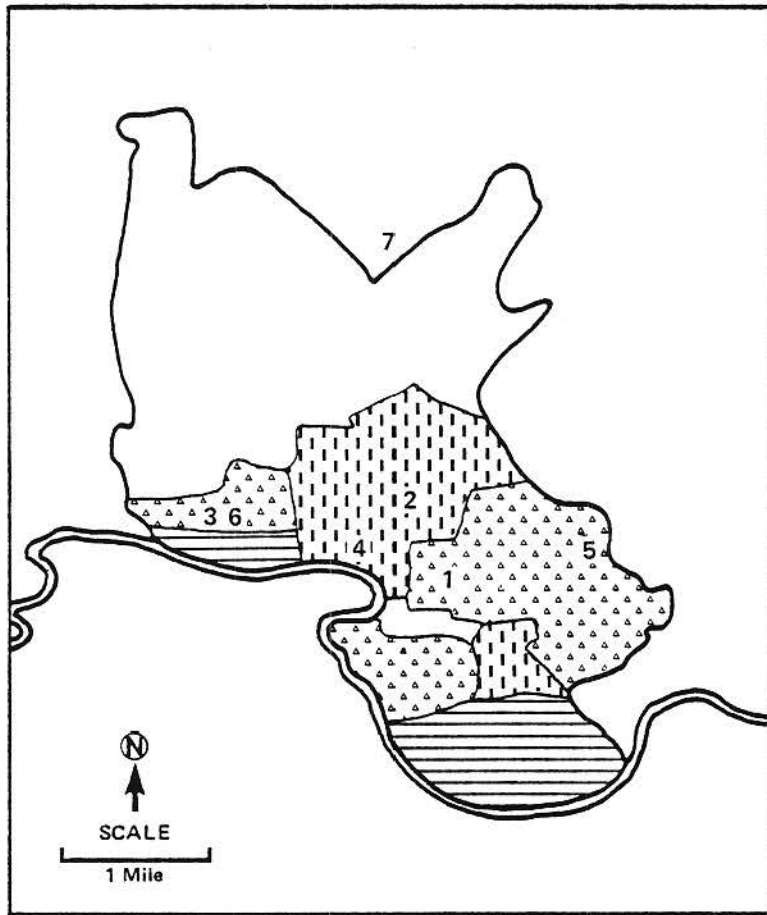
*Social Security Administration

*Selected for detailed investigation

SOURCE: Provided by project staff.

Figure 3-6

LOCATION OF KINSTON SOCIAL SERVICE AGENCIES
AND THE ELDERLY



LEGEND:

-  Less than 7% elderly
-  7-14% elderly
-  Greater than 14% elderly
-  Underdeveloped flood plain area

- 1 Lenoir Co. Department of Social Services
- 2 Greene Lamp, Incorporated
- 3 Social Security Administration
- 4 Kinston Recreation Department
- 5 Lions Industries of the Blind
- 6 N.C. Division of Vocational Rehabilitation
- 7 Lenoir Memorial Hospital

incomes and were travelling for medical purposes. Indeed, in the case of two providers, only medical trips were accepted. Overall, the seven agencies served some 630 one-way trips per week, less than half of which were within the City of Kinston. The costs to the agencies of providing these transportation services were extremely low. For example, Greene Lamp's operating costs included only gasoline, maintenance, and the salary of the transportation coordinator. Their drivers, who were paid by CETA monies, and vehicles, which were typically outright gifts, were not included in the agency budget. For most other agencies, transportation programs represented less than 1 percent of the total agency budget. The sole exception was the hospital's emergency ambulance transportation, with its extremely high service quality requirements. However, the high costs of this service (an average of \$87.00 per one-way trip) were defrayed through user charges, 90 percent of which were covered by insurance.

4

DEMONSTRATION IMPLEMENTATION AND OPERATIONS

In this chapter, the administrative activities undertaken as part of the demonstration project are outlined. Demonstration project administrative activities can be classified into three distinct types, or phases: preoperational planning, administrative support, and implementation of the ticket distribution/redemption system (see Figure 4-1). In the following section, specific activities in each of these phases are described in detail. The costs of these activities are then summarized.

ADMINISTRATIVE ACTIVITIES

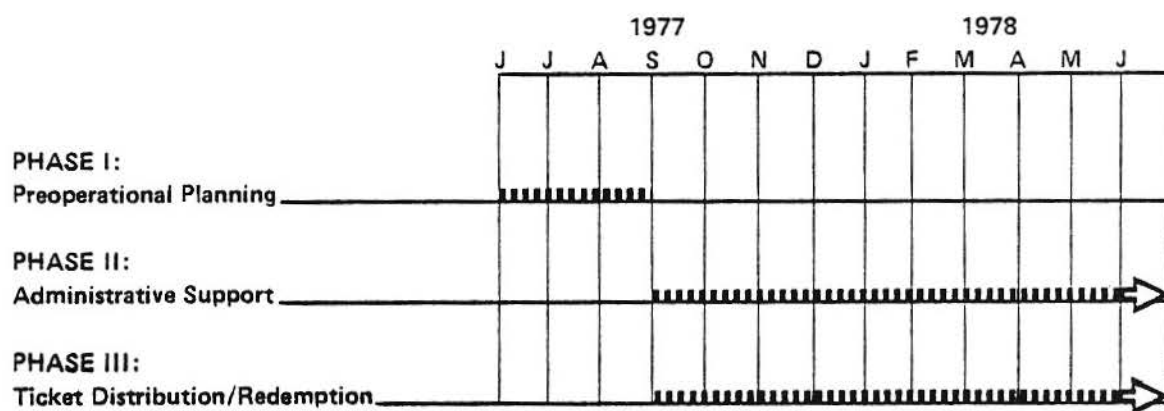
PHASE I. PREOPERATIONAL PLANNING

The first step in the preoperational planning phase* involved the organization of the project staff team. The City Manager, appointed by the

*Prior to formal initiation of the preoperational planning phase in June, 1977, other administrative activities were undertaken in support of the UMTA demonstration grant application process. These included changing the Kinston taxi ordinance to allow ride-sharing without the permission of the first passenger (as described in Chapter 2) and obtaining letters of intent to participate in the program and abide by its administrative procedures from taxi operators. No noteworthy problems or obstacles were encountered in carrying out these tasks, as the project appeared to be well-received by all interested parties. The sole exception was the decision of two firms, Safeway and Eastend, not to participate in the program. These firms did not perceive that many of their clients would participate in the program and therefore felt that the potential benefits from joining the program were minimal.

Figure 4-1

KINSTON USER-SIDE SUBSIDY DEMONSTRATION-
PROJECT TIME SCHEDULE



Mayor and the City Council, was officially responsible for the implementation of the demonstration project. However, the Assistant City Manager acted as project manager and selected the project staff, which consisted of a project technician, cashier, temporary clerks and interviewers. These individuals were assisted by a city finance officer and payroll clerk. The specific responsibilities of each of these individuals are outlined below:

PROJECT STAFF

1. Project Manager -- reported to the City Manager, Mayor, and City Council on the project's progress, maintained budgetary control, and hired project personnel. Other duties included supervising project staff, assisting in the promotion of the project, preparing reports to the city and UMTA, and coordinating project activities with other city departments.
2. Project Technician -- responsible for preparing reports to the city and UMTA, overseeing the processing and redemption of tickets, responding to complaints of project participants, maintaining project records, coordinating the marketing and promotion of the project, and performing other duties related to day-to-day operations.
3. Cashier -- responsible for project-related secretarial duties, maintaining an inventory of project supplies, conducting registration interviews, assisting in project promotion, and distributing ticket books.
4. Temporary Clerks -- provided assistance when the amount of clerical work involved in processing registrations and marketing the program exceeded the resources of the regular project staff.
5. Interviewers -- conducted data collections supporting evaluation efforts beyond the scope of normal project administration (see Appendix A). They also assisted in the registration process during the first month of project operation.

PARTICIPATING CITY EMPLOYEES

6. Assistant City Clerk -- verified and processed project subsidy payments to taxi operators.
7. Finance Officer -- responsible for reviewing all purchase orders for office equipment and supplies as well as requests for proposals for contractual work.

In the four months preceding the commencement of subsidized service, these staff members undertook a variety of planning activities. These included developing eligibility criteria and registration procedures; designing and obtaining identification cards for project users; establishing procedures for ticket distribution to registrants and ticket processing and reimbursement for participating taxi operators; designing a publicity and outreach program; identifying local registration areas; and establishing procedures for reporting and investigating complaints, monitoring ticket usage, and organizing monthly ridership data. The administrative policies and procedures resulting from this planning effort are described in the following two sections.

PHASE II. ADMINISTRATIVE SUPPORT

A variety of administrative activities were undertaken to provide indirect support for the implementation and operation of the subsidy program. These activities can be subdivided into project registration/monitoring and program promotion and are described in detail below.

PROJECT REGISTRATION/MONITORING

Eligible individuals were required to register with the program in order to benefit from the subsidy. To be eligible a person had to be a resident of the City of Kinston and at least 65 years of age and/or handicapped (see Table 4-1). Registration took place in the program office at City Hall or any of the satellite locations shown in Figure 4-2 and consisted of a brief personal interview to ensure that the eligibility criteria were met. (For evaluation purposes, a more extensive interview addressing key socioeconomic characteristics and travel habits was also administered at this time -- see Appendix A.) Registrants were then given an identification card which entitled them to purchase tickets valid for payment of taxi fares for half of their face value (see Figure 4-3).

To protect the project somewhat from unauthorized resale of taxi tickets and high costs caused by excessive use, individuals were limited in the number of discount tickets they could purchase. Initially, this limit was set at \$20 per month (face value). However, after fares were increased in June 1978 this limit was reset at \$25 per month. To ensure that the limit was not violated, the project staff maintained records of purchases by each registrant and checked these records when new purchases were made. In this manner, it was virtually impossible for an individual to exceed the purchase limit without the knowledge of the project staff.

Shortly after the project began, it became apparent that some registrants needed to use taxis more frequently than the budget limit would allow. For

Table 4-1

ELIGIBILITY CRITERIA

EACH PROJECT PARTICIPANT MUST:

- 1) Reside in the City of Kinston

AND BE EITHER

- 2) Elderly, establishing their age through use of:

- a) Medicare card;
- b) Driver's license;
- c) Social security check with Codes A, B, HB, or D (green check); or
- d) Any other identification showing birthdate such as a birth certificate, insurance card, etc.

OR

- 3) Handicapped, due to:
 - a) Non-ambulatory disabilities -- impairments that, regardless of cause of manifestation, for all practical purposes confine individuals to wheelchairs.
 - b) Semi-ambulatory disabilities -- impairments that cause individuals to walk with difficulty or insecurity. Individuals who are amputees, use braces or crutches, or have arthritis, neuromuscular disorders, or pulmonary or cardiac conditions may be considered semi-ambulatory.
 - c) Sight disabilities -- total blindness or uncorrectable impairment affecting sight to the extent that the individual is insecure or exposed to danger when in public.
 - d) Hearing disabilities -- total deafness or uncorrectable hearing handicaps that make an individual insecure in public areas because of an inability to communicate or hear warning signals.
 - e) Disabilities of incoordination -- faulty coordination or palsy from brain, spinal, or peripheral nerve injury.
 - f) Mental retardation -- applicant must have IQ of 49 or less and be unable to perform routine repetitive tasks or have physical or other mental impairment resulting in restriction of function;
 - g) Brain damage -- diagnosis by a psychiatrist, neurologist, or clinical pathologist, establishing that the applicant has organic brain syndrome.

Table continued on following page.

Table 4-1 (Continued)

ELIGIBILITY CRITERIA

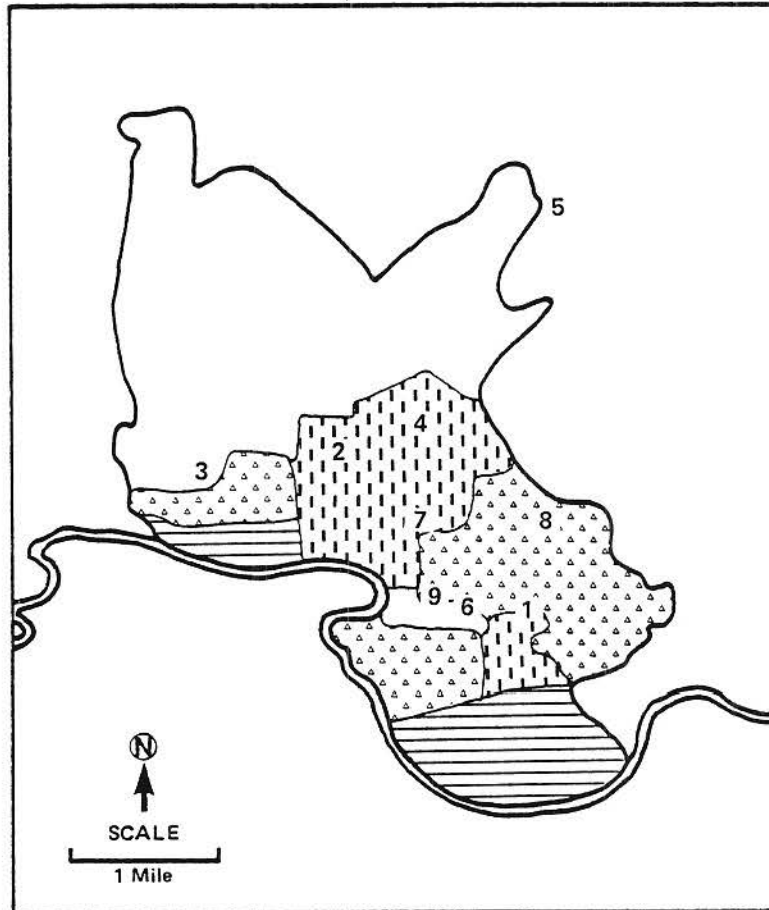
In cases where handicaps are not obvious, the following serve as proof of eligibility:

- a) Medicare card with Codes HA or W;
- b) Supplemental Security Income checks (gold) with codes DI, DX, DE, DC, DS, BI, BX, BE, BC, or BS;
- c) A doctor's statement certifying that the applicant has a disability that hinders mobility;
- d) A letter of certified disability from the VA or Social Security office; or
- e) A signed statement allowing the project staff to check the applicant's file at the Social Security office for a record of disability.




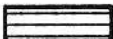
SOURCE: Project staff documentation of eligibility criteria.

Figure 4-2

TAXI DISCOUNT PROGRAM REGISTRATION AND TICKET PURCHASE LOCATIONS



LEGEND:

-  Less than 7% elderly
-  7-14% elderly
-  Greater than 14% elderly
-  Underdeveloped flood plain area


- 1 Simon Bright Apartments Office, Monday 9 to 12
- 2 Oak Manor Nursing Home, Tuesday 9 to 11
- 3 Fairfield Recreation Center, Tuesday 11 to 12
- 4 Emma Webb Park Office, Wednesday 9 to 11
- 5 Guardian Care Nursing Home, Wednesday 11 to 12 (Cancelled due to low volume)
- 6 Carver Courts Office, Thursday 9 to 11
- 7 Hotel Kinston, Thursday 11 to 1
- 8 Mitchell Wooten Apartments Office, Friday 9 to 12
- 9 City Hall, Monday thru Friday 1 to 5

NOTE: Project cashier present at each site at the times indicated.

Figure 4-3

SAMPLE IDENTIFICATION CARD AND TAXI TICKETS

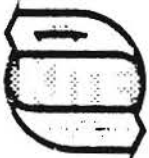
IDENTIFICATION CARD
KINSTON'S INDEPENDENT TRANSPORTATION FOR THE ELDERLY



Name: _____
Address: _____
I.D. Number: _____

The Bearer of this card is eligible to participate in Kinston's "Independent Transportation For The Elderly" program.

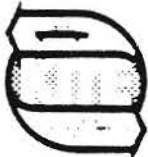
KINSTON'S
INDEPENDENT TRANSPORTATION
FOR THE ELDERLY



I.D. NUMBER: _____

Bearer of this ticket is entitled to **1.00** purchase of transportation from participating in Kinston's INDEPENDENT TRANSPORTATION FOR THE ELDERLY

KINSTON'S
INDEPENDENT TRANSPORTATION
FOR THE ELDERLY



I.D. NUMBER: _____

Bearer of this ticket is entitled to **25c** toward the purchase of transportation from any taxi company participating in Kinston's INDEPENDENT TRANSPORTATION FOR THE ELDERLY

NOTE: Tickets sold in denominations of \$.25 and \$1.00, with \$5.00 worth of tickets per book.

example, several registrants who could not qualify for drivers' licenses because of travel handicaps used taxis on a subscription basis to travel to and from work. Other registrants encountered temporary situations (e.g., hospitalization of spouse) that required relatively intensive use of taxis for a shorter period of time. Because of these needs the project manager instituted an informal policy whereby registrants could apply for a waiver of the budget limit if they had special travel requirements.

Approximately 40 registrants (5 percent of all registrants) took advantage of this policy. This group contained a disproportionate representation of nonelderly handicapped individuals and workers in comparison to registrants who did not obtain the waiver (see Table 4-2) and tended to use the project much more frequently than other registrants. As shown in Table 4-3, 86.0 percent of the registrants who had not applied for or been granted the budget limit waiver did not use the project more than the monthly purchase limit for any of the seven months between January and July 1979, while 59.0 percent of the registrants who had obtained the waiver used the project more than the nominal purchase limit at least once.

It must be noted that the adoption of the limit waiver policy by the project staff did not necessarily allow all registrants to make all of the trips they would have liked using project discounts. The policy was not publicized and was only applied upon the initiative of the registrants (who may not even have been aware that this was an option). Indeed, the fact that over 13 percent of all project registrants who did not obtain a budget waiver at least occasionally took more project trips per month than the purchase limit would allow them to take on a continuous basis tends to indicate that the purchase limit acted as a constraint on their project tripmaking. Since individuals who would otherwise use the project mode frequently (e.g., for work trips) might be discouraged by the budget limits from registering for or utilizing the project discounts at all, and rely instead on some alternate method of travel, the effect of the budget limits may be greater than indicated by this figure. This is supported by the fact that 38.6 percent of all registrants have indicated that they would purchase more discount tickets if they were allowed to.* Furthermore, project registrants taking taxi trips without using discount tickets comprised 4.5 percent of overall taxi demand in Kinston, the equivalent of 26.6 percent of total project ridership.** While some "stockout" of tickets is unavoidable, and some registrants may simply have chosen not to use tickets, indications are that factors such as the initial presentation of use limit restrictions to registrants and lack of publicity of the waiver policy on the part of the project staff caused many registrants to use the project less than they otherwise might have.

*Survey of project registrants, July 1979.

**Taxi on-board survey, August 1979.

Table 4-2

COMPARISON OF REGISTRANTS ALLOWED TO EXCEED THE PROJECT TICKET PURCHASE LIMIT AND REGISTRANTS NOT ALLOWED TO EXCEED THE LIMIT, AS OF NOVEMBER 1979

	<u>Allowed to Exceed</u>	<u>Not Allowed to Exceed</u>
Number	40	737
Age (percent)		
5-54	68.3%	9.1%
55-64	2.4	9.5
65-69	19.5	31.3
70-74	4.9	22.6
75-84	2.4	23.7
85+	2.4	3.7
Sex		
Male	42.5	21.9
Female	57.5	78.1
Race		
White	37.5	35.9
Black	62.5	63.3
Other	0.0	0.8
Marital Status		
Single	37.5	10.3
Married	17.5	22.4
Formerly Married	45.0	67.3
Handicap Status		
No Handicaps	20.0	62.1
Non-Ambulatory	5.0	1.5
Semi-Ambulatory	5.0	23.8
Sight	52.5	7.4
Hearing	0.0	1.7
Incoordination/Mental Retardation/ Brain Damage	17.5	3.5
Aids		
Crutches	0.0	1.7
Wheelchair	5.0	1.5
Walker	0.0	2.8
Cane	20.0	17.3
Escort	17.5	1.4
Other	12.5	0.8
Total	55.0	25.5
Current Driver's License		
Yes	12.5	11.1
No	87.5	88.9

Table continued on following page.

Table 4-2 (Continued)

COMPARISON OF REGISTRANTS ALLOWED TO EXCEED THE PROJECT TICKET PURCHASE LIMIT
AND REGISTRANTS NOT ALLOWED TO EXCEED THE LIMIT, AS OF NOVEMBER 1979

	<u>Allowed to Exceed</u>	<u>Not Allowed to Exceed</u>
Number of Vehicles in Household		
0	87.5%	84.3%
1	7.5	13.3
2+	5.0	2.3
Household Size		
1	35.0	54.4
2	25.0	31.8
3	12.5	7.2
4+	27.5	6.6
Number in Household 65 Yrs./Older		
0	60.0	20.5
1	25.0	59.4
2+	15.0	20.1
Number in Household Less than 65 Yrs. and Handicapped		
0	52.5	76.6
1	42.5	19.9
2+	5.0	3.4
Employment Status		
Employed Full-time	32.5	2.1
Employed Part-time	0.0	3.6
Unemployed	10.0	6.6
Retired	32.5	75.5
Student	2.5	0.7
Homemaker	0.0	2.9
Other	20.5	9.9
Household Income		
Less than \$3,000	63.2	64.8
\$3,000 to \$4,999	26.3	25.1
\$5,000 to \$7,999	5.3	5.0
\$8,000+	5.2	5.1

SOURCE: Registration interviews, September 1977-November 1979.

Table 4-3

COMPARISON OF PROJECT USAGE WITH TICKET PURCHASE LIMITS*
 (Percent of Registrants)

	Number of Months Usage Exceeded Monthly Purchase Limit in Sample of Seven Months from January through July 1979								
	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Total</u>
All registrants (n=777)	83.8	7.2	4.0	2.8	1.2	0.5	0.1	0.4	100
-Registrants with budget waiver (n=40)	41.0	10.2	17.9	7.7	5.1	7.7	2.6	7.7	100
-Registrants without budget waiver (n=737)	86.0	7.0	3.2	2.6	0.9	0.1	0	0	100

SOURCE: Taxi ticket use records.

*In the short term, usage may exceed the monthly purchase limit if an individual has saved some tickets from purchases made in previous months. Therefore, it is possible for registrants who had not obtained a budget waiver to exceed the purchase limit in one or more months without violating project rules.

PROGRAM PROMOTION

Program promotion entailed a variety of administrative activities undertaken to facilitate the implementation and acceptance of the project. For example, taxi drivers had to be instructed in the handling of project tickets (see Phase III, below). Also, project-related information was often requested by registrants and potential registrants over the telephone.

Overall, however, the largest component of program promotion involved marketing and outreach activities. Beginning in the middle of September 1977, an intensive advertising and promotional effort was undertaken to encourage all eligible citizens of Kinston to register with the program and obtain the identification card that would allow them to receive discount fares. Organizations and agencies with elderly and/or handicapped clients and members were asked to assist in registration, and provisions were made for those who could not register in person. Local churches were contacted, as well as the offices of Social Security, Social Services, Vocational Rehabilitation, the Veteran's Administration, Housing Authority, Recreation Department, Health Department, and Lenoir County Hospital. Programs such as "Meals on Wheels" and "Foster Grandparents," in which the elderly and handicapped might be interested, provided lists of individuals who were then contacted personally by telephone. A letter campaign was also conducted in which over 1,800 potential registrants whose names and addresses were drawn from the city's voter registration list were contacted by mail.





After the first month of project operation, public relations activities continued at a lower level of effort, primarily involving contacts with social service agencies and periodic media announcements. The program was publicized in the newspaper and in one-minute radio advertisements, five times a day for five weeks in November-December 1977 on two local stations. Also, the staff distributed posters and pamphlets (see Figure 4-4) and gave informal talks about the program. Finally, based on a suggestion by the UMTA project manager, complimentary rides were offered as a means of attracting eligible individuals to register. If cab drivers told potential participants about the program and brought them in to register, the fare would be paid by the project, allowing the passenger to ride for free. Although the drivers reacted enthusiastically to this plan, very few took advantage of it.

Overall, despite the high level of promotion and marketing activity, registration for the program was relatively modest. After an initial registration of 265 people in the first month, registration declined to a slow but steady rate.* As shown in Table 4-5, most individuals decided to register after hearing about the program from a friend or relative. Project

*A summary of new project registration by month from September 1977 through February 1980 is presented in Table 4-4.

Figure 4-4

KITE PROMOTIONAL PAMPHLET



"KITE" is a program specifically designed to provide unrestricted transportation within the city limits to eligible citizens.

Here's how it works!

If you are 65 years old or handicapped and a resident of the City of Kingston, you may be eligible. If you are eligible you should go to one of the centers listed on the reverse side of this flyer to register and be certified to participate in this program. You will be given a registration card and ID number which you must show to the taxi driver whenever you ride. Once you are registered you may purchase up to \$20.00 worth of tickets each month which are redeemable for taxi fares only. However, you pay only half of their value. For example, \$20.00 worth of tickets will cost you \$10.00 with the remainder being paid by this program. There are no restrictions on travel other than the tickets may be used only for trips within the city limits.

The maximum ticket redemption is only worth \$20.00 (the maximum amount that can be purchased in any month).

Only licensed taxicab drivers are permitted to use this program. All taxicab companies (except those on the reverse side of this flyer) and passengers must carry their own liability insurance. Passengers participating in the KITE program should show their own registration card and pay the full fare for tickets.

