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User-Side Subsidies For Shared Ride Taxi Service In Danville, Illinois: Phase I

Final Report
June 1977

Service and Methods Demonstration Program

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

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16. Abstract

An UMTA Service and Methods Demonstration has been implemented in Danville, Illinois. The purpose of the demonstration is to test the use of a user-side subsidy on a shared ride taxi service for handicapped and elderly persons. This report presents time series and survey data analysis on the workability, cost-effectiveness and impacts of the project during Phase I. The demonstration has proven that a user-side subsidy can be workable and cost effective. Project demand has been moderate and costs per passenger trip have proven to be very low. Members of the target group and general public have responded very favorably to the project. UMTA and the Project Staff are now planning an expansion of the demonstration to include a user-side subsidy for all persons on privately operated regularly scheduled fixed route service.

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PREFACE

The Danville User-Side Subsidy experiment has been funded by the U.S. DOT, UMTA Service and Methods Demonstration (SMD) Program together with local support from the City of Danville. As part of the demonstration program, Crain & Associates, under contract to U.S. DOT, Transportation Systems Center, has prepared the following Final Evaluation Report on the demonstration.

The report is based on analysis of data collected with the help of the City of Danville's Department of Planning and the three taxicab companies involved in the project. In addition to the data, the observations and opinions of individuals in these and other local organizations have been incorporated into the report. In particular I wish to thank the following individuals for their contributions to the evaluation effort:

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Marvin Futrell	-	Project Monitor, UMTA/SMD Program
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METRIC CONVERSION FACTORS

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
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