When you have used all your tickets you may buy more at either the ticket sales sites or at City Hall in the Transportation Office.

Continued on following page.


Figure 4-4


KITE PROMOTIONAL PAMPHLET (Continued)

“KITE”


**Kinston's Independent Transportation
For The Elderly**

A Transportation Service
designed specifically for
the elderly and handicapped
citizens of Kinston.




 **IDENTIFICATION CARDS**

If you are eligible, you will be issued an identification card to present to the taxi driver when you wish to ride.


 **PARTICIPATING TAXI COMPANIES**

These are the local taxi companies participating in the "KITE" program:


City Taxi	523-6361
Eagle Cab	523-2240
Manhattan Cab	523-3244
Smith's Cab	527-4462
Surton Cab	527-5174
Union Taxi	523-2116

 **TICKETS**

Tickets may be purchased in denominations of 25¢ and \$1.00. You may buy tickets as often as you like but a maximum of \$20.00 per month per person. Tickets will be in books at \$5.00 per book.


 **FOR FURTHER INFORMATION CALL: 527-2513**

or contact the Transportation Office at City Hall

 **CASHIER HOURS**

Tickets may be purchased Monday thru Friday as follows:

Monday	Simon Bright Apartments Office 9 to 12
Tuesday	Oak Manor Nursing Home: 9 to 11 Fairfield Recreation Center: 11 to 12
Wednesday	Emma Webb Park Office: 9 to 11 Guardian Care Center: 11 to 12
Thursday	Carver Courts Office: 9 to 11 Hotel Kinston: 11 to 1
Friday	Michael Wooten Apartments Office: 9 to 12
Monday thru Friday	City Hall: 1 to 5



400-0000000-00000000

Table 4-4

NEW PROJECT REGISTRATIONS

		<u>Month Only</u>	<u>Cumulative Total</u>
1977	September	265	265
	October	53	318
	November	40	358
	December	31	389
1978	January	23	412
	February	24	436
	March	35	471
	April	37	508
	May	17	525
	June	17	542
	July	16	558
	August	26	584
	September	13	597
	October	14	611
	November	12	623
	December	6	629
1979	January	22	651
	February	17	668
	March	11	679
	April	7	686
	May	18	704
	June	16	720
	July	14	734
	August	9	743
	September	5	748
	October	14	762
	November	12	774
	December	9	783
1980	January	11	794
	February	7	801

SOURCE: Project records.

Table 4-5
 KITE PROMOTION
 (Percent)

	<u>Provided Information*</u>	<u>Convinced to Register</u>
Letter Campaign	24.2	23.7
Newspaper	18.1	11.7
Television	6.8	1.8
Radio	14.2	7.6
Friend or Relative	46.7	42.7
Social Service Agency	11.8	10.3
Employer	1.7	1.4
Religious Organization	1.0	0.6

(n = 768)

SOURCE: Registration interviews, September 1977 to October 1979.

*Does not add to 100 percent because of multiple responses.

staff promotions and social service agencies were also significant information sources.

PHASE III. TICKET DISTRIBUTION/REDEMPTION SYSTEM

The user-side subsidy was administered through the sale of tickets that could be used for payment on taxi rides* to eligible individuals who registered for the program and obtained a project identification card using the procedures described in Phase II (above). Project registrants with proper identification could purchase tickets for half of their face value from the project cashier, who traveled to each of the residential and activity centers shown in Figure 4-2. At the time of purchase, tickets were coded with the user's identification number. When a registrant paid for a taxi trip using the tickets, the identification card had to be shown to prove that the tickets were valid, discouraging unauthorized individuals from trying to take advantage of the subsidy. The cab driver then recorded the trip in a log book, giving the ID number, origin and destination, fare and time-of-day (see Figure 4-5). The log book and tickets were turned in periodically (typically every week) for reimbursement by the city. These returns were checked and processed by the project technician, and payment was typically issued by the payroll clerk within two or three business days.

At the outset of the project, taxi operators expressed reservations concerning the driver's responsibilities in the detection of fraud. Overall, however, it appears that the unauthorized use of project tickets was extremely limited. Operators encountered very few instances where individuals attempted to use tickets without a corresponding identification card (i.e., tickets that have been transferred from an eligible person) or cases where identification information appeared to be falsified.** Of course, it would have been possible, for example, for operators to induce registrants to turn over their tickets without providing a ride so that operators and registrants shared the value of the subsidy illegally. However, given the project policy of linking tickets to specific registrants at the time of sale as well as at the time of use through identification numbers, the ability of project staff to recognize irregularities in the purchase patterns of individual registrants, and the complete record of project trips available to the project staff from the taxi operator logs, the opportunities for most types of fraud on the part of users or service providers appear to be very limited.

*Only taxi rides within Kinston were eligible for payment with project tickets.

**Taxi operator interviews, July 1979.

Figure 4-5

SAMPLE PROJECT TRIP LOG

Company <u>MANHATTAN</u>				
Franchise Owner <u>JOHN DOE</u>				
Date <u>SEPTEMBER 12, 1977</u>				
ID#	Origin Address	Destination Address	Fare	Time
000012	SIMON BRIGHT	HOSPITAL	1.50	9 AM
000123	DR. PIERCE'S OFFICE	1102 OAK STREET	1.50	10:30 AM
000145	WINN DIXIE	HOTEL KINSTON	1.25	1 PM
000237	COURTHOUSE	MITCHELL WOOTEN	1.25	3:30 PM
000794	1100 NORTH EAST ST.	BRODY'S	1.00	6:00 PM

ADMINISTRATIVE COSTS

The administrative actions described above that were required to implement and manage the Kinston user-side subsidy demonstration entailed a considerable effort on the part of the project staff. A number of nonlabor expenses, such as advertising costs and office rental, were also incurred. These project management costs can be divided into those associated with the specific phases of administrative activity described above, those that are essentially overhead, and those that form the subsidy payments themselves, as follows.

PHASE I. PREOPERATIONAL PLANNING

The selection of project staff and planning of administrative procedures were carried out almost entirely by the project manager and project technician. As shown in Table 4-6, the effort required from these individuals amounted to 283.5 hours and \$1,485 in direct time and labor cost during the period from June through the middle of September 1977. Under the assumption that fringe benefits and other nondirect labor charges add approximately 25 percent to direct labor costs, the total cost of Phase I is estimated to be \$1,856. This was essentially a one-time start-up cost that cannot meaningfully be allocated over project rides, etc. It should be noted, however, that these start-up costs may be higher at nondemonstration sites. Some activities that must be undertaken to implement a user-side subsidy program, such as solicitation of operating funds, were undertaken in Kinston prior to the formal initiation of the preoperational planning phase and are not accounted for here.

PHASE II. ADMINISTRATIVE SUPPORT

Administrative support activities involved virtually all of the project staff. The project manager, project technician, and cashier participated in initial program marketing and outreach activities, while project registration and monitoring were the responsibility of the project technician and cashier. The hours expended by each of these individuals on Phase II activities for a sample of months are shown in Table 4-7. Once again, these efforts did not vary directly with project utilization by registrants. However, they can meaningfully be divided into a cost per registrant (for the registration process), continuous fixed costs (information dissemination and ongoing marketing activities) and start-up costs (intensive initial marketing/outreach and information dissemination) as follows:

- Registration costs can be found by identifying the effort spent in different months on the registration process and dividing by the number of registrations taking place during that time. As shown in Table 4-8,

Table 4-6

PREOPERATIONAL PLANNING COSTS

	<u>Project Manager</u>	<u>Project Technician</u>	<u>Cashier</u>	<u>Total</u>
Hours - 6/77	50.5	0.0	0.0	50.5
7/77	16.5	27.0	0.0	43.5
8/77	19.5	132.0	0.0	151.5
9/77	16.0	10.0	12.0	38.0
Total Hours	<u>102.5</u>	<u>169.0</u>	<u>12.0</u>	<u>283.5</u>
Annual Salary (1977)	\$15,225	\$7,925	\$5,928	--
Cost Per Hour (= Annual Salary ÷ Annual Hours)	\$ 7.61	\$ 3.96	\$ 2.96	--
Phase I Direct Labor Cost (= Total Hours x Cost Per Hour)	\$ 780	\$ 669	\$ 36	\$1,485
Phase I Direct Nonlabor Cost*	--	--	--	\$ 371
Phase I Total Direct Cost	--	--	--	\$1,856

SOURCE: Project staff time records.

*Assumed to equal 25 percent of direct labor cost. Includes fringe benefits.

Table 4-7

PROJECT STAFF ADMINISTRATIVE SUPPORT EFFORT

		<u>Project Manager</u>	<u>Project Technician</u>	<u>Cashier</u>	<u>Interviewers</u>
Hours (Phase II Only)	9/77	27.0	73.0	59.5	240
	10/77	51.5	47.0	72.0	-
	11/77	22.0	40.0	68.0	-
	12/77	19.0	40.0	45.0	-
	11/79	4.0	17.3	13.0	-

SOURCE: Project staff time records.

Table 4-8
REGISTRATION COSTS

		<u>Project Technician</u>	<u>Cashier</u>	<u>Interviewers</u>	<u>Total</u>
Hours (Registration Interviews Only)	9/77	13	25	240	-
	10/77	6	31	-	-
	11/77	8	35	-	-
	12/77	10	25	-	-
	11/79	<u>0</u>	<u>8.7</u>	<u>-</u>	<u>-</u>
	Total	37	124.7	240	
Cost/Hour (1977)*		\$3.96	\$2.96	\$3.00	
Direct Labor Cost		\$ 147	\$ 369	\$ 720	\$1,236
Direct Nonlabor Cost**		-	-	-	\$ 309
Total Direct Costs		-	-	-	\$1,545
Number of Registrations+		-	-	-	401
Direct Cost/Registration		-	-	-	\$ 3.85

SOURCE: Project staff time records.

*See Table 4-6. Interviewer cost = \$3.00 per hour.

**Assumed to equal 25 percent of direct labor cost. Includes fringe benefits.

+See Table 4-4.

this cost has averaged \$3.85 per registrant (in 1977 dollars). This does not include the costs of the extensive interviews undertaken at the time of user registration for project evaluation purposes (see Appendix A).

- Continuous fixed costs are estimated as the difference between registration costs and overall Phase II costs after project registration and use had attained equilibrium. As shown in Table 4-9, data from November 1979 suggest a continuous fixed cost of \$150 per month (in 1977 dollars) to cover ongoing information dissemination, marketing, etc.
- Start-up costs consist of Phase II costs incurred at the beginning of the project that were not related to user registration or normal, continuous fixed costs. As shown in Table 4-10, these costs amounted to \$3,296 for the period of September 1977 to December 1977. After this period, the project staff discontinued their practice of recording the time spent on specific project activities. However, based on their assertion that the level and mix of administrative activities reached an equilibrium in January 1978, this estimate can be taken to represent the total initial costs associated with program marketing/outreach, etc.

PHASE III. TICKET DISTRIBUTION/REDEMPTION SYSTEM

Administrative activities related to the subsidy mechanism itself, such as ticket distribution and taxi operator reimbursement, involved the project technician, cashier, and assistant city clerk. (Initially, the project manager participated to a limited extent as well.) Overall, these costs can be expected to vary in proportion to project ridership and, as shown in Table 4-11, averaged approximately \$.29 per ride (in 1977 dollars).

OVERHEAD

Overhead costs include those project costs that are not attributable to any specific aspect of project activity and consisted almost entirely of office rental costs of \$200 per month (1977 dollars). The city finance officer was occasionally involved in general project financial matters, particularly at the beginning of the project, but the total amount of time spent was very small and not recorded.

SUBSIDY

The cost of the subsidy itself was equal to half of the value of all project taxi rides taken in any given month and is therefore sensitive to the number and characteristics of project rides. However, as shown in Table 4-12, the total fare per ride (and, by inference, average trip length) remained

Table 4-9
CONTINUOUS FIXED COSTS

	<u>Project Manager</u>	<u>Project Technician</u>	<u>Cashier</u>	<u>Total</u>
Hours 11/79 (Phase II, Nonregistration)	4	17.3	4.3	--
Cost/Hour (1977)*	\$7.61	\$3.96	\$2.96	--
Direct Labor Cost	\$ 30	\$ 69	\$ 13	\$ 112
Advertising, etc., Expenses	--	--	--	\$ 10
Direct Nonlabor Cost**	--	--	--	\$ 28
Total Direct Cost	--	--	--	\$ 150

SOURCE: Project staff time records.

*See Table 4-6.

**Assumed to equal 25 percent of direct labor cost. Includes fringe benefits.

Table 4-10
START-UP COSTS

		<u>Project Manager</u>	<u>Project Technician</u>	<u>Cashier</u>	<u>Total</u>
Hours	9/77	27.0	60.0	24.5	-
	10/77	51.5	41.0	41.0	-
(Phase II, Nonregistration)	11/77	22.0	32.0	33.0	-
	12/77	19.0	30.0	20.0	-
Total		<u>119.5</u>	<u>163.0</u>	<u>118.5</u>	<u>-</u>
Cost/Hour (1977)*		\$7.61	\$3.96	\$2.96	-
Direct Labor Cost		\$909	\$645	\$351	\$1,905
Advertising, etc. Expenses		-	-	-	\$1,475
Other Direct Nonlabor Costs**		-	-	-	<u>\$ 476</u>
Sub-Total		-	-	-	\$3,856
Less 4 Months Continuous Fixed Costs+		-	-	-	\$ -560
Total Start-Up Costs		-	-	-	\$3,296

SOURCE: Project staff time records.

*See Table 4-6.

**Assumed to equal 25 percent of direct labor cost. Includes fringe benefits.

+See Table 4-9.

Table 4-11

TICKET DISTRIBUTION/REDEMPTION SYSTEM COSTS

	<u>Project Technician</u>	<u>Secretary/ Cashier</u>	<u>Assistant City Clerk</u>	<u>Total</u>
Hours 11/79	69.3	108.0	17.3	-
Cost/Hour (1977)*	\$3.96	\$2.96	\$5.78	-
Direct Labor Cost	\$ 274	\$ 320	\$ 100	\$ 694
Direct Nonlabor Cost**	-	-	-	\$ 174
Total Cost	-	-	-	\$ 868
Project Ridership (11/79)	-	-	-	2,979
Ticket System Cost per Ride+ (approximate)	-	-	-	\$.29

SOURCE: Project staff time records.

*See Table 4-6.

**Assumed to equal 25 percent of direct labor cost. Includes fringe benefits.

+Note: This is the cost of operating the ticket system only and does not include either the cost of the subsidy itself or any allocation of other costs.

Table 4-12
SUBSIDY COST PER PROJECT RIDE

	<u>Month</u>	<u>Number of Project Rides</u>	<u>Total Fare (Including Subsidy)</u>	<u>Total Fare Per Ride</u>	<u>Subsidy per Ride*</u>
1977	September	665	\$ 947	1.42	.71
	October	1,715	2,103	1.23	.61
	November	1,963	2,509	1.28	.64
	December	1,999	2,468	1.23	.62
1978	January	2,156	2,730	1.27	.63
	February	2,187	2,783	1.27	.64
	March	2,692	3,358	1.25	.62
	April	2,648	3,381	1.28	.64
	May	3,003	3,841	1.28	.64

SOURCE: Project records.

*Equals 50 percent of the total fare per ride.

relatively constant throughout the early stages of the project, leading to a subsidy of approximately \$.63 per ride. Of course, this amount changed later in the project due to general increases in taxi fares.

PROJECT MANAGEMENT COST SUMMARY AND FUNDING ISSUES

The project management costs described above can be summarized as follows:

<u>Activity</u>	<u>Cost (1977 dollars)</u>			
	<u>Initial</u>	<u>Per Month</u>	<u>Per Registrant</u>	<u>Per Ride</u>
Phase I (Preoperational Planning)	\$1,856			
Phase II (Administrative Support)	\$4,841	+ \$ 150	+ \$ 3.85	
Phase III (Ticket Distribution/Redemption System)				\$.29
Overhead		\$ 200		
Subsidy				\$.63
TOTAL	\$6,697	+ \$ 350/ month	+ \$ 3.85/ registrant	\$.92/ ride

Based on this summary, expected administrative costs for user-side subsidy projects at sites similar to Kinston (in terms of administrative support, ticket distribution/redemption system, taxi fares, and subsidy percentage, etc.) can be estimated. For example, the annual cost for an operation of

this type that averages 10 new registrants per month and 3,000 project rides per month at equilibrium (i.e., after all start-up activities have been undertaken and the initial wave of project registration has taken place) can be estimated as follows:

$$\begin{aligned} \text{Annual cost} &= 12 \times \text{monthly cost} \\ \text{(1977 dollars)} &= 12 \times (350 + (10 \times 3.85) + (3000 \times .92)) \\ &= \$37,782, \end{aligned}$$

including the cost of the subsidy itself.

In Kinston, these costs were covered during the demonstration by a combination of funding from the UMTA demonstration grant and in-kind donations by the City of Kinston. The city provided the services of the project manager, finance officer, and assistant city clerk, as well as the project office, without charge to the project. Demonstration funding, on the other hand, was used to provide the services of the project technician and cashier, as well as to pay for the subsidy itself and other miscellaneous expenses.

As of August 1980, it was anticipated that the demonstration grant would be depleted on or about March 1981. The City of Kinston has filed an application with the State of North Carolina to obtain federal funds for nonurbanized areas available under Section 18 of the Urban Mass Transportation Act of 1964 (as amended) with which to continue the KITE program beyond that time.

5

LEVEL-OF-SERVICE CHANGES

The user-side subsidy demonstration in Kinston had the potential to affect a variety of transportation supply attributes. The direct, primary effects of the demonstration involved the fare and level of ride-sharing. Secondary effects, involving changes in other level-of-service attributes caused by operator reactions to the project (i.e., if taxi operators perceived that there were differences between the attractiveness of project and nonproject trips, they might act to create corresponding service quality differentials) were much less in evidence. All of these effects are described in detail below.

PRIMARY EFFECTS

FARE

The most important single change in transportation supply attributes and, indeed, the focus of the entire demonstration, involved the reduction of taxi fares for elderly and handicapped residents of Kinston. As outlined in Chapter 4, eligible individuals who registered for the KITE program were able to obtain a 50 percent subsidy for taxi fares through the purchase of discount tickets. Because of purchase limitations, this discount was only effective for a maximum of \$25 (originally \$20) worth of taxi rides per month and only applied to trips within Kinston. However, given the magnitude of the subsidy, this change in travel cost as perceived by the user was expected to have significant effects on registrant mobility.

RIDE-SHARING

As outlined earlier, ride-sharing had previously been allowed in Kinston only with the consent of the first passenger. When the project started, this restriction was removed, so that rider consent was no longer required. However, because ride-sharing was not an uncommon practice before the project, the practical effect of this change was insignificant. For example, the percentage of taxi passengers whose rides were shared with the subsequent ride in a given cab was essentially the same before and after the beginning of the project (9.6 percent* versus 9.4 percent**). This supports the observation of many taxi operators that the previous Kinston taxi ordinance had not posed a severe constraint, since the first passenger rarely if ever declined to give permission for ride-sharing.+

SECONDARY EFFECTS

It is sometimes assumed that the ticket system used in Kinston precluded operator discrimination in the treatment of project and nonproject trips, since an individual did not formally identify him/herself as a project participant until after service had been rendered (i.e., when paying for the ride). However, a large portion of the traffic of each taxi firm in Kinston involved regular passengers who were recognized by dispatchers and/or drivers. Therefore, it would have been possible in practice for operators to distinguish between likely project and nonproject trips, though this did not lead to extensive service quality differentiation, as shown below.

WAIT TIME

If taxi operators perceived significant differences between the attractiveness of project and nonproject trips, they might not assign equal importance to providing prompt service to requests from all customers. This attitude would be reflected in a difference in wait times between project and nonproject trips. For immediate service requests, wait time includes the difference between pick-up and service request times, while for advanced requests, it includes only the difference between actual and scheduled pick-up times. In practice, no significant difference was found between the wait times of project and nonproject users (means of 4.8(n=67) and 5.0(n=338)

*Taxi on-board survey, August 1977.

**Taxi on-board survey, August 1979.

+Taxi operator interviews, July 1979.

minutes, respectively).^{*} Rather, it appears that taxi service in Kinston was prompt and punctual for project and nonproject users alike. This reinforces the unanimous opinion of project registrants (see Table 5-1) that project rides did not entail longer wait times than nonproject rides.

RIDE TIME

Given the incentives for taxi operators to provide direct and efficient service once a passenger has been picked up, it is extremely unlikely that operators would attempt to differentiate the service quality of project and nonproject trips in this manner.^{**} In fact, ride times of project and nonproject trips did not differ significantly (means of 7.0 (n=66) and 7.4 (n=326) minutes, respectively).⁺ Project registrants were again unanimous in their opinion that project rides took no longer than nonproject rides and that project ride times were no more variable than nonproject ride times (see Table 5-1).

COURTESY/ASSISTANCE

As shown in Table 5-2, there were differences between project and nonproject trips in the amount of assistance offered by drivers. Project riders tended to receive more physical assistance and help with doors and packages at both the origins and destinations of trips than nonproject riders. However, nonproject riders who were eligible for the subsidy program also received higher levels of driver assistance. Indeed, the level of physical assistance offered by drivers on eligible nonproject trips at their destinations was significantly higher⁺⁺ than that offered on project trips, a phenomenon that may be attributable at least in part to the need for drivers to record information about project trips in a log book and carefully keep track of project tickets once they had been received. Overall, indications are that

^{*}Taxi on-board survey, August 1979.

^{**}If the previous restrictions on ride-sharing had been binding, ride times of project and/or nonproject rides could have been affected by an increase in diversions to serve other passengers, which also would have reduced wait times.

⁺Taxi on-board survey, August 1979. Nonproject trips could be expected to be slightly longer than project trips, since project tickets could only be used to pay for trips within Kinston. However, the higher incidence of ride-sharing on project trips may tend to increase ride times, offsetting the effects of trip length differences.

⁺⁺At the 95 percent confidence level.

Table 5-1

PROJECT REGISTRANT COMPARISONS OF SERVICE QUALITY FOR
PROJECT AND NONPROJECT TAXI RIDES

	<u>Percent Responding</u>		<u>n</u>
	<u>Yes</u>	<u>No</u>	
Project wait time longer?	0.0	100.0	141
Project ride time longer?	0.7	99.3	141
Project ride time as reliable?	100.0	0.0	141
Project ride courtesy/assistance as good?	100.0	0.0	141

SOURCE: Survey of project registrants, July 1979.

Table 5-2
 DRIVER ASSISTANCE OFFERED TO PASSENGERS
 (Percent)

	<u>At Trip Origin</u>		<u>At Trip Destination</u>	
	<u>Physical Assistance</u>	<u>Help with Doors, Packages</u>	<u>Physical Assistance</u>	<u>Help with Doors, Packages</u>
Project (n=69)	4.4	10.1	2.8	11.1
Nonproject Total (n=351)	1.7	8.6	1.4	8.8
Eligible (n=44)	9.3	11.6	11.4	13.6
Noneligible (n=307)	0.7	8.2	0.0	8.1

SOURCE: Taxi on-board survey, August 1979.

the level of assistance offered by drivers depended upon the characteristics and needs of riders, rather than intentional operator efforts to provide service quality differentials. Once again, this was confirmed by the unanimous opinion of project registrants, who found no difference in driver courtesy and assistance between project and nonproject trips (see Table 5-1).

SUMMARY

Overall, the only significant supply change associated with the demonstration project involved the change in effective taxi fare. The change in taxi regulations regarding ride-sharing had no real effect, due to the widespread acceptance of ride-sharing prior to the demonstration. Also, taxi operators made no effort to differentiate the service they offered to project and nonproject riders. This indicates that taxi operators did not perceive significant differences between the attractiveness of project and nonproject rides.

6

USER IMPACTS AND TRAVEL BEHAVIOR CHANGES

The effect of the taxi discount program on the travel behavior of the elderly and handicapped in Kinston constituted the principal impact of interest in this demonstration. The 50 percent reduction in taxi fares was expected to attract many eligible individuals to register for the program, and to have significant effects on the number and types of trips they made. In this chapter the characteristics of project registrants and users are described in detail, and the effects of the program on their tripmaking are analyzed.

PROJECT REGISTRATION

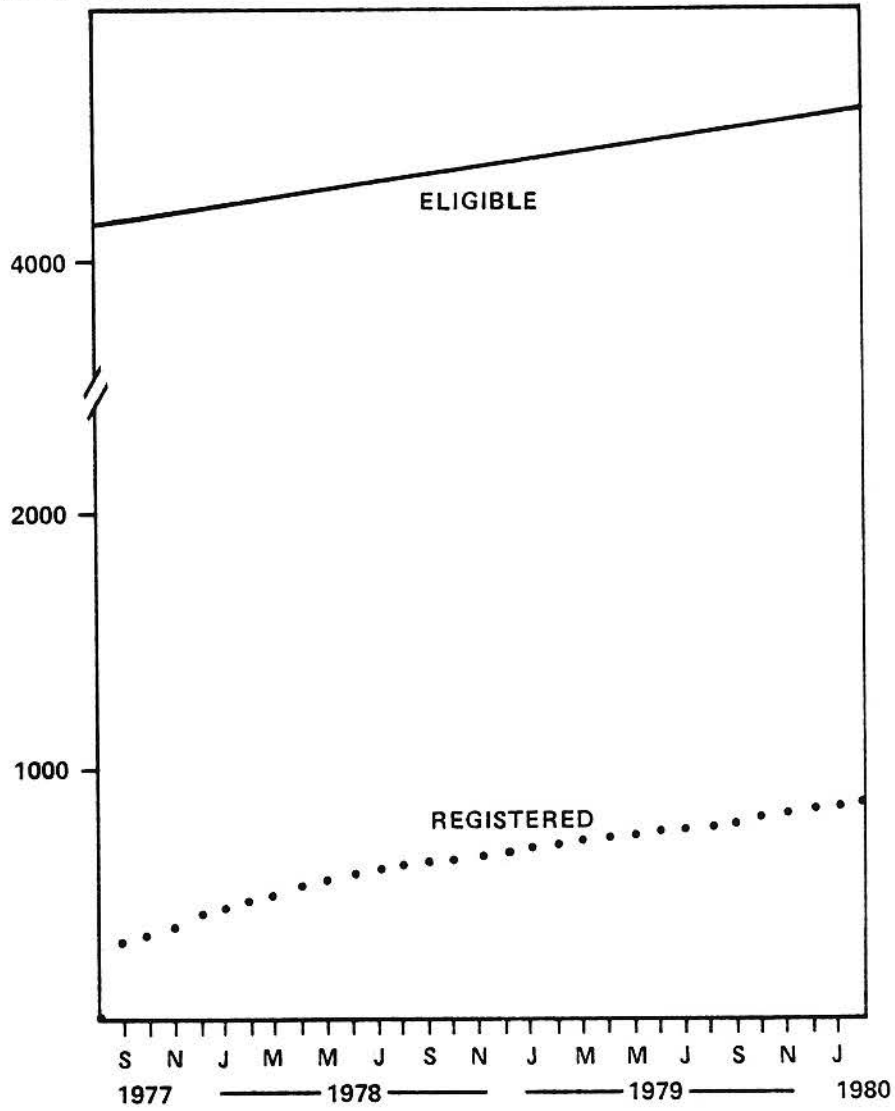
As outlined in Chapter 3, it is tentatively estimated approximately 4,152 elderly or handicapped residents of Kinston were eligible for the taxi discount program in 1977, and that by 1979 this number had increased to 4,584. This change, and the cumulative pattern of project registration over time, is shown in Figure 6-1.

It is evident from this figure that the proportion of registered individuals in the eligible population was relatively stable for most of the project. However, the inclination of specific individuals to register for the program varied widely and was related to a number of sociodemographic characteristics. A comparison of the characteristics of project registrants and nonregistrants and the penetration achieved by the project in these different market segments is presented in Table 6-1.

Figure 6-1

ELIGIBLE AND REGISTERED INDIVIDUALS

INDIVIDUALS



NOTE: Eligible population estimated in Chapter 3.

Registration statistics drawn from Table 4-3. These statistics may overstate the true number of registrants at any given time, since attrition among registrants has not been accounted for.

Table 6-1

COMPARISON OF PROJECT REGISTRANTS AND NONREGISTRANTS
AS OF NOVEMBER 1979

	<u>Registrants</u>	<u>Eligible Nonregistrants</u>	<u>Market Penetration</u>
Number	777*	3807**	.17
Age (percent)			
5-54	11.1	4.5	.33
55-64	9.3	3.6	.34
65-69	31.1	34.5	.15
70-74	22.0	27.3	.14
75-84	22.9	26.4	.15
85+	3.6	3.6	.17
Sex			
Male	22.9	33.6	.12
Female	77.1	66.4	.19
Race			
White	36.0	45.1	.14
Black	63.2	54.0	.19
Other	0.8	0.9	.15
Handicap Status			
No handicap	59.8	61.1	.17
Non-ambulatory	1.7	2.7	.11
Semi-ambulatory	22.9	23.9	.16
Sight	9.8	8.0	.20
Hearing	1.6	0.9	.27
Incoordination/ Mental retardation/ Brain damage	4.3	4.5	.16
Aids			
Crutches	1.6	1.8	.15
Wheelchair	1.7	2.7	.11
Walker	2.6	3.5	.13
Cane	17.4	8.0	.31
Escort	2.2	0.9	.33
Other	1.4	0.9	.24
Total	26.9	17.8	.24

Table continued on following page.

Table 6-1 (Continued)

COMPARISON OF PROJECT REGISTRANTS AND NONREGISTRANTS
AS OF NOVEMBER 1979

	<u>Registrants</u>	<u>Eligible Nonregistrants</u>	<u>Market Penetration</u>
Current Driver's License			
Yes	11.2	54.0	.04
No	88.8	46.0	.28
Number of Vehicles In Household			
0	84.7	22.3	.44
1	13.1	56.2	.04
2	2.0	18.8	.02
3	0.3	2.7	.02
Household Size			
1	54.3	35.4	.24
2	32.0	49.6	.12
3	7.6	12.4	.11
4+	6.1	3.5	.26
Number in Household 65 Years or Over			
0	22.8	2.7	.63
1	58.2	55.8	.18
2	18.2	39.8	.08
3	0.8	1.8	.08
Number in Household Less than 65 Years and Handicapped			
0	75.8	89.4	.15
1+	24.2	10.6	.32
Employment Status			
Employed full-time	4.1	3.5	.19
Employed part-time	3.8	8.1	.09
Unemployed	7.6	3.5	.31
Retired	81.9	66.1	.20
Student	0.9	1.8	.09
Homemaker	3.0	16.9	.03

Table continued on following page.

Table 6-1 (Continued)

COMPARISON OF PROJECT REGISTRANTS AND NONREGISTRANTS
AS OF NOVEMBER 1979

	<u>Registrants</u>	<u>Eligible Nonregistrants</u>	<u>Market Penetration</u>
Household Income			
Less than \$3,000	64.7	40.5	.25
\$3,000 to \$4,999	25.2	32.9	.14
\$5,000 to \$7,999	5.0	12.6	.07
\$8,000+	5.1	13.9	.07
	n = 777	n=113	

SOURCE: Survey of nonregistrants, July 1979 and registration interviews, September 1977-November 1979.

*The number of registrants and all related market penetration statistics may be slightly over-estimated, since attrition among registrants has not been accounted for.

**Estimated 1979 eligible population (=4584, from Chapter 3) less number of registrants.

Project registrants do not appear to differ significantly from eligible nonregistrants in their travel handicaps. However, registrants do contain a disproportionate representation of females and blacks, and tend to come from smaller households (54 percent live alone), with lower incomes. Nonelderly handicapped individuals, on average, are much more likely to register for the program than elderly individuals. Of particular relevance to the project, the overwhelming majority of project registrants do not have a driver's license or an automobile in their household, while more than half of the nonregistrants do have a license, and more than three-fourths of the nonregistrants have at least one automobile in their household.

Reasons cited by nonregistrants for their lack of participation in the program reinforce the importance of auto availability that is evident in registrant/nonregistrant comparisons. As shown in Table 6-2, over 70 percent of all nonregistrants indicated that the availability of automobiles to drive or ride in made it unnecessary for them to register for the program. In contrast, only 25 percent of all nonregistrants lacked information about the program or "intended" to register, and even these reasons tend to show a lack of need for or interest in the program. While the registration of a relatively small percentage of the 16.5 percent of all nonregistrants that lacked information about the program would cause a much more significant percentage increase in the number of registrants, these findings tend to indicate a limited potential for expansion of the program among nonregistrants. It is also important to note that none of the nonregistrants cited difficulties in using nonlift-equipped conventional taxis as a reason for not participating in the program.

New registrant characteristics changed somewhat over time. As shown in Table 6-3, later registrants tended to be made up more of individuals who had just become eligible for the project (i.e., age 65-69), and less of older individuals. Later registrants also consisted to a greater extent of whites and had somewhat higher incomes than earlier registrants. Of particular relevance to the project, later registrants had significantly higher access to automobiles through drivers' licenses and/or vehicles owned by the household. This may be attributable to the more widespread proliferation and usage of automobiles among the younger, newly eligible registrants, as well as an increased tendency for regular auto users to register for the program that may have been caused by the problems of gasoline availability and price during 1979 described in Chapter 3.

PROJECT USE

From the beginning of operations in September 1977, the project experienced a steady growth in ridership, interrupted mainly by the effects of periodic fare increases. A summary of the project ridership carried each month by participating taxi firms is presented in Table 6-4.

Table 6-2

REASONS CITED BY NONREGISTRANTS
FOR LACK OF PROGRAM PARTICIPATION

<u>Reason</u>	<u>Percent of All Nonregistrants Citing Reason*</u>
Capable of driving	42.1
Someone else drives for me	28.9
Haven't heard of the program	16.5
Haven't had time to register	8.3
No reason	6.6
	(n=121)

SOURCE: Survey of nonregistrants, July 1979.

*Does not sum to 100 percent due to multiple responses.

Table 6-3

REGISTRANT CHARACTERISTICS BY DATE OF REGISTRATION

	<u>9/77 to 4/78</u>	<u>5/78 to 12/78</u>	<u>1/79 to 11/79</u>
Number	518	120	130
Age (percent)			
5 - 54	10.4	16.6	10.7
55 - 64	9.1	8.4	10.8
65 - 69	29.2	35.0	34.6
70 - 74	24.1	14.2	20.0
75 - 84	23.9	20.0	20.8
85+	3.3	5.8	3.1
Sex			
Male	22.6	23.3	23.8
Female	77.4	76.7	76.2
Race			
White	31.7	38.3	50.8
Black	67.1	61.7	49.2
Other	1.2	0.0	0.0
Marital Status			
Married	21.9	22.5	23.1
Single	9.7	18.3	13.8
Formerly married	68.5	59.2	63.1
Handicap Status			
No handicap	60.3	62.1	55.9
Non-ambulatory	1.8	3.4	0.0
Semi-ambulatory	23.2	19.0	25.2
Sight	10.5	6.9	9.4
Hearing	1.2	0.9	3.9
Incoordination/ Mental retardation/ Brain damage	3.2	7.8	5.5

Table continued on following page.

Table 6-3 (Continued)

REGISTRANT CHARACTERISTICS BY DATE OF REGISTRATION

	<u>9/77 to 4/78</u>	<u>5/78 to 12/78</u>	<u>1/79 to 11/79</u>
Aids			
Braces	0.4	0.0	0.0
Artificial limbs	0.4	0.0	0.0
Crutches	2.3	0.0	0.0
Wheelchair	1.5	4.2	0.0
Walker	2.7	4.2	0.8
Cane (for walking)	17.2	8.3	10.8
Cane (for blind person)	3.3	0.8	2.3
Escort	1.0	5.8	3.9
Other	0.8	1.7	0.8
Total	29.6	25.0	18.6
Current Driver's License			
Yes	8.3	13.3	20.8
No	91.7	86.7	79.2
Number of Vehicles in Household			
0	88.2	77.5	77.3
1	9.9	17.5	21.9
2	1.9	3.3	0.8
3	0.0	1.7	0.0
Household Size			
1	55.2	45.0	59.5
2	31.8	33.3	31.7
3	6.9	10.8	7.1
4+	6.1	10.9	1.6
Number in Household 65 Years or Older			
0	25.2	20.0	15.7
1	56.9	61.7	59.8
2	17.2	16.7	23.6
3	0.6	1.7	0.8

Table continued on following page.

Table 6-3 (Continued)

REGISTRANT CHARACTERISTICS BY DATE OF REGISTRATION

	<u>9/77 to 4/78</u>	<u>5/78 to 12/78</u>	<u>1/79 to 11/79</u>
Number in Household			
Less than 65 Years and Handicapped			
0	75.5	77.5	75.4
1	20.6	20.8	23.8
2+	3.9	1.7	0.8
Employment Status			
Employed full-time	4.6	2.0	3.8
Employed part-time	3.1	4.9	5.6
Unemployed	7.4	15.5	1.0
Retired	83.5	74.6	81.2
Student	0.4	0.0	3.2
Homemaker	1.1	2.0	13.2
Household Income			
Less than \$3,000	71.3	49.1	52.5
\$3,000 to \$4,999	20.8	34.5	34.4
\$5,000-\$7,999	4.0	6.9	7.4
\$8,000+	3.9	9.5	5.7

SOURCE: Registration interviews, September 1977-November 1979.

Table 6-4

SUMMARY OF PROJECT RIDERSHIP

<u>Firm</u>	<u>Sept.</u> <u>1977</u>	<u>Oct.</u> <u>1977</u>	<u>Nov.</u> <u>1977</u>	<u>Dec.</u> <u>1977</u>	<u>Jan.</u> <u>1978</u>	<u>Feb.</u> <u>1978</u>	<u>Mar.</u> <u>1978</u>	<u>Apr.</u> <u>1978</u>	<u>May</u> <u>1978</u>	<u>June</u> <u>1978</u>	<u>July</u> <u>1978</u>	<u>Aug.</u> <u>1978</u>
City Taxi	33 (\$51)	73 (\$83)	77 (\$92)	84 (\$98)	90 (\$106)	57 (\$68)	90 (\$101)	61 (\$73)	92 (\$110)	102 (\$127)	55 (\$78)	64 (\$95)
Eagle Cab	136 (\$183)	355 (\$417)	408 (\$529)	402 (\$473)	524 (\$630)	505 (\$628)	675 (\$790)	657 (\$785)	624 (\$743)	561 (\$745)	562 (\$775)	666 (\$925)
Smith Cab	28 (\$31)	117 (\$143)	106 (\$134)	116 (\$144)	92 (\$110)	132 (\$167)	192 (\$232)	170 (\$210)	202 (\$255)	208 (\$287)	194 (\$277)	229 (\$337)
Sutton Cab	169 (\$299)	601 (\$733)	701 (\$883)	716 (\$877)	698 (\$846)	753 (\$947)	826 (\$1008)	839 (\$1052)	772 (\$978)	679 (\$957)	699 (\$1041)	771 (\$1135)
Union Taxi	205 (\$276)	358 (\$461)	401 (\$523)	412 (\$528)	483 (\$677)	451 (\$603)	586 (\$812)	578 (\$799)	754 (\$1027)	688 (\$1080)	634 (\$1041)	698 (\$1162)
Manhattan Cab	94 (\$107)	211 (\$266)	270 (\$348)	269 (\$348)	269 (\$361)	289 (\$370)	323 (\$415)	330 (\$441)	373 (\$498)	314 (\$464)	340 (\$506)	381 (\$597)
Lassiter Cab								13 (\$21)	186 (\$230)	122 (\$163)	156 (\$225)	176 (\$262)
	665 (\$947)*	1715 (\$2103)	1963 (\$2509)	1999 (\$2468)	2156 (\$2730)	2187 (\$2783)	2692 (\$3358)	2648 (\$3381)	3003 (\$3841)	2674** (\$3823)	2640 (\$3943)	2985 (\$4513)

Table continued on following page.

Table 6-4 (Continued)

SUMMARY OF PROJECT RIDERSHIP

Firm	Sept. 1978	Oct. 1978	Nov. 1978	Dec. 1978	Jan. 1979	Feb. 1979	Mar. 1979	Apr. 1979	May 1979	June 1979	July 1979	Aug. 1979
City Taxi	88 (\$133)	82 (\$130)	65 (\$98)	79 (\$114)	61 (\$90)	89 (\$131)	123 (\$188)	125 (\$181)	165 (\$236)	147 (\$238)	126 (\$218)	147 (\$242)
Eagle Cab	486 (\$717)	557 (\$801)	494 (\$719)	665 (\$969)	772 (\$1158)	786 (\$1190)	926 (\$1427)	860 (\$1284)	1021 (\$1596)	754 (\$1283)	711 (\$1236)	779 (\$1362)
Smith Cab	194 (\$292)	219 (\$318)	119 (\$169)	191 (\$277)	184 (\$264)	171 (\$249)	218 (\$315)	244 (\$358)	248 (\$350)	207 (\$335)	206 (\$350)	187 (\$323)
Sutton/ Dove Cab	771 (\$1143)	766 (\$1168)	775 (\$1180)	845 (\$1262)	786 (\$1177)	532+ (\$790)	628 (\$920)	548 (\$814)	617 (\$888)	622 (\$1035)	564 (\$947)	631 (\$1062)
Union Taxi	593 (\$969)	648 (\$1060)	664 (\$1084)	737 (\$1192)	709 (\$1141)	625 (\$1014)	618 (\$1138)	672 (\$1130)	793 (\$1336)	655 (\$1230)	695 (\$1292)	793 (\$1532)
Manhattan Cab	361 (\$558)	359 (\$550)	350 (\$526)	268 (\$405)	317 (\$489)	353 (\$544)	443 (\$677)	382 (\$562)	407 (\$643)	367 (\$640)	367 (\$662)	434 (\$757)
Lassiter Cab	249 (\$353)	199 (\$289)	229 (\$337)	215 (\$312)	240 (\$341)	240 (\$356)	314 (\$458)	258 (\$377)	263 (\$393)	142 (\$398)	230 (\$396)	262 (\$453)
Lenoir Cab			2 (\$3)	30 (\$46)	13 (\$18)	56 (\$75)	64 (\$95)	106 (\$156)	56 (\$86)	37 (\$61)	51 (\$72)	41 (\$61)
	2742 (\$4165)	2830 (\$4316)	2698 (\$4116)	3030 (\$4577)	3082 (\$4678)	2852 (\$4349)	3334 (\$5218)	3195 (\$4862)	3570 (\$5528)	2931** (\$5228)	2950 (\$5173)	3274 (\$5792)

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Table continued on following page.

Table 6-4 (Continued)

SUMMARY OF PROJECT RIDERSHIP

Firm	Sept. 1979	Oct. 1979	Nov. 1979	Dec. 1979	Jan. 1980	Feb. 1980	Project Total Sept. 1977-Feb. 1980
City Taxi	112 (\$193)	123 (\$214)	149 (\$261)	125 (\$212)	144 (\$250)	163 (\$281)	2,991 (\$4,492)
Eagle Cab	761 (\$1333)	877 (\$1502)	831 (\$1494)	762 (\$1320)	836 (\$1451)	774 (\$1318)	19,727 (\$29,783)
Smith Cab	146 (\$256)	205 (\$338)	180 (\$309)	163 (\$269)	150 (\$257)	193 (\$327)	5,211 (\$7,683)
Dove Cab	452 (\$790)	543 (\$926)	511 (\$887)	559 (\$948)	589 (\$1020)	521 (\$878)	19,484 (\$28,591)
Union Taxi	618 (\$1147)	668 (\$1254)	671 (\$1282)	634 (\$1218)	613 (\$1169)	614 (\$1167)	18,268 (\$30,344)
Manhattan Cab	371 (\$670)	402 (\$729)	374 (\$696)	293 (\$517)	368 (\$654)	345 (\$618)	10,024 (\$15,618)
Lassiter Cab	208 (\$358)	290 (\$487)	226 (\$392)	225 (\$374)	247 (\$416)	254 (\$425)	4,944 (\$7,816)
Lenoir Cab	41 (\$69)	49 (\$75)	37 (\$63)	38 (\$59)	26 (\$44)	20 (\$33)	667 (\$1,016)
	2709 (\$4816)	3157 (\$5525)	2979 (\$5384)	2799 (\$4917)	2973 (\$5261)	2884 (\$5047)	81,316 (\$125,343)

SOURCE: Project records.

*Figure in parentheses is amount of operator reimbursement, which is the face value of the tickets (i.e., full amount of the fare including 50 percent user prepayment).

**Fare increase of 25¢ per zone occurred during this period.
+Change in ownership of Sutton Cab to Dove Cab in February 1979.

Among registrants, there was wide variation in the extent to which the project discount was utilized for taxi trips. As shown in Figure 6-2, many registrants took no trips during the course of a month, while others used project tickets extensively. Differences in utilization rates appear to be related to a number of registrant characteristics. As shown in Table 6-5, the group of intensive users contained a disproportionate representation of individuals requiring aids to travel, and tended to have lower incomes in comparison with other registrants. The nonelderly handicapped appear to have been particularly heavy users, while usage was markedly lower for individuals over 75 years of age. Workers also tended to utilize project discounts extensively. (Note that an individual who was unemployed at the time of the registration interview was still a member of the labor force, and may have gained employment subsequent to registration.) Once again the presence of travel alternatives appears to have played a major role, as the wide majority of intensive users had no driver's license and no vehicles in their household. It should also be noted that all of the nonambulatory project registrants (i.e., those requiring wheelchairs) were able to use the project at least intermittently, and many averaged over 10 project trips per month.

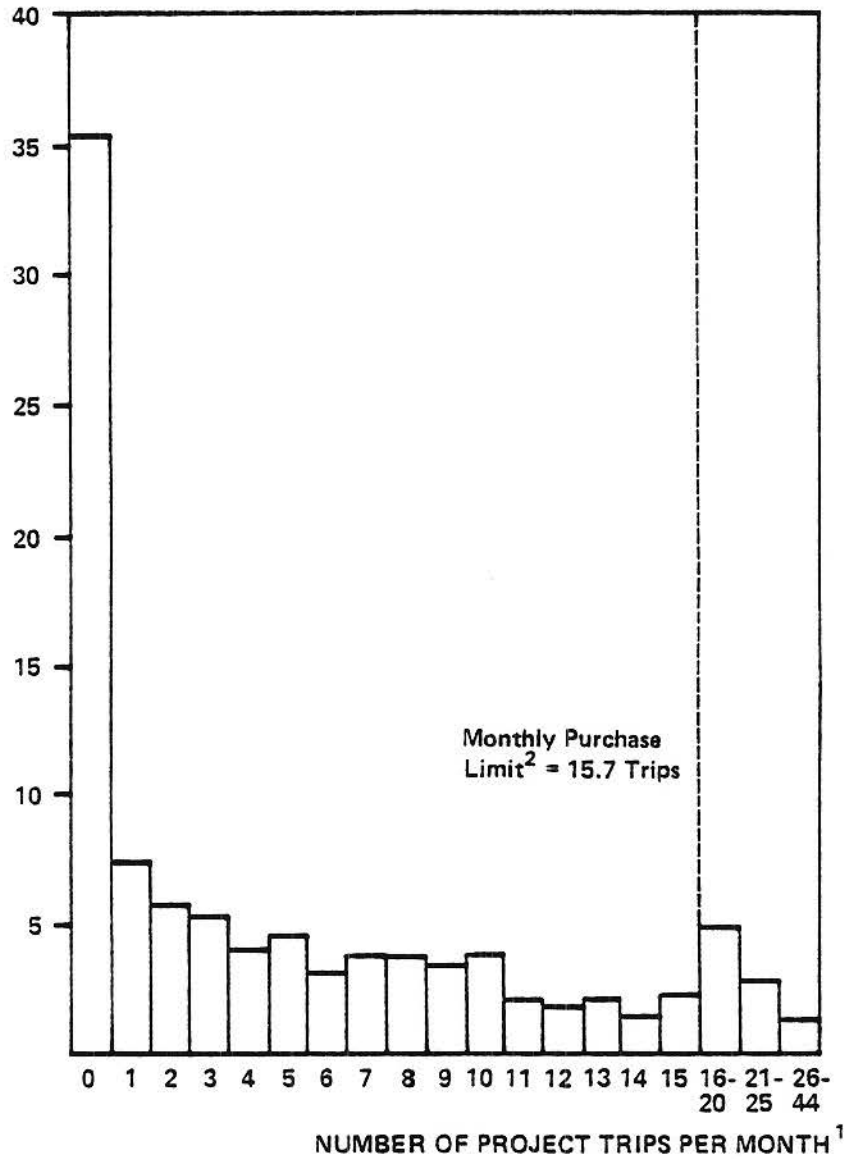
Project utilization was also related to the time of registration by the users. As shown in Table 6-6, early registrants tended to make the most frequent use of project discounts. This reflects the fact that the neediest individuals are likely to have registered for the program immediately, while those whose needs were less pronounced may have delayed their registration until their circumstances more clearly demonstrated the utility of the taxi discount program. Given that registrants in 1979 may have consisted to some degree of auto users who registered for the program due to gasoline availability and price problems, the observation that earlier registrants made greater use of the project is consistent with the role of auto travel alternatives in the determination of project-use frequency described above. This tends to indicate that many later registrants used the program as "insurance" against the possibility of a major gasoline shortfall rather than a day-to-day method of financing taxi trips.

Changes in user characteristics after registration may also have a significant or even overriding effect on a user's attitude toward and need for the project. Some registrants may have died or moved away from Kinston, precluding them from active participation in the program. The extent of this sort of attrition is difficult to document since individuals who chose not to use the program cannot be distinguished from those who were not able to. However, the fact that the percentage of registrants not using the project was lower for the sample of registrants who were present in Kinston to respond to a survey of project registrants in July 1979 than for the total of all individuals who had ever registered for the program (31.3 percent vs. 42.8 percent) shows that this type of attrition is significant. This finding is confirmed by a statistical analysis of project ridership trends (presented in Appendix C) that reveals an implicit decline in ridership per nominal

Figure 6-2

PROJECT UTILIZATION

PERCENT OF REGISTRANTS



¹ Sample month – April 1978

² As noted earlier, usage in a given month may exceed the purchase limit if the registrant has saved tickets from previous months.

SOURCE: Taxi ticket use records.

Table 6-5

COMPARISON OF FREQUENT AND INFREQUENT PROJECT USERS

	<u>Average Number of Project Taxi Trips per Month*</u>			
	<u>0</u>	<u>1-4</u>	<u>5-9</u>	<u>10-60</u>
Number	50	346	220	118
Age (percent)				
5 - 54	14.0	7.5	10.4	29.6
55 - 64	7.5	6.1	15.5	7.6
65 - 69	31.2	28.9	34.6	28.0
70 - 74	16.1	25.1	20.9	17.0
75 - 84	29.0	26.3	17.3	16.1
85+	2.2	6.1	1.4	1.7
Sex				
Male	32.2	22.7	13.8	33.6
Female	67.8	77.2	86.2	66.4
Race				
White	46.7	42.6	30.7	18.1
Black	53.3	56.3	68.8	81.0
Other	0.0	1.2	0.5	0.9
Marital Status				
Single	21.1	7.6	10.6	19.1
Married	23.3	24.7	20.2	17.4
Formerly married	55.6	67.7	69.3	63.5
Handicap Status				
No handicap	48.3	67.8	59.2	46.1
Nonambulatory	0.0	2.6	0.0	3.5
Semi-ambulatory	28.7	18.1	26.8	25.2
Sight	12.6	6.7	8.5	19.1
Hearing	0.0	2.1	2.3	0.0
Incoordination/ Mental retardation/ Brain damage	10.3	2.7	3.2	6.1

Table continued on following page.

Table 6-5 (Continued)

COMPARISON OF FREQUENT AND INFREQUENT PROJECT USERS

	<u>Average Number of Project Taxi Trips per Month</u>			
	<u>0</u>	<u>1-4</u>	<u>5-9</u>	<u>10-60</u>
Aids				
Wheelchair	0.0	2.3	0.9	2.6
Walker	4.4	2.6	2.8	0.9
Crutches	1.1	0.9	1.8	3.5
Cane (for walking)	7.8	15.7	14.2	18.1
Cane (for blind person)	2.2	1.5	3.7	5.2
Artificial limbs	0.0	0.6	0.0	0.0
Braces	0.0	0.3	0.5	0.0
Escort	4.4	1.5	1.4	4.3
Other	1.1	0.6	0.9	1.7
Total	21.0	26.0	26.2	36.3
Household Size				
1	47.2	54.5	58.9	50.9
2	31.5	33.6	29.9	31.6
3	13.5	6.3	7.5	7.0
4+	7.9	5.7	3.7	10.5
Number in Household 65 Years or Older				
0	15.9	17.8	28.6	32.2
1	61.4	61.5	56.7	48.7
2	21.6	19.8	13.8	19.1
3	3.4	0.9	0.9	0.0
Number in Household Less than 65 Years and Handicapped				
0	76.7	81.6	73.6	62.1
1+	23.3	18.4	26.4	37.9

Table continued on following page.

Table 5-5 (Continued)

COMPARISON OF FREQUENT AND INFREQUENT PROJECT USERS

	<u>Average Number of Project Taxi Trips per Month</u>			
	<u>0</u>	<u>1-4</u>	<u>5-9</u>	<u>10-60</u>
Employment Status				
Employed full-time	2.5	3.1	3.2	10.5
Employed part-time	2.5	1.6	5.2	9.3
Unemployed	6.4	5.9	8.9	11.3
Retired	83.5	85.9	81.7	66.7
Student	2.5	0.3	0.0	3.1
Homemaker	6.4	3.1	2.6	1.0
Household Income				
Less than \$3,000	48.2	65.2	67.8	69.9
\$3,000 - \$4,999	33.7	24.6	23.4	23.9
\$5,000 - \$7,999	7.2	3.6	6.1	5.3
\$8,000+	10.8	6.6	2.8	0.9
Number of Vehicles in Household				
0	70.8	82.2	90.3	92.2
1	25.8	15.5	7.8	6.0
2	3.4	2.0	1.4	1.7
3	0.0	0.3	0.5	0.0
Current Driver's License				
Yes	25.6	12.5	6.0	6.0
No	74.4	87.5	94.0	94.0

SOURCE: Registration interviews, September 1977-July 1979 and taxi ticket use records.

*From September 1977-July 1978 and January 1979-July 1979.

Table 6-6

PROJECT USE BY DATE OF REGISTRATION
(Percent)

<u>Average Number of Project Trips per Month</u>	<u>9/77 to 4/78</u>	<u>5/78 to 12/78</u>	<u>1/79 to 11/79</u>
0	5.6	15.0	33.1
1 - 4	47.7	50.0	28.5
5 - 9	29.3	25.0	27.7
10 - 60	17.4	10.0	10.8

SOURCE: Registration interviews, September 1977-November 1979 and taxi ticket use records.

registrant of between 1.0 and 1.5 percent per month. All other things equal, this could be interpreted as a corresponding decline in the true number of registrants. While the other factors that might also contribute to this time trend (e.g, income or attitude changes) make it difficult to identify the exact attrition rate, it can be seen that the exit of registrants from the program over time is a nontrivial phenomenon and must be considered, at least implicitly, when nominal registration totals or aggregate use rates are being analyzed.

Changes that did not involve the permanent departure of registrants from the program also affected project usage. At a minimum, registrants grew older over time and experienced many corresponding changes in their travel behavior. Other specific changes experienced by KITE project registrants during the course of the demonstration that are relevant to project use included changes in household size, employment status, handicap status, vehicle ownership, and income, and are summarized in Table 6-7. While these changes may not have been large on a net basis and may have accrued to few registrants, they are likely to have had major effects on the use rates of individual project participants.

Within the constraint of project budget limitations, project registrants expressed a number of reasons for not making greater use of the subsidy program (see Table 6-8). The majority of these reasons relate to a lack of need for taxi travel rather than difficulties experienced in utilizing program taxi discounts. However, as outlined in Chapter 4, almost 30 percent of all registrants indicated that the discount ticket purchase limit acted as a constraint on their project tripmaking. Indeed, given the sensitivity of use rates to the characteristics of individuals, and the types of reasons cited by registrants for not participating more in the program, the monthly budget limitation may have been the only policy-sensitive variable that had a significant effect on project use.

TRAVEL BEHAVIOR CHANGES

The information presented above provides detailed perspectives on the types of individuals who registered for the project and the extent to which they made use of project subsidies. However, this, in and of itself, does not represent a change in travel behavior that is attributable to the program, since it has not been established that the same individuals would not have made the same trips if the program had never been implemented.* Such changes in travel behavior that reflect changes in registrant mobility caused by the subsidy program are of particular interest in this demonstration.

*See Charles River Associates, Measurements of the Effects of Transportation Changes, prepared for U.S. Department of Transportation, July 1972.

Table 6-7

CHANGES IN STATUS OF REGISTRANTS DURING PROJECT

	<u>Percent of Registrants Experiencing Change</u>
Residence	14.2*
Household size	12.5
Employment status	2.7
Handicap status	22.1
Vehicle ownership	2.1
Income	2.8
	(n=147)

SOURCE: Survey of project registrants, July 1979.

*Changes of residence within city limits only.

Table 6-8

REGISTRANT RESPONSES TO QUESTION,
 "WHY HAVEN'T YOU USED KITE MORE TO RIDE TAXIS?"

<u>Reason</u>	<u>Percent of Registrants Citing Reason*</u>
Don't need to	36.0
Health worsened	4.8
Uses only when auto not available	3.4
Registered, but never bought tickets	2.7
No money to buy tickets	1.4
Still drives	0.7
Thought tickets were free when registering	0.7
No reason	55.1

Sample Size = 147

SOURCE: Survey of project registrants, July 1979.

*Does not add to 100 percent because of multiple responses.

At an aggregate level, it is readily apparent that the demonstration project caused substantial changes in registrant behavior. For example, nearly 70 percent of project registrants reported increases in their taxi usage after the beginning of the program.* These opinions are confirmed by an increase in the elderly proportion of the ridership of participating firms from 11.8 percent to 20.1 percent between August 1977 and August 1979.** Of course, a variety of exogenous influences such as changing demographic patterns and changes in travel habits by nonregistrants may also affect this latter measure. In addition, this difference between before and after observations may simply represent a reallocation of a given volume of traffic among taxi firms, as project registrants who previously had ridden with firms that did not participate in the program switched to firms that did.+ However, a statistical analysis of the sensitivity of project ridership to fare changes reveals that up to 40 percent of all project trips could have been trips that would not have been made by taxi in the absence of the project.++

Overall, there is compelling evidence to indicate that the project subsidies had a significant effect on taxi use.

*Survey of project registrants, July 1979.

**Taxi on-board surveys. This difference is significant at the 95 percent confidence level.

+The July 1979 survey of project registrants found that this occurred for 1 to 2 percent of all project participants. Given that recall reliability may be hindered by the time span between the initial registration date of most registrants and the time of this survey, and that individuals who forego their revealed preference for a given firm to participate in the program are likely to use taxis more frequently than others, the switching phenomenon may have been somewhat more common than indicated by this figure.

++See Appendix C for a detailed description of methods and results. This figure must be used with a great deal of caution, since as outlined in Appendix C, there are several reasons why ridership may in fact have been less sensitive to fare changes than would otherwise be indicated. Also, the fact that individuals had to expend at least some effort to register for the program and obtain discount tickets is likely to have produced a lower sensitivity to the fare changes associated with the project than occurred in the "frictionless" fare changes analyzed in Appendix C. Furthermore, the fare that would exist in the absence of the project is outside of the range of variation experienced during the project that was analyzed in Appendix C and greatly decreases the expected precision of such extrapolations. Therefore, it is important that this figure be considered only as an upper bound on the project-related increase in taxi usage.

Such aggregate changes in taxi usage are of considerable interest when the effects of the subsidy program on the taxi industry are being assessed (see Chapter 7). However, this measure does not fully describe the detailed changes in travel behavior that reflect changes in registrant mobility. For the purposes of this analysis, changes in travel behavior can usefully be categorized into effects on overall travel frequency, trip purpose, mode, destination, and timing. Changes of each of these types that are attributable to the subsidy project are described below.

TRAVEL FREQUENCY

Changes in overall travel frequency that occurred because of the program are extremely significant because they represent both the primary measure of changes in registrant mobility and a principal cause of changes in the total volume of taxi travel handled by service providers. Based on registrant-reported changes in the frequency of travel to destinations served by taxicabs,* it is estimated that 10.8 percent of all taxi trips made by project registrants would not have been made in the absence of the subsidy program. Since project trips accounted for 79.0 percent ($1.00/(1.00 + .266)$) of all registrant taxi trips (see Chapter 4), project-induced trips are estimated to account for 13.7 percent ($.108/.79$) of all project trips. Based on the project utilization rate of 5.8 rides/registrant/month (see Appendix C) found early in the project, this is the equivalent of .79 ($.137 \times 5.8 =$) project-induced trips/registrant/month. This estimate is supported by applying the 12.8 percent growth in taxi use that is attributable to project-induced trips ($.108/(1 - .108 - (.06 \times .79))$) to the preproject taxi trip rate of 4.6 taxi trips/registrant/month (derived from trip recall questions administered to initial registrants as part of the registration interviews). The resulting estimate of .59 project-induced trips/registrant/month ($.128 \times 4.6$) is lower than the previous estimate of .79 project-induced trips/registrant/month derived above. However, this may be attributable to the tendency of elderly clients to forget some trips over time, and the fact that the "trips" in the trip recall questions may have included some round trips as well as unlinked trips.

A comparison of the trip recall-based estimate of project-induced trips (.59 new trips/registrant/month) with the total preproject trip rate of 16.8 trips/registrant/month (also obtained from the initial registration interviews) yields an estimate of the increase in total travel caused by the project of 3.5 percent ($.59/16.8$). While these figures must all be viewed somewhat tentatively because of their reliance on registrant recall, they

*Taxi on-board surveys.

are compatible with the observed changes in aggregate taxi use described earlier, and are mutually supportive in indicating that the increase in overall tripmaking attributable to the project is measurable, though very modest.

TRIP PURPOSE

As shown in Table 6-9, the overall mix of trip purposes for which taxis were used changed somewhat during the demonstration program. The proportion of work/school trips increased somewhat, while the use of taxis to visit friends or relatives declined. It can be assumed that the project itself did not reduce the actual frequency of any particular types of trips, though the new trips that were taken because of the subsidy may have been for distinct purposes, and affected the overall trip purpose mix. However, since project ridership formed such a small fraction of total ridership (16.6 percent), it is generally not possible to infer the purposes of project-induced trips from system-level before/after comparisons of the trip purpose mix.

As shown in Table 6-10, project rides tended to be for shopping/personal business and medical trips, supporting the opinions of taxi operators.* The change between August 1977 and August 1979 in the mix of trip purposes for which elderly (only) individuals rode taxis (see Table 6-11) tends to indicate that shopping/personal business and medical trips also accounted for much of the increase in taxi use associated with the project. This confirms the opinions of project registrants, who indicated that shopping, personal business and medical trips were the principal types of trips they made more of because of the KITE program (see Table 6-12).

MODE

The increase in taxi travel resulting from the subsidy program described earlier includes trips that were diverted to taxi from other methods of travel. These trips do not represent an increase in total tripmaking by project registrants but indicate that the project subsidies have enabled at least some registrants to substitute a more preferred mode (i.e., taxi) for less convenient methods of travel. While project registrants tend to be individuals who do not own or drive automobiles and would rely heavily on taxis even in the absence of the program, it is estimated (based on Table 6-13), that some 6 percent of all project trips would have been made before the program by walking or riding as a passenger in an automobile. Given the earlier finding that new, project-induced trips accounted for 13.7 percent of all project trips, it can be seen that the additional 6 percent of project trips that result from modal diversion yield a total increase in taxi usage

*Taxi operator interviews, July 1979.

Table 6-9
KINSTON TAXI TRIP PURPOSE: ALL RIDES

<u>Trip Purpose</u>	<u>August 1977</u>	<u>August 1979</u>
Work/School	19.6	29.6
Shopping/Personal Business	39.1	35.0
Medical	11.2	14.3
Visit Friends, Relatives	20.3	13.5
Recreation/Entertainment	1.5	2.2
Social Service Agency	3.2	2.2
Religious	4.8	3.2
	(n = 311)	(n = 223)

SOURCE: Taxi on-board surveys.

Table 6-10
TRIP PURPOSES OF PROJECT RIDES

<u>Purpose</u>	<u>Percent</u>
Work/School	8.6
Shopping/Personal Business	58.6
Medical	20.0
Visit Friends, Relatives	11.4
Recreation/Entertainment	0
Social Service Agency	0
Religious	1.4
	(n = 70)

SOURCE: Taxi on-board survey, August 1979.

Table 6-11

TRIP PURPOSES OF ELDERLY TAXI RIDERS*
(Percent)

<u>Purpose</u>	<u>August 1977</u>	<u>August 1979</u>
Work/School	16.6	9.4
Shopping/Personal Business	36.0	56.5
Medical	16.6	18.9
Visit Friends, Relatives	11.0	11.8
Recreation/Entertainment	0	0
Social Service Agency	8.4	1.2
Religious	11.0	2.3
	(n = 55)	(n = 85)

Note: Percentages may not add to 100 because of rounding.

SOURCE: Taxi on-board surveys.

*65 and over only.

Table 6-12

REGISTRANT RESPONSES TO QUESTION,*
 "WHAT KINDS OF TAXI TRIPS DO YOU TAKE MORE BECAUSE OF KITE?"

<u>Purpose</u>	<u>Percent**</u>
Work/School	3.5
Shopping	70.9
Personal Business	58.1
Medical	84.9
Visit Friends, Relatives	18.6
Recreation/Entertainment	1.2
Religious	14.0

SOURCE: Survey of project registrants, July 1979.

*Asked only of registrants who indicated taxi use frequency increases (n=86).

**Does not sum to 100 percent due to multiple responses.

Table 6-13

PRIMARY MODE FOR TRAVEL
TO DESTINATIONS OF PROJECT TRIPS

<u>Mode</u>	<u>Before KITE Program*</u>	<u>During KITE Program**</u>
Auto driver	3.7	3.6
Auto passenger	5.6	1.8
Taxi	84.3	90.9
Walk	5.6	1.8
Social service agency vehicle	0	0
Other	0.9	1.8
	(n = 108)	(n = 110)

SOURCE: Taxi on-board survey, July 1979.

*Response to question, "How did you usually travel (where you're going now/where you've just been) before the KITE program?"

**Response to question, "How do you usually travel (where you're going now/where you've just been)?" scalarized to eliminate trips that would not have been made prior to KITE.

that is attributable to the project of 19.7 percent of project trips (.06+.137). This is consistent with the aggregate indicators of changes in taxi usage described above.

DESTINATION

Changes in trip destinations are potentially important impacts of a subsidy program of this type, since they could affect the characteristics of the demand encountered by taxi operators and the activity levels of different establishments, as well as indicate a quantum improvement in the mobility of project riders. Conversely, since the project's ticket purchase limits involved costs, and not the number of trips per se, users may have experienced incentives to take shorter trips. Overall, taxi operators expressed the opinion that neither of these effects was in evidence, as project riders traveled to essentially the same destinations as they did before the KITE program. This is substantiated by project registrants, who indicated that virtually all of the taxi trips they made after the start of the KITE program involved the same destination that they traveled to before the program.* Further evidence is provided by the average fare for project rides, which varied only by the amount of the fare changes that took place during the project (see Appendix C). If project rider destination choice were sensitive to the fare, the structure of project rides would have been expected to vary significantly in the presence of fare changes, resulting in further changes in the average fare. It is therefore concluded that project-related new taxi trips did not involve destinations that were not previously visited for a given trip purpose. This is consistent with the small geographical size of Kinston, the relatively coarse zonal fare structure, and the fact that project tickets could generally only be used for trips within the city limits.

TRIP TIMING

Given the reliance of project registrants on taxis for transportation (e.g., see Table 6-14) and the relatively small number of trips taken by registrants during any given week or even month, effects of the project on trip timing may serve to indicate significant mobility changes, as the higher volume of travel produced by the project could provide registrants with a greater amount of temporal "coverage" and flexibility for trip purposes of all types. In particular, it is widely perceived** that the high cost of travel relative to income for many taxi-dependent project-eligible individuals results in a

*Taxi on-board survey, August 1979.

**For example, in taxi operator interviews.

Table 6-14

TRAVEL CHARACTERISTICS OF
PROJECT REGISTRANTS AND NONREGISTRANTS

	<u>Registrants</u>	<u>Eligible Nonregistrants</u>
Frequency of taxi use		
at least once a week	52.1	5.3
at least once a month	29.2	11.4
at least once a year	11.1	8.8
very infrequently	6.3	5.3
never	1.4	69.3
Most frequent mode		
walk	15.2	5.3
auto driver	3.4	49.6
auto passenger	27.6	39.8
taxi	53.8	4.4
social service agency	0.0	0.0
other	0.0	0.9
Second most frequent mode		
walk	16.8	27.5
auto driver	0.0	4.3
auto passenger	47.6	44.9
taxi	32.9	20.3
social service agency	0.7	0.0
other	2.1	2.9
	(n=147)	(n=113)

SOURCE: Surveys of project registrants and nonregistrants, July 1979.

consolidation of taxi trips at the beginning of the month when Social Security checks are received. To the extent that the reduction in taxi fares associated with the project enables registrants to travel at other times of the month, their opportunities for engaging in all types of activities may be significantly improved.

As shown in Table 6-15, the timing of trips made by elderly individuals (i.e., those 65 and older) did change somewhat between August 1977 and August 1979. However, before any changes are attributed to the subsidy program, it must be pointed out that exogenous factors appear to have had a major effect on observed results. In particular, heavy rainfall during "Week 1" of the 1979 survey* may have had the effect of shifting a substantial number of trips to "Week 2." Given that the first two weeks of the month account for virtually identical portions of total monthly ridership in the two samples (50.2 percent vs. 52.4 percent), a major shift in the distribution of trips during the month cannot be substantiated. Indeed, these data tend to indicate that while a disproportionate number of trips are made immediately after the receipt of income at the beginning of the month, these trips are made at the convenience of the individual (e.g., according to the weather) and do not inhibit or inherently reduce tripmaking later in the month. Since trips by these project-eligible individuals were already distributed over time in this manner, the project has not produced an aggregate shift in the timing of their trips. However, for specific individuals, project-induced trips may still provide significant improvements in the temporal coverage of available opportunities.

*National Oceanic and Atmospheric Administration, Climatological Data: North Carolina.

Table 6-15

TRIP TIMING BY WEEK OF MONTH FOR ELDERLY TAXI RIDERS*
(Percent)

<u>Week</u>	<u>August 1977</u>	<u>August 1979</u>
Week #1	31.0	21.8
Week #2	19.2	30.6
Week #3	21.3	20.8
Week #4	28.5	26.7
	(n = 55)	(n = 91)

SOURCE: Taxi on-board surveys. Normalized to account for sampling differences.

*Age 65 and over only.

7

TAXI OPERATOR IMPACTS

The user-side subsidy program and its effects on registrant travel behavior had a variety of impacts on the Kinston taxi industry. These impacts involved changes in the volume and characteristics of taxi trips that affected vehicle productivity, as well as more macro-level shifts in the financial performance (costs and revenues) of taxi operators, and are described below.

VEHICLE PRODUCTIVITY

The changes in taxi-use frequency that are attributable to the project affected the mix of passengers that were served by taxi operators. To the extent that the characteristics of project trips differed from those of other trips, different levels of provider resources may have been required.

At the beginning of the project, taxi drivers perceived that rides by the elderly and handicapped involved a greater effort on the part of the driver to provide some form of physical assistance, ascertain the trip destination and/or reach agreement with the rider concerning the proper fare (see Table 7-1). Service to elderly and handicapped customers was also perceived to involve longer wait times, while destinations and trip lengths were found to be consistent with those of other riders.

Further insights into the effects of the project on vehicle productivity can be obtained through a comparison of more objectively measured characteristics

Table 7-1

DRIVER COMPARISONS OF ELDERLY AND HANDICAPPED WITH OTHER CLIENTS

1. Do you usually have to offer them any more assistance in getting in or out of the cab, or with packages?

	<u>Elderly</u>	<u>Handicapped</u>
Almost always	52%	57%
Occasionally	46%	41%
Very seldom	0%	0%
Don't know	2%	2%

2. Do you have any trouble finding out where they want to go, or how much the fare should be?

	<u>Elderly</u>	<u>Handicapped</u>
Almost always	32%	33%
Occasionally	46%	48%
Very seldom	20%	19%
Don't know	2%	0%

3. Do you find you have to wait any longer for them to be ready to go when you answer the call compared to other passengers?

	<u>Elderly</u>	<u>Handicapped</u>
Wait longer	67%	70%
No difference	33%	30%
Wait less	0%	0%
Don't know	0%	0%

4. Are the places they travel to out of the way compared to other passengers?

	<u>Elderly</u>	<u>Handicapped</u>
Generally yes	26%	28%
Occasionally	20%	20%
Generally no	54%	52%
Don't know	0%	0%

5. How do their fares compare with other passengers?

	<u>Elderly</u>	<u>Handicapped</u>
Generally more	26%	26%
About same	65%	67%
Generally less	7%	5%
Don't know	2%	2%

SOURCE: Taxi driver survey, August 1977. (n = 54)

of project and nonproject trips (see Table 7-2). Project rides do require significantly more driver assistance, at least at the trip origin, and are comparable to nonproject rides on the basis of other characteristics, supporting many of the opinions of taxi drivers outlined above. However, in contrast with driver opinions, dwell times of project rides are found to be lower than those of nonproject rides. This implies that a greater proportion of project riders may be waiting for the cab when it arrives, negating the effect of the higher level of required assistance, and leading to the conclusion that the characteristics of project rides do not inherently tend to degrade vehicle productivity in comparison with nonproject rides.

The quality of taxi service attainable from a given number of cabs is sensitive to the volume of taxi traffic, implying that new taxi trips caused by the project may indeed have had an effect on the overall level of service if the number of cabs in service remained constant. The magnitude of this effect would have been small, however, since these new trips equaled 19.7 percent of all project trips, and project trips accounted for 16.6 percent of all taxi trips in Kinston.* Under these circumstances, new taxi trips amounted to only 3.3 percent (.197x.166) of total Kinston taxi demand. Furthermore, as shown in Figure 7-1, while project trips tended to cluster around particular days of the week and weeks of the month in comparison with nonproject trips, project trips were generally taken earlier in the day. Since the number of available cabs is determined at least in part by peak-period (i.e., evening, nonproject) requirements, the impact of the project on level of service would be minimized by the off-peak incidence of project trips, even if the number of cabs in service did not change.

In fact, the number of cabs in service did not remain constant during the demonstration. As outlined in Chapter 3, the transfer of Sutton Cab to Dove and the entry of Lassiter and Lenoir had the net effect of increasing the number of vehicles employed by firms participating in the project from 38 to 41, an increase of almost 8 percent. However, since the Dove and Lassiter drivers as well as some of the Lenoir drivers provided service in Kinston prior to the demonstration, and fare increases that took place during the project could provide the revenue to support an increased number of vehicles in service in the presence of an inelastic overall demand for taxi service, the observed change in the number of vehicles in service is likely to have been exogenous to the effects of the subsidy program.

Instead, the effects of the subsidy program on service providers appear to be concentrated within the operations of providers who carried large numbers or proportions of project rides, and by inference, served many elderly and handicapped clients prior to the demonstration (see Table 7-3). For example, the drivers of both Lassiter and Dove carried a large number of elderly and

*Taxi on-board survey, August 1979.

Table 7-2

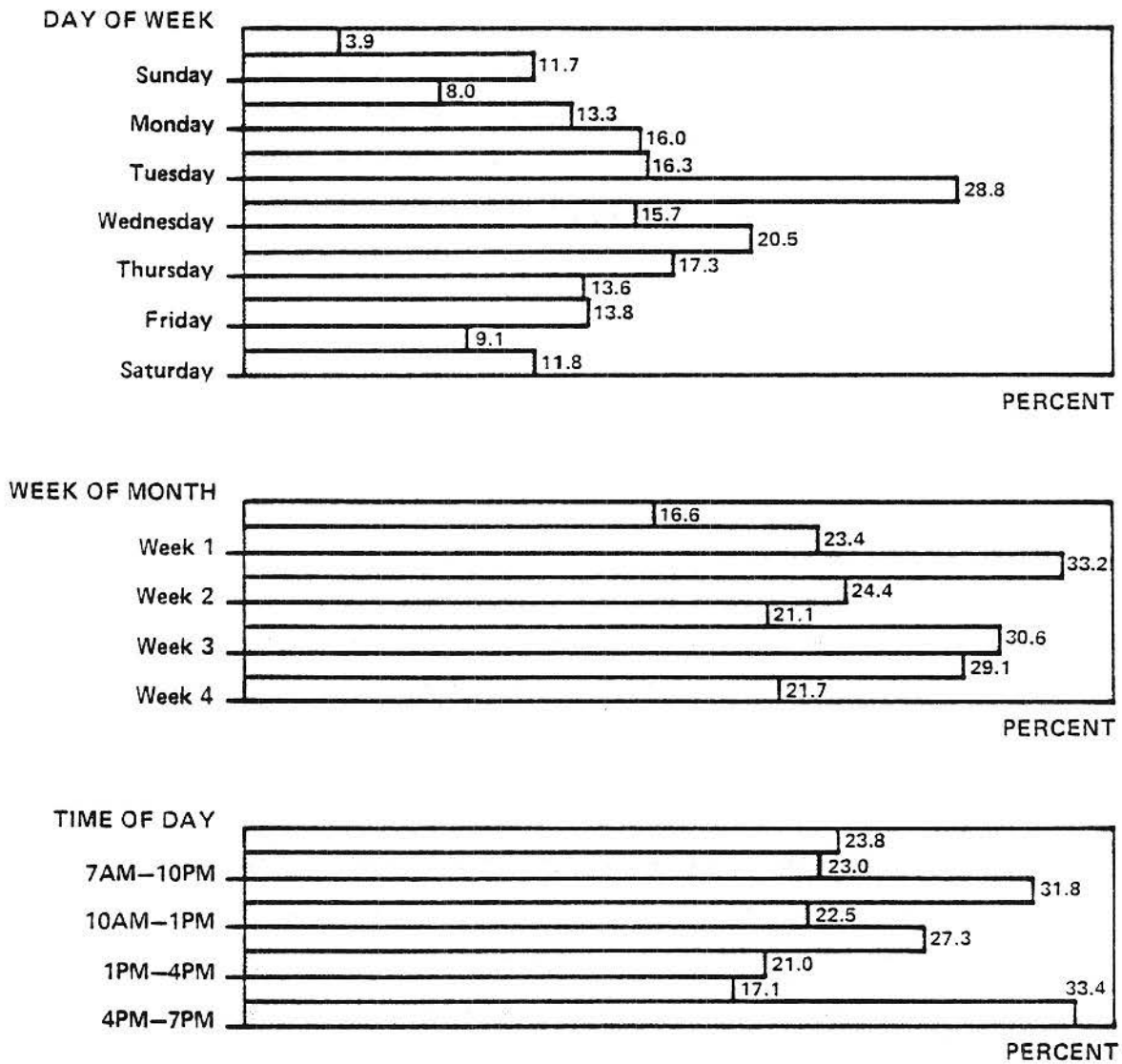
CHARACTERISTICS OF PROJECT AND NONPROJECT TRIPS

	<u>Project</u>	<u>NonProject</u>
Driver Assistance at Origin (percent of rides)		
To find rider	3.6	0.4
To physically help rider	5.4	1.8
To help with bags or open door only	7.1	8.0
Total	16.1	10.2
Number of Riders (mean)	1.1	1.1
Shared Rides (percent)	8.2	9.4
Travel Time (mean)	6.9 minutes	7.4 minutes
Driver Assistance at Destination (percent)		
To physically help rider	3.4	1.4
To help with bags or open door only	6.8	7.9
Total	10.2	9.3
Dwell Time (origin and destination) (mean)	1.0 minutes	1.5 minutes
	(n = 58)	(n = 272)

SOURCE: Taxi on-board survey, August 1979.

Figure 7-1

TRIP TIMING BY DAY OF WEEK, WEEK OF MONTH, AND TIME OF DAY FOR PROJECT AND NONPROJECT TAXI RIDES



NOTE: Percentages may not sum to 100 due to rounding.

- Project (n=60)
- Nonproject (n=281)

SOURCE: Taxi on-board survey, August 1979. Normalized to account for sampling differences.

Table 7-3

PROJECT TRIPS CARRIED BY DIFFERENT TAXI FIRMS

<u>Firm</u>	<u>Project Trips Per Month</u>	<u>Number of Vehicles</u>	<u>Project Trips per Vehicle per Month</u>
City	103.6	4	25.9
Eagle	676.3	5	135.3
Manhattan	342.4	14	24.4
Smith	177.9	1	177.9
Sutton	736.5	7	105.2
Union	620.5	7	88.6
Lassiter	224.3	1	224.3
Lenoir	43.3	7	6.2
Dove	571.5	2	285.8

Note: Project ridership was found to equal 16.6 percent of total taxi ridership in the August taxi on-board survey. However, because of sample size limitations, reliable corresponding figures for each firm are not available.

SOURCE: Taxi operator interviews, August 1979, and Table 6-4.

handicapped customers prior to the demonstration (while they were affiliated with Sutton), and the increase in taxi trip-making by these individuals associated with the project appears to have contributed to their decision to operate independently.* It is particularly interesting to note that the two Dove drivers carried slightly less project ridership than all seven Sutton drivers (two of whom were the Dove drivers) had carried before the change of ownership in February 1979, indicating that they specialized to some degree in providing service to elderly and handicapped clients, and therefore benefitted disproportionately from project-related taxi use increases. Similarly, the decision of Smith Cab, which handled a large number of elderly and handicapped clients, to reduce its operating hours may be traced at least in part to the increase in taxi use frequency attributable to the project. Union Cab, with a large volume of project ridership, moved its office to a location close to Kinston Towers (the new housing project for the elderly),** and planned to add another vehicle to its fleet. All of these firms carried large numbers or proportions of project riders and perceived that ridership for their elderly and handicapped clients had increased as a result of the program.

In contrast, taxi operators serving smaller volumes of project rides did not perceive significant changes in ridership by their elderly and handicapped clients, and made virtually no changes in facilities, equipment, staffing, or company affiliations that were attributable to the program.+ None of the operators changed their operating or service policies because of the program (aside from changes in operating hours), and it is particularly interesting to note that none of the operators undertook any special marketing initiatives to attract project riders. Rather, it appears that operators continued to provide service to largely the same customers that they did before the subsidy program. For these operators who had previously carried a large number of elderly and handicapped clients, this sometimes resulted in a change in volume that was substantial and affected their company affiliations or hours of service. For the others, the changes in volume attributable to the program had no significant effects on their operations.

*And, in the case of Lassiter, to reduce operating hours as well.

**Union's decision to move was based at least in part on the size and quality of the new office. However, the Towers provided Union with significant walk-up business, while Lenoir, which took over the bus station office previously used by Union, experienced little project demand.

+Taxi operator interviews, July 1979.

FINANCIAL

Given that the impacts on operating efficiency of new taxi trips caused by the project were minor, the principal costs to operators associated with the program involved the administrative effort required to account for and process KITE tickets and the costs associated with serving new trips themselves. As part of the administrative procedures described in Chapter 4, project tickets and logs had to be organized on a regular basis and submitted for reimbursement, and the operator then had to wait for payment from the city. These costs are potentially very important, as they may affect the willingness of operators to participate in the program. In practice, however, the Kinston taxi operators found that the handling of tickets and logs required a negligible amount of paperwork (typically less than 1 hour per week for each cab company*), and the 2 to 3 day turnaround time for ticket reimbursement is not onerous for a viable and ongoing business. Overall, therefore, the administrative costs incurred by taxi operators under this type of ticket system are not very significant.

The cost of serving individual new trips is much more significant, but due to the lack of record-keeping by independent owner-operators, it cannot be determined directly. However, based on the comparisons of project and nonproject trips presented above, it is known that project trips required approximately the same level of operator effort in terms of time and mileage, and were therefore essentially indistinguishable from nonproject trips in terms of the costs of providing service. Furthermore, given that the fare for all trips within Kinston is determined using the zone system, project and nonproject trips between the same origins and destinations generated the same revenues.** Therefore, as an approximation, the contribution (revenues minus marginal costs) of each project trip to overhead expenses and profits can be taken to be equal to the contribution of a nonproject trip. The increase in contribution attributable to the project is therefore estimated as the proportion that project-related increases in taxi usage formed of total ridership, or approximately 3.3 percent. Given relatively fixed overhead expenses, this would translate into a larger percentage increase in profits.

Once again, these changes were concentrated among the firms that carried a large number or proportion of elderly and handicapped riders before the

*Operators have indicated that the "opportunity cost" for this time was negligible, since they had a considerable amount of free time in which to attend to general administrative matters.

**The practice of tipping in Kinston is virtually nonexistent for project and nonproject trips alike.

demonstration and consequently experienced the greatest increases in volume due to the project. Lassiter, Smith, and Eagle all estimated that their revenues and profits increased slightly during the demonstration project, while other owner-operators and drivers indicated that increases in expenses offset increases in fares and revenues.

It should be noted that the average fare for nonproject trips is approximately 7 percent higher than the fare for project trips,* leading to a higher contribution for nonproject trips. This would appear to conflict with the earlier finding that project and nonproject trips have approximately the same length. However, since nonproject trips may involve origins or destinations outside of Kinston which entail use of a different fare structure, there is no reason for relationships between the lengths and fares of project and nonproject trips to be consistent.

The difference in the contribution of project and nonproject trips caused by this difference in revenue implies that the estimated increase in overall contribution attributable to the program derived above may be somewhat liberal. However, it is clear that, at least among the firms carrying a significant percentage of elderly and handicapped riders, the increase in contribution was significant. Across all firms the generally positive effect of the program in relation to the costs perceived by operators is evident in the uniformly supportive attitudes of service providers toward the project** and the fact that none of the original operators ceased their participation in the project after it had begun.

*Taxi on-board survey, August 1979.

**Taxi operator interviews, July 1979.

8

NONTRAVEL IMPACTS

As outlined in the preceding chapters, the user-side subsidy demonstration in Kinston had a variety of effects related to the travel behavior of project registrants and the provision of taxi service. In addition, however, the results of the demonstration shed light on some nontravel effects. These can usefully be classified into effects on social service agencies, project users, and firms and establishments, and are described in detail below.

SOCIAL SERVICE AGENCIES

It was originally anticipated that social service agencies might perceive the user-side subsidy program as an efficient and desirable alternative to their own transportation services and consequently use the program to supplement or replace those services. Furthermore, for the many social service agencies that provided no transportation services, the user-side subsidy program was expected to promote access to the agency by its clientele, resulting in increased agency activity levels. In response, the agencies might assist their clients in arranging or paying for project trips, or even provide financial support for the program itself.

At the beginning of the demonstration, agency attitudes toward the program were generally positive, and there was a broad consensus that the mobility of the elderly and handicapped in general, and agency clients in particular, would be improved by the project (see Table 8-1). Agencies indicated that they would definitely consider providing support for user-side subsidy program promotion and registration activities. However, active involvement

Table 8-1

PREDEMONSTRATION AGENCY ATTITUDES TOWARD SUBSIDY PROGRAM

<u>Agency</u>	<u>Potential Advantages</u>
Lenoir County Department of Social Services	Will allow many elderly to make nonmedical trips that agency cannot assist.
Greene Lamp, Inc.	Will add to existing package of transportation services in Kinston.
Social Security Administration	"There is a need for service to transit dependents."
Kinston Recreation Department	Attendance could be improved at the Senior Citizens workshops, although little expected improvements for handicapped clients.
Lions Industries for the Blind	Will help in training.
Division of Vocational Rehabilitation	Expect a small quantity of additional travel to occur.
Lenoir Memorial Hospital	Will bring additional visitors to hospital.

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Table continued on following page.

Table 8-1 (Continued)

PREDEMONSTRATION AGENCY ATTITUDES TOWARD SUBSIDY PROGRAM

Agency	Potential Disadvantages
Lenoir County Department of Social Services	Limitation to the city limits.
Greene Lamp, Inc.	Limitation to the city limits.
Social Security Administration	Doubted whether subsidy was the best way to meet the need.
Kinston Recreation Department	Taxis would be too expensive for target group population, even with 50 percent discount.
Lions Industries for the Blind	None cited.
Division of Vocational Rehabilitation	Clients cannot afford a taxi, even at 50 percent of regular fare.
Lenoir Memorial Hospital	Those who (ab)use the agency ambulance service for regular visits will continue, because they pay little or none of the cost for an extremely high quality service.

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Table continued on following page.

Table 8-1 (Continued)

PREDEMONSTRATION AGENCY ATTITUDES TOWARD SUBSIDY PROGRAM

<u>Agency</u>	<u>Willingness to Participate in the Subsidy Program</u>			
	<u>Promotion</u>	<u>Registration</u>	<u>Scheduling</u>	<u>Funding</u>
Lenoir County Department of Social Services	Yes	Yes	No	No
Greene Lamp, Inc.	Yes		Yes	Perhaps
Social Security Administration	Yes	Yes, but cannot identify eligibles because of the Privacy Act	No	No
Kinston Recreation Department	Yes	Perhaps	Perhaps	No
Lions Industries for the Blind	Yes	Yes, for clients	Yes	No; want to maintain an incentive for clients to work.
Division of Vocational Rehabilitation	Yes	Yes	Yes	Perhaps, but State Department of Human Resources would have to approve. Taxi companies would have to wait 2-3 months for compensation.
Lenoir Memorial Hospital	Yes	Possibly, administration of hospital must approve.	Not likely, administration of hospital must approve.	Not likely, hospital has been cutting its budget.

SOURCE: Social service agency interviews, July 1977.

in trip scheduling was viewed as much less attractive, and almost no potential for financial support was indicated.

Once the demonstration began, agency support was somewhat less than originally envisioned. Some agency clients were referred to or provided information about the KITE program, and, as outlined in Chapter 4, some agencies participated in project marketing/outreach activities by providing lists of their clients to the project staff. However, the agencies took no active role in program registration, trip scheduling, or funding.

Given the original expectations concerning the role of social service agencies in the context of the subsidy program it is important to account for this lack of agency participation. For any agency, participation in the program would have required new expenditures. For agencies that did not provide their own transportation services, budget limitations may have precluded these additional expenditures or the higher levels of agency activities that would be caused by project-induced trips. For agencies that did provide transportation services, the true cost per trip might have been lower using the subsidy program. However, agency transportation providers were able to utilize donated labor and vehicles that were nontransferable to other agency activities. Lack of rigorous cost accounting may also have contributed to agency unawareness of cost differentials.

Other potential causes for the lack of agency participation include the following:

1. Service -- The clients of some agencies had specialized service requirements in terms of equipment or responsiveness (e.g., ambulances) that could not be met by ordinary taxis. Direct agency control over the selection and operation of equipment ensured that these requirements were met.
2. Nondiscrimination -- The service areas of almost all of the agencies were larger than the area covered by the subsidy program. Agency support of the project or project trips would therefore have amounted to a differential in the overall quality of service offered to agency participants. The KITE program in general was perceived to be a "city" program, while social service agencies often operated on a county or regional basis.
3. User cost -- Even with a 50 percent subsidy, the cost to the users of conventional taxi service was still greater than that of agency transportation, which was usually provided free.
4. Marketing -- Agencies that provided transportation services may have placed a value on the positive effects that service has on the attitudes of clients towards the agency and may not have wanted to forego this benefit.

PROJECT USERS

Users of project subsidies incurred both costs and benefits as a result of the program. Costs included the effort required to register for the program and obtain discount tickets, as well as the carrying costs involved in maintaining an "inventory" of tickets for future use. Overall, the dispersion of ticket sales locations shown in Figure 4-2 served to minimize the inconvenience associated with ticket purchase itself. Furthermore, with a single purchase an individual could obtain tickets for approximately 15 project rides, sufficient for 2 to 4 months' worth of taxi travel by most registrants. In comparison to the value of the subsidy, the inconvenience of obtaining tickets appears to have been minor. Indeed, project registrants were virtually unanimous in the opinion that there were no problems involved in obtaining tickets.* Inventory costs were also minor, as the typical user held an average of only \$4-5.00 (purchase price) of taxi tickets. The corresponding annual carrying cost (at 15 percent interest) of \$.75 is only slightly higher than the value of the subsidy for a single ride. Therefore, it is concluded that the costs accruing to users of the Kinston subsidy program as a result of the ticket system were not significant compared to the benefits they produced.

Aside from the travel benefits described in Chapter 6, users of project subsidies received two distinct types of nontravel benefits as a result of the program. First of all, there was a gain in welfare experienced by individuals who increased their travel frequency and would have been willing to pay more than the subsidized fare (but less than the unsubsidized fare) to make the new trip(s). For these individuals the project created new travel opportunities which, when taken advantage of, made the individuals better off.

The second, and somewhat more tangible, benefit received by project participants, was the reduction in taxi fares for trips they would have made anyway. This was essentially a transfer payment that increased the user's disposable income net of travel. Since the portion of subsidy payments that accrued in this manner is equal to one minus the fraction that project-related taxi use increases form of total project ridership, it can be seen that 80.3 percent ($1 - .197$) of the project subsidy payments amounted to income transfers. These may have been significant income supplements for project registrants.

Friends, relatives, and cohabitants of project users received indirect benefits from the project. To the extent that registrants used the project discount to take trips that previously would have been taken as a passenger in someone else's auto, the project reduced the requirements placed on

*Survey of project registrants, July 1979.

those other ride sources. Project users themselves may have benefitted psychologically from this increased level of independence.

FIRMS AND ESTABLISHMENTS

The changes in travel behavior outlined above had effects on levels of activities of many different firms and organizations. Increases in the frequency of shopping trips imply increases in the level of retail activity, at least for the stores with a significant elderly and handicapped clientele. This effect may have been further magnified by the "income effect" described above, which essentially provided users with more disposable income by reducing the cost of transportation, in addition to allowing them more frequent visits to retail areas. Doctors and hospitals also experienced an increase in activity levels as patients were able to afford and seek more frequent consultations and treatments. Overall, the increased mobility and income of subsidy users led to increased activity levels for all establishments that served as the destinations for project trips, particularly those that increased in frequency.

9

SUMMARY AND CONCLUSIONS

The Kinston user-side subsidy demonstration tested an innovative approach to the task of increasing the mobility of the elderly and handicapped. From this test, as outlined in the preceding chapters, numerous observations concerning the operation and effects of the subsidy program in the local setting have been made. When assessing the potential merits of user-side subsidy programs in other areas, however, it is necessary to account for the effects that the characteristics of the local setting have on observed findings. Therefore, in this chapter, relationships between the impacts of this demonstration and site- and project-related factors are developed. Based on these relationships, the potential effects of user-side subsidies in general and at other sites, as well as the potential for improvement both in the subsidy program as applied in Kinston, and in the concept overall, are assessed.

CONCEPT FEASIBILITY

An assessment of the feasibility of the user-side subsidy concept must address issues related to both effectiveness and efficiency. Effectiveness involves the extent to which the concept is found to be an administratively practical and viable method to enhance the mobility of the elderly and handicapped, while efficiency issues consider whether or not the same results might be achieved using fewer resources.

EFFECTIVENESS

The viability of the user-side subsidy concept employing tickets to provide discounts on taxi rides is heavily dependent upon the nature of the environment in which it is implemented. In Kinston, this concept has been shown to be effective when applied to a geographically small area, where a low cost per trip makes taxi travel a realistic alternative for low-income individuals, and ticket distribution can be accomplished with a reasonable level of effort. It may work equally well in larger areas, though its application in such a setting has not yet been tested. Potentially, when many individuals in the population are eligible for subsidies, administrative scale economies may be taken advantage of, and the competition created by a large number of service providers tends to enhance project service quality and decrease the likelihood of provider fraud. Conversely, the presence of other forms of public transportation, particularly conventional bus transit, may introduce unique complications, such as those related to the use of different types of federal operating assistance monies. Other institutional and political factors, such as the favorable publicity for elected officials caused by the direct provision of specialized services, may also act against the user-side subsidy concept in some settings. The fact that most or all of these factors were favorable in the Kinston subsidy project should not obscure their importance in determining the feasibility of this concept in other areas.

Within any given setting, a basic measure of the effectiveness of a user-side subsidy program is its ability to gain the support of service providers who are willing to perform the administrative functions that are inherently needed in this type of approach to maintain accountability. This is particularly important when the service providers are private taxi operators who do not normally maintain detailed records of traffic and may be leery of public sector intervention. In Kinston, the user-side subsidy program was able to enlist and maintain the support of a majority of taxi operators, with nonparticipants consisting only of two small firms who perceived that their clientele would generally not be affected by the program. The fact that some 90 percent of the taxi vehicles in Kinston participated in the program is ample evidence that the handling of tickets and associated administrative requirements were not a significant concern for taxi operators.

Likewise, eligible individuals who needed project subsidies were generally able to register for and use the project without any significant problems. Extensive project marketing/outreach ensured that most eligible individuals were aware of the subsidy, and the distribution of registration/ticket sales locations throughout the city minimized the inconvenience associated with program participation and administrative procedures. There is some evidence that the monthly ticket purchase limit acted to constrain the project tripmaking of at least some registrants, and it might therefore be productive to consider possible alternatives. For example, the project staff did adopt an informal policy of granting exceptions to the budget limit, but many

registrants were not aware of the policy. Also, the budget limit itself could be set at a higher level or removed altogether.

Of course, when budget limits are raised or removed, the risk of fraud may increase at some sites as individuals who would make unauthorized use of tickets (e.g., transfer them directly to taxi operators without receiving service) are able to increase the scope of their fraudulent activities. In Kinston, fraud does not appear to have been a significant problem. This is due at least in part to the relatively small population of Kinston, which resulted in a personal familiarity among taxi drivers, project staff members, and registrants, and to the owner-operator/franchise structure of taxi supply, which resulted in long tenures for many taxi drivers (contributing to the personal familiarity described above) and gave each driver a significant personal stake in the propriety and legality of his operations. At other sites, where the scale of the project or structure of taxi supply might act to increase the likelihood of fraud, security could be enhanced through the use of photo-ID cards. In general, it should be noted that the elderly and handicapped may be less prone to make fraudulent use of this type of project than other population segments, though this in no way obviates the need for reliable security procedures.

Overall, the user-side subsidy concept as demonstrated in Kinston appears to be an administratively practical and viable method of enhancing the mobility of the elderly and handicapped, particularly those with low incomes and few travel alternatives.

EFFICIENCY

It is to be expected that the costs of administering a transportation subsidy program in which reimbursements to providers are made on the basis of an accounting of trips made will be substantial. As outlined in Chapter 4, administrative costs are significant in comparison to the size of the subsidy itself. Given that most project rides would have been made even without the project subsidies, the administrative costs for new trips are even higher than indicated here. These highly visible costs must be compared to the more hidden inefficiencies inherent in provider-side subsidies (caused by the lack of performance incentives) when the user-side subsidy concept is being considered for implementation elsewhere.

In the Kinston demonstration, a large proportion of ongoing administrative costs were attributable to ticket sales activities. With a cashier present at the program office or one of the remote sales locations virtually full-time, the level of effort expended to distribute tickets was large in comparison with the number of tickets actually sold. An alternative procedure for Kinston or other sites might be to allow registrants to order their tickets by mail or telephone from the program office. This saves the

time and cost of transportation for the ticket sales cashier and the registrant, and provides many opportunities for the cashier to consolidate ticket purchase requests, and engage in other productive activities when ticket sales are slow. If an individual has registered with the program, and the tickets are still stamped with the ID number, mailing the tickets to the individual's home provides virtually the same protection against eventual fraudulent use as personal sales. This procedure might be especially attractive in geographically large implementation settings, where the costs of providing adequate coverage with in-person ticket sales locations would be highest.

Of course, it is always possible to restrict ticket sales activities to the central program office without providing any remote locations or mail/telephone ordering. This alternative is most attractive in geographically small implementation settings, where the program office is located at or near a major activity center that project registrants would be likely to visit in the course of their normal travel. While the savings resulting from this approach must be traded off against the resulting reductions in accessibility to the program subsidy, this would appear to be a viable alternative for ticket sales in Kinston and many other settings.

Initial program marketing/outreach activities were also a significant source of administrative costs in Kinston. As outlined in Chapter 4, considerable media advertising and labor-intensive mailing were used to make individuals aware of the program and encourage them to register for it. While this approach was very effective, similar results might have been achieved through a greater reliance at the outset on taxi operators for program promotion. Since most program participants were dependent upon taxis anyway, and taxi operators stood to gain from any increases in tripmaking caused by the subsidy, it appears in retrospect that at least some of the initial project marketing activities could have been replaced by personal contact between drivers and taxi riders, or program announcements posted in cabs. Indeed, this type of approach was eventually used in Kinston after the other marketing initiatives had already been undertaken.

Of course, individual taxi drivers may not be effective "salesmen" and may prefer not to involve themselves with public sector programs of this or any other type. However, the fact that reliance on taxi operators for program promotion in Kinston after other methods had already been used produced a low marginal yield should not obscure its potential future applicability. This approach would seem attractive at sites such as Kinston, where owner-operators have a major stake in the volume of business they can attract, and loyalty of riders to companies and individual drivers would tend to ensure that the operators conducting program-related marketing would be the ones to benefit from volume changes. At other sites, where these factors are not so conducive to driver marketing, the more conventional marketing approaches employed in Kinston would almost certainly be appropriate and are

limited only by possible restrictions on access to the names of individuals who are likely to be project-eligible.*

Overall, the need to attract eligible individuals and the need to account for the project trips they make are potentially major sources of costs in user-side subsidy programs. However, based on the Kinston experience, it appears that there are cost-effective approaches to these tasks that do not overly restrict the viability of the concept in a variety of settings.

MOBILITY

The Kinston user-side subsidy project was able to serve a substantial number of elderly and handicapped clients, though these individuals constituted a relatively small percentage** of the theoretically eligible population. However, given that the majority of nonregistrants owned or had access to automobiles, and had somewhat higher incomes than registrants, the penetration of the project into the mobility-disadvantaged segment of low income individuals with few travel alternatives for which it was primarily targeted was much greater. Indeed, there was little more that could have been done in Kinston to attract additional registrants. The market penetration potential of similar programs at other sites can therefore be seen to depend primarily on the mobility needs of the eligible population and the suitability of conventional taxi service to meet those needs. The presence of low user-cost conventional transit as an alternative mode at some sites may also be an important consideration.

At any given site, it is reasonable to expect an initial wave of registration by those individuals who have the greatest need for this type of discount. Over time, some individuals for whom taxi subsidies are less important (e.g., because of income or travel alternatives) and individuals who become eligible for the subsidy may also find it worthwhile to register. Exogenous events may cause distinct short-term shifts in the characteristics of new registrants over time, such as occurred during the 1979 gasoline shortage,

*For example, social service agencies may be unwilling to release the names of their clients to an outside subsidy program because of the Privacy Act.

**It should be reiterated that the market penetration statistics presented in Chapter 6 were heavily dependent upon the method used to estimate the eligible population and must therefore be viewed as tentative.

when auto users registered for the project as insurance against disruptions to their own mobility.*

Patterns of project usage in Kinston were very similar to those of project registration, with those registrants having the lowest income and fewest travel alternatives making the greatest use of taxi discounts. Also, a number of handicapped individuals, including individuals that needed wheelchairs, used the project regularly (e.g., for work trips). Most project users would have relied heavily on taxis even without project subsidies, a tendency that may have been accentuated by the need to purchase an inventory of tickets prior to their use. At least some registrants were constrained by ticket purchase limitations and might have used the project more if those restrictions were eased.

At other sites, therefore, major determinants of project use should include the characteristics of registrants and their access to automobiles, as well as the level of taxi fares relative to registrant income and project use limits. The use of prepurchased tickets (as opposed to vouchers or some other means) as the subsidy mechanism may introduce some bias against less frequent taxi users, and, as was the case with project registration, the presence or absence of low user-cost conventional bus transit may be a factor in determining project use rates.

The changes in travel behavior produced by the Kinston demonstration were measurable and consisted for the most part of changes in overall travel frequency and mode that led to substantial increases in the taxi use frequency of project registrants. This increase in overall travel corresponds to an increase in the mobility of project registrants and represents attainment of the project's primary objective.

This finding appears to conflict somewhat with the hypothesis that taxi riders have relatively fixed needs for taxi service and are therefore somewhat insensitive to fare changes.** In reconciling this difference, it must be taken into account that an individual who registers for the program implicitly reveals a greater than average "need" for taxi subsidies, either

*In the longer run, if fuel supply reductions and interruptions result primarily in price increases rather than supply shortfalls or long-term rationing, the similarities in operating characteristics between taxis and private autos should tend to ensure that there will be no distinct shift towards taxi use caused by the energy situation. Exceptions to this may occur, however, if the volume and composition of taxi demand lends itself to extensive ride-sharing (e.g., in geographically small areas with few service providers).

**See, for example, Frederic Fravel and Gorman Gilbert, Fare Elasticities for Exclusive-Ride Taxi Services, prepared for U.S. Department of Transportation, October 1978.

because of lower income (as described above) or (potentially) higher frequency of taxi use. As shown in Table 6-14, project registrants are much more heavily dependent on taxis for their mobility than are nonregistrants. The combination of the higher frequency of taxi use and lower incomes of project registrants implies that taxi travel consumes a much larger portion of their total income. Changes in the cost of taxi travel are therefore much more likely to produce changes in registrant travel frequency than would occur with nonregistrants who use taxis only on an irregular or special-purpose basis, and are therefore less sensitive to the level of the fare.

Despite the travel frequency changes, however, on the order of 80 percent of all subsidy payments accrued as income transfers, since the majority of project trips would have been made even in the absence of the subsidy program. Given that there is no practical way to separate new, project-induced trips from those that would have been made anyway, at least for the purposes of offering reduced fares only to the former, income transfer must be viewed as an inherent part of any user-side subsidy program.

At some sites, user-side subsidies could be expected to produce changes in trip destination as well as frequency. In Kinston, this was not found to occur, due to the geographically small service area and relatively coarse zonal fare structure under which trips to different destinations for the same trip purpose could cost the same amount for a given user. However, with a larger service area (which might contain more alternative destinations) and a finer zone or purely distance-based fare structure, destination choice changes could also result from user-side subsidies, depending upon the nature of project-use restrictions.

SUPPLY

The changes in taxi-use frequency by project registrants in Kinston contributed to observed changes in the supply of taxi service. For taxi operators who carried a large proportion of elderly and handicapped riders prior to the project, the project yielded an increase in revenues. Project trips received slightly more driver assistance than nonproject trips but, overall, took no more time to serve. Since project trips tended to occur during off-peak hours when there was some excess capacity, the costs of serving the additional riders were less than or equal to the costs of providing nonproject service, and the increase in revenues associated with the project translated into a corresponding increase in profits. This contributed to the decision of some drivers to reduce their operating hours and/or discontinue their affiliations with established companies.

It should be noted that taxi operators made no particular effort to attract project riders more than any other type of riders. This may be due to the loyalty of regular users to individual companies or drivers and the fact that once the subsidy was implemented, the increase in taxi tripmaking had already occurred, and no further benefits could be extracted by the companies by serving project versus nonproject rides. Also, overt indications of specialization in elderly and handicapped service may lead to adverse reactions from other, larger market segments.

At other sites, the supply impacts of a user-side subsidy program will be largely related to customer/driver loyalty. In small service areas, particularly those served over a long period of time by stable owner-operators, customer/driver loyalty may cause the effects of taxi use frequency increases to be concentrated among a few operators and preclude the use of marketing by individual drivers to attract project-eligible riders. In other areas, where customer/driver relationships are less stable, the impacts of the subsidy program may be spread more evenly among taxi operators and result in general increases in profitability that have few if any effects on the relationships among individual drivers and firms, or on the hours of operation. In this latter setting, selective promotion or service differentiation by drivers prior to the subsidy project, designed to attract and retain elderly and handicapped clients, could be a productive course of action for operators and lead to level-of-service or amenity increases for project riders. Significant efficiency changes could also take place at other sites with the removal of binding constraints on ride-sharing.

SOCIAL SERVICE AGENCIES

Overall, the Kinston user-side subsidy demonstration did not produce a significant response among local social service agencies. Despite the obvious potential for involvement of social service agencies with a program of this type, the role of these agencies consisted primarily of promotion and client referrals, with no funding assistance. This may be due at least in part to the limited financial flexibility of Kinston's social service agencies and the low relative importance of transportation services of any type to these agencies exhibited by the general lack of in-house transportation programs.

Clearly, at other sites, particularly those with more extensive transportation programs, the response from the agencies to a user-side subsidy program might be more supportive. Furthermore, real fuel price increases may make inefficient agency-provided transportation services appear relatively less desirable in the future and make some agencies more receptive to a carefully planned funding involvement with a user-side subsidy program. However, as outlined in Chapter 8, there are many inherent reasons why user-side subsidies may not be well-received by social service agencies,

including specialized service requirements, user cost, agency marketing, geographical discrimination, and low out-of-pocket costs for in-house services. These reasons tend to persist across many sites and may place severe constraints on the responsiveness of social service agencies to the user-side subsidy concept.

However, this lack of agency response in no way indicates that user-side subsidies are less efficient or less desirable than provider-side subsidies from the perspectives of all agencies or interested parties under all circumstances. These subsidies have been shown in Kinston to be capable of producing beneficial travel behavior changes among project registrants. When parochial considerations are removed, and user-side subsidies are compared to other alternatives on the basis of true costs and effectiveness, they may be a preferred technique to use in facilitating the mobility of the elderly and handicapped in a variety of settings.

Appendix A

EVALUATION OVERVIEW

The information and analysis presented throughout this report is based on a series of data collection efforts designed to monitor all of the potential effects of the demonstration project described above. For the most part, the data collection was structured in a "before and after" framework to identify changes that took place with the implementation of the demonstration. The before and after observations have been supplemented by monitoring exogenous events and indicators of site activity to facilitate the interpretation of before/after changes, and enhance the credibility of findings.

Specific evaluation activities included:

1. Site data collections;
2. Registration interviews;
3. Taxi on-board surveys;
4. Taxi operator profiles;
5. Social service agency profiles;
6. A follow-up survey of project registrants;
7. Survey of nonregistrants;
8. Tabulation of taxi ticket returns; and
9. Administrative cost accounting.

For each of these activities, a brief description, along with survey instruments and sampling plans as appropriate, are presented below.

1. SITE DATA COLLECTION

Various measures were collected to provide a description of the demonstration site, assist in identifying the location and distribution of the target population, describe local travel patterns, monitor exogenous changes, and aid in the transfer of results. Specific data items included aggregate demographic characteristics, geographical features, land-use distributions, locations of residential and activity centers, and indicators of the local economy and weather conditions. These data were gathered from a variety of sources, including the Bureau of the Census, Kinston Planning Department, and Neuse River Council of Governments.

2. REGISTRATION INTERVIEWS

Whenever an individual registered for the KITE program, an interview was conducted to gather socioeconomic data describing the individual and his/her household, as well as various travel-related characteristics. A copy of the standard Registration Interview Form is presented in this appendix.

3. TAXI ON-BOARD SURVEYS

Taxi on-board surveys were administered before and during the demonstration to gather information describing project (eligible) and nonproject riders and the types of trips they made from the perspectives of driver and passenger. In each case, interviewers were selected to ride in vehicles in a manner which resulted in an approximately random assignment across available vehicle hours. The surveys were conducted over a 4-week period to eliminate daily or weekly biases, and since the before and after surveys were each conducted at the same time of the year (August), seasonal biases were compensated for as well. In August 1977, a total of 479 interviews were conducted, while in August 1979, there were 452 interviews of taxi riders. A copy of the Taxi On-Board Survey Form is included in this appendix.

4. TAXI OPERATOR PROFILES

For each taxi firm participating in the subsidy program, a comprehensive description of predemonstration operations, covering vehicles and facilities,

service policies, operating policies, etc., was developed on the basis of personal interviews conducted in July 1977. In July 1979, a second round of interviews was conducted to detect and investigate significant changes that had taken place during the demonstration. The Taxi Operator Profile Interviewer Checklist used in both of these interviews is included in this appendix.

Because Kinston taxis operate on a franchise basis, many important operating decisions are made at the level of the individual owner/operator. Therefore, as part of the taxi operator profiles, interviews were conducted with individual franchise holders. The Taxi Franchise Profile Interviewer Checklist used in these interviews is included in this appendix.

5. SOCIAL SERVICE AGENCY PROFILES

For the seven largest social service agencies in Kinston at the beginning of the demonstration, profiles of agency activities, transportation services and attitudes toward the user-side subsidy program were constructed on the basis of personal interviews conducted in July 1977. These profiles facilitated the analysis of social service agency response to the user-side subsidy program, and were conducted using the Social Service Agency Profile Interviewer Checklist which is included in this appendix.

6. FOLLOW-UP SURVEY OF PROJECT REGISTRANTS

In July 1979, a sample of 147 project registrants, selected randomly from the 719 project registrations completed prior to that time, were contacted by telephone. This survey investigated changes in the characteristics of registrants since the time of their registration that might have affected their travel behavior, changes in travel behavior they attributed to the KITE program, the level of service experienced on KITE and non-KITE taxi rides, difficulties experienced in using the subsidy program, and reasons why they did not use the program more. A copy of the Follow-Up Survey of Project Registrants is included in this appendix.

7. SURVEY OF NONREGISTRANTS

The purpose of this survey was to investigate the socioeconomic and travel characteristics of individuals who were eligible for the KITE program but chose not to register, as well as their reasons for nonparticipation. Differences between registrants and nonregistrants are particularly important

in explaining project market penetration rates and assessing the transferability of the subsidy concept in other sites. For this survey, a sample of names was drawn randomly from the Kinston telephone directory (using a random start/constant skip interval), and contacted by telephone. Since eligible and noneligible individuals could not be distinguished prior to telephone contact, a large number of calls had to be made to yield the final sample of 121 eligible nonregistrants. A copy of the Telephone Survey of Nonregistrants is included in this appendix.

8. TABULATION OF TAXI TICKET RETURNS

At the end of each month, the project staff compiled a list of the project trips taken during the month by each registrant, based on the taxi operator logs and registrant identification numbers stamped on each ticket. This information facilitated analysis of the factors affecting project use rates by different individuals and was recorded on the Project Travel Record Form which is included in this appendix.

9. ADMINISTRATIVE COST ACCOUNTING

To facilitate analyses of project administrative costs and the skills required for different tasks, each project staff member tabulated the time spent working on different administrative activities, using the standard form and cost accounts included in this appendix under Administrative Cost Records. These records were kept from June through December 1977 and provided detailed insights into start-up costs and activities. As of January 1978, the project staff asserted that weekly activities had become routine, and discontinued the practice of tabulating the time they spent on a weekly basis. However, in November 1979, a "typical" week's activities were documented by the project staff based on the original system of cost accounts, enabling analyses of "equilibrium" administrative costs to be undertaken.

REGISTRATION INTERVIEW FORM

City of Kinston
Discount Taxi Program
User Registration Interview

Code Col 1: 1

ID #: _____ (Col 2-20)
Date: _____ (Col 21-26)
Interview Location: _____ (Col 27-28)
Applicant Name: _____ (Col 29-50)
Address: _____ (Col 51-70)
Phone Number: _____ (Col 71-77)

Code Col 1: 2

Code Resp ID: _____

1. What is your age? yrs. (Col 2-19)
2. Sex (INTERVIEWER RECORD FROM OBSERVATION) (Col 20-21)
(1) Male (2) Female (Col 22)
3. Race (INTERVIEWER RECORD FROM OBSERVATION) (Col 23)
(1) White (2) Black (3) Other
4. What is your marital status? (Col 24)
(1) Single
(2) Married
(3) Formerly married (widowed)
divorced or separated
- 5a. Do you have a physical handicap? (Col 25)
(1) Yes (2) No
- 5b. (IF YES) can you describe the handicap?

CODE HERE THE NUMBER OF THE HANDICAP ELIGIBILITY
CLASS ASSIGNED THIS INDIVIDUAL: (Col 26-27)

6a. Do you require any special aids for movement? (DO NOT PROBE; CHECK ALL THAT APPLY) _____ (Col 28-29)

- (1) ___ Handicapped, but no aids
- (2) ___ Wheelchair
- (3) ___ Walker
- (4) ___ Crutches
- (5) ___ Cane (for walking)
- (6) ___ Cane (for blind person)
- (7) ___ Car with special controls
- (8) ___ Seeing-eye dog
- (9) ___ Artificial limbs
- (10) ___ Braces
- (11) ___ Another person
- (12) ___ Other (specify)
- (13) ___ No handicap

6b. Do you have any difficulty performing any of the following activities? (ASK EACH AND RECORD ALL THAT APPLY) _____ (Col 30-36)

- (1) ___ Walking more than one block
- (2) ___ Negotiating a flight of stairs or escalator
- (3) ___ Sitting down or getting up
- (4) ___ Reading information signs
- (5) ___ Hearing announcements

7a. Do you have a current driver's license? _____

- (1) ___ Yes
- (2) ___ No

7b. When did you last drive? _____

- (1) ___ within past month
- (2) ___ within past 3 months
- (3) ___ within past year
- (4) ___ more than 1 year
- (5) ___ never drove

8. What is your employment status (DO NOT PROBE): _____

- (1) ___ Employed full-time
- (2) ___ Employed part-time
- (3) ___ Unemployed
- (4) ___ Retired
- (5) ___ Student
- (6) ___ Homemaker
- (7) ___ Other, specify: _____

9. (HAND RESPONDENT CARD 1) Could you please tell me the letter of the category in which your personal annual income before taxes falls? (ASK ONLY IF ANNUAL ESTIMATE IS DIFFICULT) Perhaps then you could give me an estimate of your monthly income?

(Col 40)

	Annual	Monthly
(1) <u> </u> A.	Less than \$3,000	Less than \$250
(2) <u> </u> B.	\$3,000 to \$4,999	\$250 to \$415
(3) <u> </u> C.	\$5,000 to \$7,999	\$416 to \$666
(4) <u> </u> D.	\$8,000 to \$11,999	\$667 to \$835
(5) <u> </u> E.	\$12,000 to \$14,999	\$836 to \$1,250
(6) <u> </u> F.	\$15,000 to \$20,000	\$1,251 to \$1,667
(7) <u> </u> G.	Over \$20,000	Over \$1,667
(8) <u> </u> H.	Refused/Don't Know	Refused/Don't Know

10. How many persons (including yourself) maintain a residence in your household? _____

(Col 41-42)

- 11a. How many persons in your household are 65 years of age or over (including yourself if applicable)? _____

(Col 43-44)

- 11b. How many of these persons (over 65) have some physical handicap that restricts their travel? _____

(Col 45-46)

12. How many persons in your household are under 65 years of age and handicapped (including yourself if applicable)? _____

(Col 47-48)

13. How many vehicles (automobiles, pickups, vans, etc.) are available for regular use to persons in your household? _____

(Col 49-50)

14. How many drivers are there in your household (including yourself)? _____

(Col 51-52)

- 15a. (HAND RESPONDENT INFORMATION SOURCE CARD)

Through which of the means listed on this card did you hear of or learn about the discount program? (CIRCLE THE NUMBER OF EACH.)

(Col 53-60)

- | | |
|--|----------------------------|
| (1) Newspaper | (6) Employer |
| (2) Television | (7) Religious organization |
| (3) Radio | (8) Other (Specify) _____ |
| (4) Friend or Relative | |
| (5) Social or Welfare Service Agency (includes Medical Clinic, Rehabilitation Workshop, or Doctor) | |

- 15b. Which was the most important in convincing you to register for membership? _____

(Col 61)

16. (HAND RESPONDENT CARD 1) Could you please tell me the letter of the category that describes the combined annual income (1976 before taxes) of all members of your household (including yourself)? (ASK ONLY IF ANNUAL ESTIMATE IS DIFFICULT) Perhaps then you could give me an estimate of your household's monthly income?

(Col 62)

	<u>Annual</u>	<u>Monthly</u>
(1) <u> </u> A.	Less than \$3,000	Less than \$250
(2) <u> </u> B.	\$3,000 to \$4,999	\$250 to \$415
(3) <u> </u> C.	\$5,000 to \$7,999	\$416 to \$666
(4) <u> </u> D.	\$8,000 to \$11,999	\$667 to \$835
(5) <u> </u> E.	\$12,000 to \$14,999	\$836 to \$1,250
(6) <u> </u> F.	\$15,000 to \$20,000	\$1,251 to \$1,667
(7) <u> </u> G.	Over \$20,000	Over \$1,667
(8) <u> </u> H.	Refused/Don't know	Refused/Don't know

17. Now, to complete this interview, I would like to ask you a few questions on your travel patterns. I would like you to think back carefully over what you did and where you went during the past week. Then I'd like you to tell me to the best of your recollection how many times you went out to engage in the type of activities, I'm going to list for you: (TELL RESPONDENT IN YOUR OWN WORDS THAT ALL JOURNEYS ARE OF INTEREST--LONG OR SHORT, BY CAR, BUS OR ON FOOT.)

Code Col 1: 3

Code Response ID#: (Col 2-20)

WEEK TRIP RECALL RECORD

<u>Number Times Performed Activity</u>	<u>Activity</u>	
—	1. Went to work or school	(Col 21-22)
—	2. Went shopping (for groceries, clothing, drugstore, a new car, etc.)	(Col 23-24)
—	3. Went to visit a friend or relative (at their home or in hospital)	(Col 25-26)
—	4. Went to see doctor or visit clinic	(Col 27-28)
—	5. Went to religious services or activities	(Col 29-30)
—	6. Went to eat meal (restaurant or fast food)	(Col 31-32)
—	7. Went to accomplish some personal business (go to the bank, hairdresser, laundromat, club meeting, funeral home)	(Col 33-34)
—	8. For entertainment (movie, flower show, baseball game, bingo, play cards)	(Col 35-36)
—	9. For recreation (go for a pleasure walk or drive, go to the park, walk dog)	(Col 37-38)
—	10. To drive somebody else somewhere (that you weren't going to for some other reason)	(Col 39-40)
—	11. To provide company or an escort for somebody else (to a place you weren't going to for some other reason)	(Col 41-42)

Card 1

INCOME

	<u>Annual</u>	<u>Monthly</u>
A.	Less than \$3,000	Less than \$250
B.	\$3,000 to \$4,999	\$250 to \$415
C.	\$5,000 to \$7,999	\$416 to \$666
D.	\$8,000 to \$11,999	\$667 to \$835
E.	\$12,000 to \$14,999	\$836 to \$1,250
F.	\$15,000 to \$20,000	\$1,250 to \$1,667
G.	Over \$20,000	Over \$1,667

Card 2

INFORMATION SOURCE(S)

- (1) Newspaper
- (2) Television
- (3) Radio
- (4) Friend or Relative
- (5) Social or Welfare Service Agency
(includes Medical Clinic, Rehabilitation
Workshop, or Doctor)
- (6) Employer
- (7) Religious Organization
- (8) Other

TAXI ON-BOARD SURVEY FORM

CITY OF KINSTON TAXI SURVEY
INTERVIEWER BATCH SHEET

Form TAXOB-3

(To be completed for each cab ridden in)

Batch No. _____
(Col 1-3)

1. Interviewer: _____ Code Number: _____
(Col 4-5)
2. Date: _____ Code Number: _____
(Col 6-7)
3. Company: _____ Code Number: _____
(Col 8-9)
4. Cab Number: _____ Code Number: _____
(Col 10-12)
5. Cab Driver: _____ Code Number: _____
(Col 13-15)
6. Time Begin: _____ am
pm Code all four digits: _____
(24 hr clock) (Col 16-19)
7. Time End: _____ am
pm Code all four digits: _____
(24 hr clock) (Col 20-23)
8. Mileage at Beginning: _____ Code last four digits: _____
(including tenths) (Col 24-27)
9. Mileage at End: _____ Code last four digits: _____
(including tenths) (Col 28-31)
10. Number of rides surveyed in
this cab: _____ Code: _____
(Number of form TAXOB-1;s completed) (Col 32-33)

CITY OF KINSTON TAXI SURVEY
CAB OPERATING INFORMATION

Batch No. _____
(Col 1-3)

Ride No. _____
(Col 4-6)

1. Is this ride shared with the previous ride:
(1) ___ Yes (2) ___ No
_____ (Col 6)
2. Time of Trip Assignment _____. Code four digits
(24 hr clock) _____ (Col 7-10)
3. How assigned:
(1) ___ Person at Cab Stand (3) ___ Call--immediately
(2) ___ Person Hailed Cab (4) ___ Call--appt
_____ (Col 11)
4. Appointment Time: _____. Code four digits or 99
(24 hr clock) _____ (Col 12-15)
5. Mileage at Assignment _____. Code last four digits
(including tenths) _____ (Col 16-19)
6. Time arrives origin _____^{am}_{pm}. Code four digits
(24 hr clock) _____ (Col 20-23)
7. Mileage at origin: _____. Code last four digits
(including tenths) _____ (Col 24-27)
8. Does driver get out of cab?
(1) ___ Yes, to find rider
(2) ___ Yes, to physically help rider
(3) ___ Yes, to help with bags or open door only
(4) ___ No
_____ (Col 28)
9. Number of riders picked up (0-5) _____
_____ (Col 29)
10. Did passenger demand an exclusive ride? (1) Yes (2) ___ No
_____ (Col 30)
11. Race of riders:
(1) ___ White (2) ___ Non-White (3) ___ Mixed Group
_____ (Col 31)

12. For each member of the group, identify any noticeable handicaps:
- | | | | |
|----------------------------|-----------|-------|----------|
| (0) No Handicap noticeable | Rider # 1 | _____ | (Col 32) |
| (1) Wheelchair | 2 | _____ | (Col 33) |
| (2) Walking Problem | 3 | _____ | (Col 34) |
| (3) Blind or Deaf | 4 | _____ | (Col 35) |
| (4) Other (specify) _____ | 5 | _____ | (Col 36) |
13. Time cab leaves origin: _____. Code four digits (24 hr clock) _____ (Col 37-40)
14. Is the next ride shared with this one?
 (1) ___ Yes (2) ___ No _____ (Col 41)
15. Enroute stops requested by this passenger:
 Number of Stops: _____ (Col 42)
 Time spent at stops: _____ minutes (Col 43-45)
 Reason for stops: ___ (1) shopping or other errand (Col 46)
 ___ (2) see friend
 ___ (3) other
16. Time cab arrives at destination: _____^{am}pm. Code four digits (24 hr clock) _____ (Col 47-50)
17. Mileage at destination: _____. Code last four digits (including tenths) _____ (Col 51-54)
18. Does driver get out of cab?
 (1) ___ Yes, to physically help rider
 (2) ___ Yes, to help with bags or open door only
 (3) ___ No _____ (Col 55)
19. Amount of fare: \$ _____. Code 4 digits: 0.75; 1.65; etc. _____ (Col 56-59)
20. Amount of tip: \$ _____. Code 3 digits: 0.75; etc.; or 99 unknown _____ (Col 60-62)
21. Time cab ready to leave again: _____. Code four digits (24 hr clock) _____ (Col 63-66)

Form TAXOB-2
Batch No. _____
(Col 1-3)

Ride No. _____
(Col 4-5)

Rider No. _____
(Col 6)

CITY OF KINSTON TAXI SURVEY
RIDER INFORMATION

1. Do you live in the city of Kinston? _____
(1) ___ Yes (2) ___ No (Col 7)

2a. What is the activity for which you are going on this trip: _____
(Col 8-9)

- | | |
|--|---|
| (1) ___ Home | (5) ___ Medical |
| (2) ___ Work or School | (6) ___ Visiting friends
or relatives |
| (3) ___ Church | (7) ___ Recreational,
Cultural, Civic |
| (4) ___ Shopping or Personal
Business | (8) ___ Visit social or
welfare agency |
| (9) ___ Other _____ | Specify |

2b. What is the activity from which you just came: _____
(Col 10-11)

- | | |
|------------------------------|---|
| (1) ___ Home | (5) ___ Medical |
| (2) ___ Work or School | (6) ___ Visiting friends
or relatives |
| (3) ___ Church | (7) ___ Recreational,
Cultural, Civic |
| (4) ___ Shopping or Personal | (8) ___ Visit social or
welfare agency |
| (9) ___ Other _____ | Specify |

3a. If you are returning home, how did you get here: _____
(Col 12)

- | | |
|------------------------|--|
| (1) ___ Auto Passenger | (3) ___ Walk |
| (2) ___ Taxi | (4) ___ Vehicle provided
by place you visited |
| | (5) ___ Other _____ Specify |

3b. If you are coming from home, how do you plan on returning: _____
(Col 13)

- | | |
|------------------------|--|
| (1) ___ Auto Passenger | (3) ___ Walk |
| (2) ___ Taxi | (4) ___ Vehicle provided by
place you visit |
| | (5) ___ Other _____ Specify |

4. How often do you use taxis? _____ (Col 14)

- (1) Daily
- (2) Several times per week
- (3) About once a week
- (4) Several times a month (less than once a week)
- (5) About once a month
- (6) Less than once a month

5. How would you have made this trip if not by taxi? _____ (Col 15)

- (1) Auto Driver
- (2) Auto Passenger
- (3) Walk
- (4) Vehicle provided by place you visited
- (5) Other (specify) _____

6a. Do you think taxicabs in Kinston maintain acceptable standards of safety, cleanliness, and reliability? _____ (Col 16)

- (1) Yes
- (2) No
- (3) Some do, some don't

6b. Do you make a serious effort to select a cab company on the basis of safety, cleanliness and reliability? _____ (Col 17)

- (1) Yes
- (2) No

7a. Did you arrange for the cab to pick you up at a stated time? _____ (Col 18)

- (1) Yes
- (2) No

7b. If so, and it did not arrive at the stated time, how long did you wait? _____ (Col 19)

- (1) Less than 5 minutes
- (2) Between 5 and 15 minutes
- (3) Between 15 and 30 minutes
- (4) Greater than 30 minutes

8. What is your age? _____ Years Old _____ (Col 20-22)

INTERVIEWER RECORD SEX OF RESPONDENT: (1) Male _____ (Col 23)
 (2) Female

9. How many persons live in your household (including yourself)?
 _____ Persons _____ (Col 24-25)

10. How many autos or other motorized vehicles are owned by your household? _____ (Col 26)
11. Do you have a current driver's license?
(1) ____ Yes (2) ____ No (Col 27)
12. (SHOW RESPONDENT INCOME RESPONSE CARD)
Could you tell me which number on this card best indicates the combined income of all members of your household (before taxes)? (Col 29)

INCOME RESPONSE CARD

	<u>Annual</u>	<u>Monthly</u>
(1)	Less than \$3,000	Less than \$250
(2)	\$3,000 to \$4,999	\$250 to \$415
(3)	\$5,000 to \$9,999	\$416 to \$835
(4)	\$10,000 to \$15,000	\$836 to \$1,250
(5)	Over \$15,000	Over \$1,250
(6)	Don't know or refuse	Don't know or refuse

Questions on Mobility Improvement and Substitution
for "After" Surveys

- 1a. How often do you make this particular trip?
_____ Time per week/month (circle one).
- 1b. How often did you make the trip before the discount program? _____ times per week/month (circle one).
- 2a. By what means do you usually travel here?
_____ Auto driver
_____ Auto passenger
_____ Bus
_____ Taxi
_____ Walk
_____ Agency service
- 2b. By what means did you usually travel before?
_____ Auto driver
_____ Auto passenger
_____ Bus
_____ Taxi
_____ Walk
_____ Agency service
3. How would you compare this place you are going to other places you have gone for this purpose?
_____ Have always gone only here for this purpose
_____ Better
_____ Same
_____ Not as good
4. How does this trip compare in distance to places you have usually gone for this purpose in the past?
_____ Further
_____ Same
_____ Not as far

5a. If you come to this place by some other means, would you have come at the same time of day?

_____ Usually yes

_____ Usually no

5b. At the same time of the week?

_____ Usually yes

_____ Usually no

5c. If there has been some change in the timing of your trip, what effect has this had on the convenience or flexibility with which you can schedule the trip?

_____ This is a better time for me

_____ About the same

_____ Not as good

KINSTON ON-BOARD TAXI SURVEY
 SURVEY OF DRIVER ATTITUDES
 ON SERVING THE ELDERLY AND HANDICAPPED

To the driver, at the end of the assignment:

As part of this survey we would also like to collect your attitudes on what it is like serving the elderly and handicapped as taxi customers. We would like to know if there is any difference between them and other passengers as far as you are concerned in some of these areas:

1. Is there any difference in the amount of attention they need? In other words, do you usually have to offer any more assistance in getting in or out of the cab, or with packages?

	<u>Elderly</u>	<u>Handicapped</u>
Almost always	<input type="checkbox"/>	<input type="checkbox"/>
Occasionally	<input type="checkbox"/>	<input type="checkbox"/>
Very seldom	<input type="checkbox"/>	<input type="checkbox"/>
No difference	<input type="checkbox"/>	<input type="checkbox"/>
Don't know	<input type="checkbox"/>	<input type="checkbox"/>

2. Do you have any trouble finding out where they want to go, or on how much the fare should be?

	<u>Elderly</u>	<u>Handicapped</u>
Almost always	<input type="checkbox"/>	<input type="checkbox"/>
Occasionally	<input type="checkbox"/>	<input type="checkbox"/>
Very seldom	<input type="checkbox"/>	<input type="checkbox"/>
No difference	<input type="checkbox"/>	<input type="checkbox"/>
Don't know	<input type="checkbox"/>	<input type="checkbox"/>

3. Do you find you have to wait any longer for them to be ready to go when you answer the call compared to other passengers?

	<u>Elderly</u>	<u>Handicapped</u>
Wait longer	<input type="checkbox"/>	<input type="checkbox"/>
No difference	<input type="checkbox"/>	<input type="checkbox"/>
Wait less	<input type="checkbox"/>	<input type="checkbox"/>
Don't know	<input type="checkbox"/>	<input type="checkbox"/>

4. How about the places they travel to or come from? Are they out of the way for you compared to other passengers?

	<u>Elderly</u>	<u>Handicapped</u>
Generally yes	<input type="checkbox"/>	<input type="checkbox"/>
Occasionally	<input type="checkbox"/>	<input type="checkbox"/>
Generally no	<input type="checkbox"/>	<input type="checkbox"/>
About the same	<input type="checkbox"/>	<input type="checkbox"/>
Don't know	<input type="checkbox"/>	<input type="checkbox"/>

5. Do they take longer rides than other persons?

	<u>Elderly</u>	<u>Handicapped</u>
Generally yes	<input type="checkbox"/>	<input type="checkbox"/>
About the same	<input type="checkbox"/>	<input type="checkbox"/>
Generally no	<input type="checkbox"/>	<input type="checkbox"/>
Don't know	<input type="checkbox"/>	<input type="checkbox"/>

6. How do their tips compare with other passengers?

	<u>Elderly</u>	<u>Handicapped</u>
Generally more	<input type="checkbox"/>	<input type="checkbox"/>
About the same	<input type="checkbox"/>	<input type="checkbox"/>
Generally less	<input type="checkbox"/>	<input type="checkbox"/>
Don't know	<input type="checkbox"/>	<input type="checkbox"/>

7. What are your feelings about the taxi discount program for elderly and handicapped? (Use back of sheet for response)

TAXI OPERATOR PROFILE INTERVIEWER CHECKLIST

TAXI OPERATOR PROFILE
INTERVIEWER CHECKLIST

1. Name of firm
2. Size characteristics of firm
 - Number franchises
 - Number vehicles bearing name of firm
 - Monthly ridership volume
3. Investment
 - Headquarters location
 - Square feet office space
 - Size and capability of maintenance facility
 - Number vehicles owned by firm and leased to franchises
4. Staffing
 - Number each and average weekly hours:
 - office managers
 - support staff (secretaries, clerks, etc.)
 - dispatchers
 - mechanics
 - other
5. Dispatching
 - monthly volume or rides dispatched
 - fraction dispatched rides of total ridership
 - equipment
 - methods
 - hours of operation
6. Operating policies (whether maintained, control over franchises)
 - operating hours (and days)
 - conscious market segmentation
 - geographic
 - client
 - concentration on particular trip generators

7. Service policies (whether maintained, control over franchises)
 - reservation
 - subscription
 - elderly or handicapped
8. Insurance
 - what liability
 - cost
9. Marketing
 - type advertising
 - yellow pages
 - stands
 - budget
10. Operation of franchises
 - how awarded
 - how decide on number
 - terms of contract
 - longevity

TAXI FRANCHISE PROFILE INTERVIEWER CHECKLIST

TAXI FRANCHISE PROFILE
INTERVIEWER CHECKLIST

1. Tenure of franchise
 - with this firm
 - other firms in the city
2. Equipment
 - number vehicles
 - age
 - owned or leased
 - equipment and characteristics
3. Staffing
 - number drivers
 - weekly hours each
 - any other employees
4. Operating hours
 - daily
 - weekly
 - coverage by drivers
5. Own operating policies
 - marketing segmentation
 - operating hours
6. Own service policies
 - reservation/subscription arrangements
 - ride grouping
 - concentration on particular trip generators
7. Ridership
 - total ridership
 - percent dispatched

TAXI FRANCHISE PROFILE
INTERVIEWER CHECKLIST

8. Utilization
 - monthly vehicle hours
 - monthly vehicle miles
9. Profitability
 - Costs
 - monthly operating cost
 - labor
 - monthly capital cost
 - (if vehicle owned)
 - Revenues
 - monthly passenger
 - monthly other
10. Attitudes toward E & H
 - liability
 - assistance
 - trip characteristics
 - project related:
 - form processing
 - identification
11. Attitudes toward franchise
 - benefits received from firm
 - constraints

SOCIAL SERVICE AGENCY PROFILE
INTERVIEWER CHECKLIST

SOCIAL SERVICE AGENCY PROFILE
INTERVIEWER CHECKLIST

1. Description of Agency
 - public or private
 - affiliations
 - brief history and rate of growth
 - when started
 - number current users
 - primary mission
 - official service area
 - official client definition
2. Description of Services
 - what services (related to mission)
 - what people use services
 - number of elderly (registered vs. regular users)
 - non-handicapped
 - handicapped
 - number of non-elderly (registered vs. regular users)
 - non-handicapped
 - handicapped
 - attendance rates
 - how often should consume service
 - actual attendance rates
 - by group
 - by time of year
 - distinguishing characteristics
 - high users
 - low users

SOCIAL SERVICE AGENCY PROFILE
INTERVIEWER CHECKLIST

3. Transportation Assistance

Describe program, if any

If own fleet:

Vehicles

number

characteristics

own/lease

Drivers

number

hiring basis (full-time, part-time, staff,
special training)

Service policies

eligibility

user charges

scheduling

service area

Trip purposes served

agency-related

nonagency-related (medical, shopping, etc.)

Other techniques (describe and quantify)

contract with taxi operators

charter busses

user cost reimbursement

other

SOCIAL SERVICE AGENCY PROFILE
INTERVIEWER CHECKLIST

Number users by type assistance
seasonal fluctuations

Other techniques (describe and quantify)
contract with taxi operators
charter busses
user cost reimbursement
other

Number users by type assistance
seasonal fluctuations

4. Problems related to transportation in fulfilling agency mission
- restricts number of visits
 - describe effect
 - estimate of market not being reached
 - relationship between agency access and distance from agency
 - type of client
 - physical characteristics
 - socioeconomic characteristics
 - efficiency in delivering mission
 - scheduling visits
 - parking problems
 - cancellations
 - problems in current transportation assistance program or preventing start-up of new program
 - costs
 - staffing
 - accounting

SOCIAL SERVICE AGENCY PROFILE
INTERVIEWER CHECKLIST

scheduling
legal
insurance
other

5. Agency Resources

Inputs

funding sources
amount from each
applicability and control

Expenditures

transportation related (breakdown)
as percent of total expenditures
cost per ride

6. Willingness to participate in subsidy program

promotion
registration
scheduling
funding assistance

7. Attitudes toward subsidy program

Comment on potential advantages

improved range
improved flexibility
reduced costs
monitoring data (processed vouchers)

Disadvantages

Secondary benefits to operating own service
publicity
control
Additional paper work

Follow-Up Survey of Project Registrants Form

CITY OF KINSTON
KITE TRANSPORTATION PROGRAM
FOLLOW-UP SURVEY OF PROJECT REGISTRANTS

Card Number:

0	1
---	---

Name:

2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
---	---	---	---	---	---	---	---	----	----	----	----	----	----	----

 LAST

17	18	19	20	21	22	23	24	25	26	27	28	29	30
----	----	----	----	----	----	----	----	----	----	----	----	----	----

 FIRST

31

 INIT.

Project ID:

32	33	34	35	36	37
----	----	----	----	----	----

I'm calling from Kinston City Hall in connection with the KITE Transportation Program. We are currently conducting a survey of people who are registered with KITE to find out how the service is working. If you have a couple of minutes, I would like to ask you a few questions concerning your use of KITE. If you are not using KITE, or if you have been having any trouble using it, we would like to ask you questions about that too.

A. First I would like to find out if there has been any change in your living arrangements since you registered. (GIVE DATE)

1. Do you still live at (GIVE RESIDENCE ADDRESS)?

1) Yes

2) No _____
(New Address)

3) Information Incorrect _____
(Correct Address)

38

39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

(Code address if changed)

2. Are there still (GIVE NUMBER) members in your household? 9 61
 1) ___ Yes (Code number if changed)
 2) ___ No _____
 (New Number)
 3) ___ Information _____
 Incorrect (Correct Number)

3. Is your employment status the same? 62 63 64
 You were formerly (GIVE EMPLOYMENT STATUS). (Code status if changed)
 1) ___ Yes
 2) ___ No _____
 (New Status)
 3) ___ Information _____
 Incorrect (Correct Status)

4. When you registered with KITE you had (GIVE HANDICAP) disability that affected your travel. Has anything happened to your health since you registered that would affect your ability to travel?
 1) ___ Yes _____
 (New Handicap)
 2) ___ No 65 66 67
 3) ___ Information _____ (Code handicap if changed)
 Incorrect (Correct Handicap)

5. Previously your household owned (GIVE NUMBER) vehicles in operating condition). Is this still true? 68 69
 1) ___ Yes (Code number if changed)
 2) ___ No _____
 (New Number)
 3) ___ Information _____
 Incorrect (Correct Number)

3. Now I'd like to ask some questions about your travel.

6. When was the last time you rode a taxi in Kinston?

71

- 1) Within past week
- 2) Within past month
- 3) Within past year
- 4) More than 1 year
- 5) Never rode (SKIP TO QU 22)

7. Do you use KITE tickets to ride taxis?

72

- 1) Yes
- 2) No (SKIP TO QU 22)

8. Did you use taxis in Kinston before KITE?

73

- 1) Yes
- 2) No (SKIP TO QU 10)

9. Do you ride taxis more now than before KITE?

74

- 1) Yes
- 2) No (SKIP TO QU 11)

Card No:

1
0 2

10. What kinds of taxi trips do you take more of because of KITE?
(RECORD RESPONSES WITHOUT ITEMIZING CHOICES)

- | | | |
|----------------------------|---------------------------------|--------------------------------|
| Work/school | 1) <input type="checkbox"/> Yes | 2) <input type="checkbox"/> No |
| Visit friends or relatives | 1) <input type="checkbox"/> Yes | 2) <input type="checkbox"/> No |
| Shopping | 1) <input type="checkbox"/> Yes | 2) <input type="checkbox"/> No |
| Church/religious | 1) <input type="checkbox"/> Yes | 2) <input type="checkbox"/> No |
| Medical | 1) <input type="checkbox"/> Yes | 2) <input type="checkbox"/> No |
| Personal business | 1) <input type="checkbox"/> Yes | 2) <input type="checkbox"/> No |
| Entertainment/recreation | 1) <input type="checkbox"/> Yes | 2) <input type="checkbox"/> No |
| Other | 1) <input type="checkbox"/> Yes | 2) <input type="checkbox"/> No |

3
4
5
6
7
8
9
10

11. Did you have to change taxi companies in order to get KITE service?
 1) ___ Yes 2) ___ No — (SKIP TO QU 13)
12. Which company did you ride with most often before?

13. Do you ever take taxi rides now where you don't use KITE tickets?
 1) ___ Yes 2) ___ No — (SKIP TO QU 15)
14. How many trips did you take last month where you paid full fare?

15. If you were permitted to buy more KITE tickets, would you buy them?
 1) ___ Yes 2) ___ No
16. How long do you generally have to wait when you request a ride with KITE? _____ minutes.
17. Do you have to wait any longer to get a KITE ride than you do for a regular taxi?
 1) ___ Yes 2) ___ No
18. Does it take any longer to get where you are going on KITE than on a regular taxi ride?
 1) ___ Yes 2) ___ No
19. Is KITE as reliable as regular taxis when it comes to getting where you're going on time?
 1) ___ Yes 2) ___ No
20. Is the courtesy or assistance you get from cab drivers under KITE as good as what you received before?
 1) ___ Yes 2) ___ No

21. When using KITE, have you ever shared a cab with someone who you weren't familiar with?

1) ___ Yes 2) ___ No

24

22. Have you had any difficulty in getting information on KITE taxi service, or in learning how to use it?

1) ___ Yes 2) ___ No → (SKIP TO QU 24)

25

23. What was the problem?

26	27
----	----

24. Have you had any trouble getting KITE tickets?

1) ___ Yes 2) ___ No (SKIP TO QU 26)

28

25. Can you describe the problem?

29	30
----	----

26. Can you tell me which method of travel you use most often: is it walking, driving, riding as a passenger in a car or taxi, or some other means?

- 1) ___ Walk
- 2) ___ Auto driver
- 3) ___ Auto passenger
- 4) ___ Taxi
- 5) ___ Social service agency
- 6) ___ Other _____

31

27. What method of travel do you use most frequently after (STATE PREVIOUS MODE)?

- 1) ___ Walk
- 2) ___ Auto driver
- 3) ___ Auto passenger
- 4) ___ Taxi
- 5) ___ Social service agency
- 6) ___ Other _____

32

28. We know that some KITE registrants have used their KITE privileges quite a bit, while others do not use theirs at all.

Can you tell us in your own words why you haven't used KITE more to ride taxis?

33	34
35	36
37	38

TELEPHONE SURVEY OF NONREGISTRANTS FORM

CITY OF KINSTON
KITE TRANSPORTATION PROGRAM
TELEPHONE SURVEY OF NON-REGISTRANTS

Household Number: _____ Card No.:

1	2	
3	4	5

Address: _____

Phone No: _____

HELLO, MY NAME IS _____ . I'M CALLING FROM THE CITY HALL IN KINSTON IN CONNECTION WITH THE KITE TRANSPORTATION PROGRAM THAT THE CITY IS SPONSORING FOR ITS ELDERLY AND HANDICAPPED RESIDENTS. IF YOU CAN SPARE A MOMENT, I WONDER IF I COULD ASK YOU A FEW QUESTIONS?

- *1. How many people, including yourself, live in your home on a full-time basis? _____

7	8
---	---
- *2. How many of these people (including yourself if applicable) are 65 years of age or older? _____

9

- *3. Are there any people who are under 65 who have some disability that may affect their travel? This means people who need wheelchairs or some other means of assistance to get about, people with serious heart conditions, who have epilepsy or some neuromuscular disease, who are mentally retarded, or who are deaf or blind (or seriously hard of hearing or visually impaired.)

1) _____ Yes 2) _____ No IF NO ONE IN HOUSEHOLD IS 65 OR OLDER OR HANDICAPPED TERMINATE INTERVIEW.

10

Describe these individuals by their disability:

1) _____

2) _____

3) _____

4) _____

(Code Number of Persons in List:)

11

*4. Do you fall in either of these categories, that is, are you 65 or older or disabled?

12

- 1) 65 or older
- 2) under 65 and disabled
- 3) no

ASK TO SPEAK WITH ONE OF THE MEMBERS WHO IS HANDICAPPED OR ELDERLY. IF THE DISABILITY PRESENTS A COMMUNICATION PROBLEM, ASK IF SOMEONE CAN SPEAK FOR THE INDIVIDUAL. BEGIN WITH QU 5.

5. What is your age? _____ years.

13 14 15

6. Do you have any disability that makes it difficult for you to travel?

- 1) Yes
- 2) No

SKIP TO QU 10

16

7. Can you describe your disability?

17 18

8. Do you use any special aids to get about, like a cane or wheelchair?

- 1) Yes
- 2) No

SKIP TO QU 9

Crutches (non-temporary) 1) Yes 2) No

Wheelchair 1) Yes 2) No

Walker 1) Yes 2) No

Cane 1) Yes 2) No

Escort 1) Yes 2) No

Other 1) Yes 2) No

19

20

21

22

23

24

25

9. Are you able to ride in a taxi?

- 1) Yes
- 2) No

26

27

10. Have you heard about the KITE Program?

21

1) ___ Yes 2) ___ No

"KITE is a program operated by the city that offers substantial discounts to elderly or handicapped citizens when riding buses or taxis. I'd be glad to give you more information later if you like." SKIP TO QU 12

11. Are you registered with the KITE Program?

29

1) ___ Yes ——— THANK RESPONDENT AND TERMINATE INTERVIEW. (GO TO CONCLUSION AND INSTRUCTIONS AT END OF SURVEY)

2) ___ No

12. Do you ever ride taxis in Kinston?

30

1) ___ Yes 2) ___ No ——— SKIP TO QU 15

13. How often do you ride taxis?

1) ___ at least once a week

31

2) ___ at least once a month

3) ___ at least once a year

4) ___ very infrequently

14. On those occasions when you do ride, are there any special conditions that cause you to use a taxi?

32 33

15. We are wondering why persons who have not registered for KITE have not done so. Can you tell me what reasons you may have had for not registering? We would like to hear all of your reasons if there is more than one.

a.) _____

34 35

b.) _____

36 37

c.) _____

38 39

d.) _____

40 41

16. (ASK IF MORE THAN ONE REASON IN QU 15) Which is the most important reason?

42 43

*17. Does your household own any cars or trucks (in operating condition)?

1) Yes 2) No — SKIP TO QU 19

*18. How many? _____

 45 6

19. Do you drive?

1) Yes 2) No

20. Can you tell me which method of travel you use most often: is it walking, driving, riding as a passenger in a car, taxi, bus or some other means?

- 1) walk
- 2) auto driver
- 3) auto passenger
- 4) taxi
- 5) MATS bus
- 6) social service agency
- 7) Other _____

21. What method of travel do you use most frequently after (STATE MODE FROM QU 20.)

- 1) walk
- 2) auto driver
- 3) auto passenger
- 4) taxi
- 5) MATS bus
- 6) social service agency
- 7) other _____

22. What is your employment status?

50

- 1) ___ Employed full-time
- 2) ___ Employed part-time
- 3) ___ Unemployed
- 4) ___ Retired
- 5) ___ Student
- 6) ___ Homemaker
- 7) ___ Other, specify: _____

*23. I'm going to read you a list of categories, and I'd like you to stop me when I reach the one that best represents the combined income (before taxes) of your household last year. Is it:

51

- 1) ___ less than \$3000 (less than \$250 per month)
 - 2) ___ \$3000 to \$5000 (\$250 to \$417 per month)
 - 3) ___ \$5000 to \$8000 (\$412 to \$667 per month)
 - 4) ___ \$8000 to \$12000 (\$667 to \$1000 per month)
 - 5) ___ \$12000 to \$20000 (\$1000 to \$1666 per month)
 - 6) ___ \$ Over \$20000 (over \$1666 per month)
 - 7) ___ Refused
 - 8) ___ Don't know
- } INTERVIEWER: DO NOT READ
AS POSSIBLE OPTION

24. INTERVIEWER RECORD SEX OF RESPONDENT

52

- 1) ___ Male
- 2) ___ Female

25. INTERVIEWER RECORD RACE OF RESPONDENT

53

- 1) ___ Black
- 2) ___ White
- 3) ___ Other, can't tell

26. ENTER HERE THE NUMBER OF THIS INTERVIEW IN THE HOUSEHOLD: _____

54

That completes my list of questions. Thank you very much for your cooperation.

IF THERE IS MORE THAN ONE ELIGIBLE PERSON IN THE HOUSEHOLD, INTERVIEW AS MANY OTHERS AS YOU CAN. FOR NEW INTERVIEWS IN SAME HOUSEHOLD, USE NEW FORM, BUT DO NOT ADMINISTER QUESTIONS WITH ASTERISKS (*). FILL IN QUESTIONS WITH ASTERISKS USING INFORMATION FROM PREVIOUS INTERVIEW.

PROJECT TRAVEL RECORD FORM

ADMINISTRATIVE COST RECORDS

ADMINISTRATIVE COST ACCOUNTS

<u>Account Number</u>	<u>Project Activity</u>
1	<u>DIRECT SUBSIDY MANAGEMENT</u>
1.01.0	Taxi voucher processing and validation
1.02.0	UMTA subsidy coordination, request for repayment
1.03.0	Taxi Operator coordination and reimbursement
1.04.0	Coordination with City Finance Office
1.05.0	Other direct subsidy management activities (specify)
2	<u>SUBSIDY-RELATED INDIRECT</u>
2.01.0	User registration process/appeals
2.02.0	Taxi operator driver training programs
2.03.0	Handling service complaints
2.04.0	Project information (telephone)
2.05.0	Other marketing and promotion
2.06.0	Fraud investigations
2.07.0	Monitoring user budgets for overrun; actions taken
2.08.0	Other problems or major tasks (specify)
2.09.0	General project planning and development relating to subsidy management procedure
2.10.0	Other meetings and coordination related to subsidy management but not specific to task
3	<u>NON-SUBSIDY RELATED</u>
3.01.*	User Registration Interviews
3.02.*	First follow-on survey of registrants
3.03.*	Second follow-on of registrants
3.04.*	Survey of non-users
3.05.*	Background site data

ADMINISTRATIVE COST ACCOUNTS -- 2

<u>Account Number</u>	<u>Project Activity</u>
3.06.*	First taxi on-board survey
3.07.*	Second taxi on-board survey
3.08.*	Third taxi on-board survey
3.09.*	Ticket processing
3.10.*	Taxi Franchise Owner Interviews
3.11.*	Taxi Firm Owner Interviews
3.12.*	Social Agency Interviews
3.13.*	Administrative Cost System Data
3.14.*	Coordination within City Hall
3.15.*	General Coordination with UMTA
3.16.*	General Coordination with TSC
3.17.*	General Coordination with Evaluator
3.18.*	Other General Coordination
3.19.*	Other NON-SUBSIDY RELATED (Specify)

*The last digit of the code for data collection activities (code 3. .) is reserved for task description:

<u>Code</u>	<u>Task Description</u>
1	Activity planning, development of forms
2	Coordination, supervision of activity in progress
3	Interviewing
4	Data reduction, processing, handling
5	File management

All activities, including data collection, should receive the four-digit code. The development of forms for user registration, for example, would be coded 3.01.1.

Appendix B
SOCIAL SERVICE AGENCY DESCRIPTIONS

Table B-1

DESCRIPTION OF SAMPLE SOCIAL SERVICE AGENCIES

<u>Agency</u>	<u>Year Founded</u>	<u>Public or Private</u>	<u>Affiliations</u>
Lenoir County Department of Social Services	1919	Public	State of North Carolina; Division of Vocational Rehabilitation; Lenoir County; National Traveler's Aid; Greene Lamp, Inc.
Greene Lamp, Inc.	1965	Private	Lenoir County Department of Social Services; Social Security Administration; Kinston Recreation Department; Division of Vocational Rehabilitation; and many others.
Social Security Administration, Kinston District Office	1955, nationally; 1967, Kinston District Office	Public	U.S. Department of Health, Education, and Welfare; frequently draw upon Greene Lamp research for federal grant applications.
Kinston Recreation Department	1953; Senior Citizens Program, 1954, Special Population Program (handicapped), 1977	Public	City of Kinston; Greene Lamp, Inc.; Mental Health Adapt Center; Caswell Institution; Mrs. Hill's Developmental Home
Lions Industries for the Blind	1971	Private	Lions Club; National Industries for the Blind; North Carolina Division of Services for the Blind; General Council for the Blind
Division of Vocational Rehabilitation	1921, for World War I Veterans	Public	U.S. Department of Health, Education, and Welfare; North Carolina Department of Human Services; Greene Lamp, Inc.
Lenoir Memorial Hospital, Department of Social Services	1973	Public	Lenoir County Department of Social Services; Vocational Rehabilitation

Table continued on following page.

Table B-1 (Continued)

DESCRIPTION OF SAMPLE SOCIAL SERVICE AGENCIES

Agency	Mission	Official Client Definition
Lenoir County Department of Social Services	To meet the needs, financial and social, of the citizens of Lenoir County.	"Any citizen in the County in need."
Greene Lamp, Inc.	To serve the needy (low-income; elderly; handicapped) population of Lenoir and Greene County.	Depends on the program; approximately one-half have income guidelines; a few have age guidelines.
Social Security Administration	To insure worker against risks of loss of income in the event of death or disability or retirement. Also to administer amendments to Social Security Act, which includes Supplemental Security Income (SSI) to the poor.	Retirement: all 62 years of age and over Disability: those with a 100 percent disability Aid to the Aged, Disabled, and Blind: those who meet income standards or are over 62, blind and 100 percent disabled, respectively.
Kinston Recreation Department	To provide recreation programs for all of Kinston's citizens.	All citizens of Kinston are served by the entire Department; for Senior Citizens Program all over 55 years of age; for Special Population Program, all with a handicap.
Etons Industries for the Blind	To prepare the blind for employment in a non-sheltered work situations	The legally blind and the multihandicapped blind
Division of Vocational Rehabilitation	To place handicapped individuals into gainful economic activities	Any individual between the ages of 16 and 65 with a physical or mental handicap that restricts employment potential.
Lenoir Memorial Hospital	To provide services to patients and their families, to the hospital, and to the community	Any patient, former patient, or future patient (in the case of ambulance services)

B-3

Table continued on following page.

Table B-1 (Continued)

DESCRIPTION OF SAMPLE SOCIAL SERVICE AGENCIES

Agency	Official Service Area	Services Provided
Lenoir County Department of Social Services	Lenoir County, although they will occasionally assist non-county residents (e.g., a child in another county says his(her) parents are in Lenoir County).	Adoption Services; Chore Services; Day Care Services for Children; Employment and Training Services; Family Planning Services; Foster Care Services for Adults and Children; Health Support Services; Information and Referral; Interstate/Intercounty Services to Children; Protective Services for Adults and Children; Services to Meet Special Needs of Blind.
Greene Temp, Inc.	Lenoir and Greene Counties	C.E.T.A. Manpower; Housing; Economic Development; Nutrition Camps; Educational Assistance; Emergency Fund; Transportation Energy Conservation; Family Planning; Headstart; Foster Grandparent; Homemaker Services
Social Security Administration	Lenoir and Greene Counties	Retirement Payments; Disability Payments; Payments to the Disabled, Blind, and Aged; Supplemental Security Income (SSI) Payments; Referral
Kinston Recreation Department	City of Kinston	Senior Citizens Program: music, crafts, bingo, games; Special Populations Program: physical fitness, exercise, arts and crafts, social club, bowling, body awareness
Hous Industries for the Blind	Eastern North Carolina	Vocational evaluation and training
Division of Vocational Rehabilitation	Lenoir, Greene, and Jones Counties	General physical and specialist examination; Individual guidance and counseling; Medical, surgical and hospital services; Vocational evaluation and training; Maintenance and transportation; placements; and follow-up.
Lenoir Memorial Hospital	Lenoir, Greene, and Jones Counties	Making arrangements for patients to go to nursing homes, other hospitals, etc.; Helping patients to obtain financial assistance and services from Lenoir County Department of Social Services; Helping patients obtain and use other community resources; and a variety of other services.

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Table continued on following page.

Table B-1 (Continued)

DESCRIPTION OF SAMPLE SOCIAL SERVICE AGENCIES

Agency	Number of Current Users and Frequency of Use	Number of Elderly (Nonhandicapped/Handicapped)*	Number of Nonelderly (Nonhandicapped/Handicapped)*
Tenoh County Department of Social Services	4800 families*; 85 office visits per day	1815*(870,945)* Individuals	5600 families headed by non-elderly, nonhandicapped; no data on nonelderly, handicapped
Greene Lamp, Inc.	5000*/month in all programs; no precise figure for total because of overlaps among programs. Frequency varies by program.	1000*(750*,250*)	3800*, 200*
Social Security Administration	Survivors: 10,219; Disability: 2,025; Supplemental Security Income: 2,994; Summed together: 250 claims per month	NA	NA
Kinston Recreation Department	Senior Citizens Program: an average of 21 attend biweekly, although 48 are registered; Special Population Program: 305 regular users (frequency varies by activity), although 350 are registered	Senior Citizens Program** 48(23,25); Special Population Program, no elderly	Senior Citizens Program 0(0,0) Special Population Program 351(0,351)
Utens Industries for the Blind	17 daily	1(0,1)	16(0,16)
Division of Vocational Rehabilitation	1,000; no precise data on number of visits.	None	1000(0,1000)
Tenoh Memorial Hospital	60-65 month for Social Services; once client leaves hospital service usually terminates.	48(2,46); in a typical month	14(2,12)

*Estimated

**Some "Senior Citizens" are between ages 55 and 65, and therefore non-elderly.

Table B-2
DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Transportation Program (Yes or No)</u>	<u>Number of Vehicles and Characteristics</u>
Lenoir County Department of Social Services	Yes	None
Greene Lamp, Inc.	Yes	5 15-passenger vans, 1 of which is equipped with a hydraulic lift; 4 of the vans are 6 months old; 1 is 4 years old
Social Security Administration	No	None
Kinston Recreation Department	None of their own, but they coordinate with Greene Lamp, Inc.	None
Lions Industries for the Blind	No	2 Dodge vans and 1 Dodge pickup, but both are for transporting goods and not people
Division of Vocational Rehabilitation	Yes	None
Lenoir Memorial Hospital	Yes; the hospital's ambulance program, although not directly related to the social service program, is utilized by many elderly and handicapped as a transportation program.	6 1974 ambulances.

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Table continued on following page.

Table B-2 (Continued)
DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Number of Drivers & Characteristics</u>	<u>Other Special Transportation Staff</u>
Lenoir County Department of Social Services	None	None
Greene Lamp, Inc.	5 full-time CETA-employed drivers (they are paid with 100 percent federal monies); all given an orientation session which includes special training for providing service to the elderly and handicapped.	1 full-time transportation director
Social Security Administration	None	None
Kinston Recreation Department	None	None
Lions Industries for the Blind	1 truck driver	1 Foreman
Division of Vocational Rehabilitation	None	None
Lenoir Memorial Hospital	14 drivers, all of whom are emergency medical technicians	4 Dispatchers

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Table continued on following page.

Table B-2 (Continued)
DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Type of Service</u>	<u>Scheduling</u>
Lenoir County Department of Social Services	Reimburse users for cost of intercity bus to medical centers of Durham and Chapel Hill, as well as City of Kinston taxicab fares	Intercity bus: dependent on bus schedules, which creates a problem since Carolina Trailways does not run frequently during the day. Most elderly leave the night before and stay over-night. Taxicabs: Same as regular Kinston service.
Greene Lamp, Inc.	Mostly scheduled "one to one" service, but some "many to many" service.	One bus, purchased by ACTION, is used exclusively for the Foster Grandparent Program. One bus purchased with HUD money, is used exclusively for Headstart. The other 3 buses are scheduled "according to need," three weeks in advance, predominantly by other agencies (e.g., Kinston Recreation Department, Greene County Health Care).
Social Security Administration	NR	NR
Kinston Recreation Department	NR	NR
Lions Industries for the Blind	NR	NR
Division of Vocational Rehabilitation	Contract with private individuals at 11 cents per mile to provide transportation for their clients.	Agency attempts to match individuals with contacts to supply transportation to clients; very time-consuming for agency staff.
Lenoir Memorial Hospital	Many to one service	No scheduling; demand actuated service

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Table continued on following page.

Table B-2 (Continued)
DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Transportation Service Area</u>	<u>Eligibility Requirements</u>	<u>Income Level of People Served</u>
Lenoir County Department of Social Services	Within the County, except for occasional medical trips to Durham and Chapel Hill	Any participant in Health Support or Medicaid Program	Very low income for those provided transportation
Greene Lamp, Inc.	Greene and Lenoir Counties except for occasional medical trips to Durham and Chapel Hill	Low Income, unless Greene Lamp reimbursed	Only serve low income, unless reimbursed for serving a middle- or high-income person.
Social Security Administration	NR	NR	NR
Kinston Recreation Department	NR	NR	NR
Lions Industries for the Blind	NR	NR	NR
Division of Vocational Rehabilitation	Lenoir, Greene, and Jones Counties	Must be non-ambulatory; "if he can walk, he can thumb like you or I." Also, must have "economic need."	All low income
Lenoir Memorial Hospital	Lenoir, Greene, and Jones Counties, except for occasional trips to Durham and Raleigh	Anyone who calls in is eligible; to leave the hospital a doctor's authorization is required	Mostly low income

Table continued on following page.

Table B-2 (Continued)
DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Hours of Service</u>	<u>Peak Hours</u>	<u>Seasonal Fluctuations</u>
Lenoir County Department of Social Services	Regular taxicab service within city; late at night for intercity bus trips (Durham, Chapel Hill)	10AM-3PM within Kinston	None cited
Greene Lamp, Inc.	Daily, 8AM-5PM; except for occasional trips to Chapel Hill & Durham which return at 8:30PM	10AM-2PM	Summer peak
Social Security Administration	NR	NR	NR
B-10 Kinston Recreation Department	NR	NR	NR
Lions Industries for the Blind	NR	NR	NR
Division of Vocational Rehabilitation	NA	10AM-2PM	Demand declines in summer
Lenoir Memorial Hospital	All hours	8AM-12AM, when discharging patients	Summer peak

Table continued on following page.

Table B-2 (Continued)
DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Trip Restrictions (Purpose)</u>	<u>Trip Purposes Served</u>	<u>User Charges</u>
Lenoir County Department of Social Services	NR	Medical 100%	None
Greene Lamp, Inc.	NONE	Medical 50*% Headstart 15*% Foster Grandparents 15*% Recreation 5*% Other 15*%	None, except for those who fall to meet income requirements in which case agency (not individual) contractor compensates
Social Security Administration	NR	NR	NR
Kinston Recreation Department	NR	NR	NR
Lions Industries for the Blind	NR	NR	NR
Division of Vocational Rehabilitation	Medical appointment and job placement trips given priority	Medical 95%* Job Placement 5%*	NONE
Lenoir Memorial Hospital	Technically, only emergency medical is permitted	Emergency medical is technically required, but many minor medical trips are also made. No quantitative estimate available, however.	\$35 within Lenoir County; \$35 and \$1/mile outside County; however, approximately 90 percent of this is covered by insurance.

*Estimates

Table continued on following page.

Table B-2 (Continued)
DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Other Transportation Techniques</u>		
	<u>Volunteer Provided Transportation</u>	<u>Contract with Taxi Operators</u>	<u>Charter Buses</u>
Lenoir County Department of Social Services	Occasionally a volunteer or case-worker will provide transportation in a private car	Three years ago the Department terminated a contract with Sutton Cab, as they found waiting time charges ("baby-sitting") excessive	NO
Greene Lamp, Inc.	NO	NO	NO
Social Security Administration	NO	NO	NO
B-12 Kinston Recreation Department	Yes, although not coordinated through Recreation Department. Two senior citizens club members rely on church members for transportation; however, reliability is poor. Over 50 percent of the time, the supplier cancels.	NO	NO
Lions Industries for the Blind	NO	NO	NO
Division of Vocational Rehabilitation	NO	Formerly had a contract with a taxi company, with special permission from N.C. Department of Human Resources to pay more than 11 cents per mile	NO
Lenoir Memorial Hospital	NO	NO	NO

Table continued on following page.

Table B-2 (Continued)
 DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Average Number of Passengers per Week</u> (One-way, unduplicated)	<u>Average Trip Length</u>
Lenoir County Department of Social Services	NA	Within City, 2-3 miles; intercity, 50-75 miles.
Greene Lamp, Inc.	343 In Lenoir County, 545 total (based on August data)	Within City 2-3 miles; intercity, 50-75 miles.
Social Security Administration	NR	NR
Kinston Recreation Department	NR	NR
Lions Industries for the Blind	NR	NR
Division of Vocational Rehabilitation	20	Within City, 2-3 miles.
Lenoir Memorial Hospital	65.8	Within City, 3-4 miles.

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Table continued on following page.

Table B-2 (Continued)
DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Transportation Related Costs</u>	<u>Transportation Costs as a Percent of Total Agency Budget</u>	<u>Costs per Person Trip (One-Way)</u>
Lenoir County Department of Social Services	\$1650/year ¹	.00024%	NA
Greene Lamp, Inc.	\$22,001/year ²	1.11%	\$0.78 ²
Social Security Administration	0	0	NR
Kinston Recreation Department	0	0	NR
Lions Industries for the Blind	0	0	NR
Division of Vocational Rehabilitation	Less than 1,000/year ¹	Less than 1%	NA
Lenoir Memorial Hospital	\$297,679*/year ¹	NA	\$87

¹This figure reflects the entire cost of agency transportation programs.

²This figure only reflects the cost of gasoline, maintenance and the transportation coordinator's salary. It does not reflect the salaries paid to CETA-employed drivers or the cost of vehicles (outright gifts to agencies).

*Estimate

Table continued on following page.

Table B-2 (Continued)
 DESCRIPTION OF AGENCY TRANSPORTATION SERVICES, 1977

<u>Agency</u>	<u>Funding</u>
Lenoir County Department of Social Services	Funding from transportation program nominally from County budget; could utilize federal Title 20 money for transportation but due to limited allocation of federal funds, they have arbitrarily allocated the federal funds to other programs.
Greene Lamp, Inc.	Community Service Administration; ACTION
Social Security Administration	No transportation funding
Kinston Recreation Department	No transportation funding
Lions Industries for the Blind	No transportation funding
Division of Vocational Rehabilitation	No earmarked transportation funding; agency funding is 80% from HEW (Vocational Rehabilitation Act of 1973); 20% from N.C. Department of Human Resources
Lenoir Memorial Hospital	Lenoir County subsidy (transportation is the only hospital program they subsidize), Insurance Company payments, Direct user payments.

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Appendix C

ANALYSIS OF RIDERSHIP TRENDS

Changes in project ridership in the presence of changes in fare can be used to infer the sensitivity of project rides to the fare. To do so, it is necessary to assemble data describing fare and ridership levels for different months of project operation. Needed data items include project ridership, number of registrants, nominal fare and a cost-of-living indicator, and are presented in Table C-1. It should be noted that for the purposes of this analysis, the nominal fare does not vary unless there has been a change in the fare structure, though other factors, such as trip length, may cause variation in the average fare/ride in any given month. Therefore, fares and rides are averaged among the months between each fare increase to yield an estimate of the fare per ride that reflects a constant composition (i.e., "fixed weight") of the other factors that might have an effect on this index. A comparison of the resulting fare per ride for each of these three periods (up to May 1978, July 1978-May 1979, and after July 1979) shows that the composition of trip characteristics tended to remain constant even in the presence of the fare increases (i.e., the \$.25 fare increase accounts for virtually all of the differences in fare/ride between periods).

Based on these data, the effect of fare changes on the frequency of project trip-making is estimated by relating rides/registrant to $.5x[(\text{fare/ride})/\text{CPI}]$. The fare term is multiplied by .5 to account for the project subsidy. Dummy variables were tested to account for seasonality and lead effects (increases in trip-making associated with anticipated fare changes), and a time trend was included to account for the increasing understatement of rides/registrant caused by attrition among registrants, secular changes in income, and any Hawthorne effects (i.e., changes in project use rates which

Table C-1

DATA FOR ANALYSIS OF RIDERSHIP TRENDS

		<u>Rides*</u>	<u>Regis- trants**</u>	<u>Rides Registrant</u>	<u>Fare Trip+</u>	<u>CPI++</u>
1977	September	665	133	5.00	1.26	176.3
	October	1,715	292	5.87	1.26	176.7
	November	1,963	338	5.81	1.26	177.6
	December	1,999	374	5.34	1.26	178.3
1978	January	2,156	401	5.38	1.26	180.0
	February	2,187	424	5.16	1.26	180.9
	March	2,692	454	5.93	1.26	182.3
	April	2,648	490	5.40	1.26	183.9
	May	3,003	517	5.81	1.26	185.3
	June#	2,674	534	5.01	1.48	186.9
	July	2,640	550	4.80	1.53	187.7
	August	2,985	571	5.23	1.53	188.7
	September	2,742	591	4.64	1.53	190.2
	October	2,830	604	4.69	1.53	191.7
	November	2,698	617	4.37	1.53	193.0
	December	3,030	626	4.84	1.53	194.6
1979	January	3,082	640	4.82	1.53	196.7
	February	2,852	660	4.32	1.53	199.1
	March	3,334	674	4.95	1.53	201.3
	April	3,195	683	4.68	1.53	203.8
	May	3,570	695	5.14	1.53	205.7
	June#	2,931	712	4.12	1.73	207.7
	July	2,950	727	4.06	1.77	209.5
	August	3,274	739	4.43	1.77	211.4
	September	2,709	746	3.63	1.77	213.8
	October	3,157	755	4.18	1.77	215.5
	November	2,979	768	3.88	1.77	218.5
	December	2,799	779	3.59	1.77	221.6##
1980	January	2,973	789	3.77	1.77	224.7##
	February	2,884	798	3.61	1.77	227.8##

*From Table 6-4.

**Estimate of average number of registrants during month based on end-of-month registration totals in Table 4-4.

+From Table 6-4. See text.

+U.S. Department of Labor index, from Survey of Current Business. 1967 = 100.

#Fare increase of \$.25 during month.

##Estimated.

occur as the "novelty" wears off) that may be present. Using ordinary least squares, the following model was estimated using data from December 1977 to February 1980 (t-statistics in parentheses):

$$\text{RIDES} = 8.31 - 6.70 (\text{RFARE}) - .06 (\text{TREND}) + .43 (\text{LEAD})$$

(8.97) (2.59) (-7.55) (2.30)

$$R^2 = .89 \quad DW = 1.97 \quad \rho = .08$$

where:

RIDES = Rides/registrant per 30 days;

RFARE = .5[(fare/trip)/(CPI/100)];

TREND = Time trend dummy variable, = 1 in December 1977;

LEAD = 1 in May 1978 and May 1979;

= 0 other times.

All coefficients exhibit the expected signs and are statistically significant at the 95 percent confidence level or above. The resulting elasticity of project demand with respect to fare is estimated to be -.40 as of December 1977 (i.e., a 100 percent increase in fare leads to a 40 percent decrease in ridership). It should be noted, however, that the magnitude of the fare coefficient is sensitive to the specification used, and the limited number of available data points makes it very difficult to add right-hand side variables while retaining statistical significance. To the extent that fare changes are correlated with seasonal effects that tend to increase ridership, the true sensitivity of ridership to fare changes would be lower than that estimated here. Indeed, across a variety of alternative specifications, the addition of more explanatory variables reduced the importance of the fare term, in addition to eroding statistical reliability. Furthermore, the presence of the monthly ticket purchase limit may have caused the decrease in project taxi usage to be larger than the decrease in total taxi usage when fares increased, again leading to overestimation of the importance of the fare term. Therefore, it is concluded that the above model provides an upper bound on the sensitivity of project rides to fare changes.

These results and basic data are cited a number of times in the text, particularly in Chapter 6.

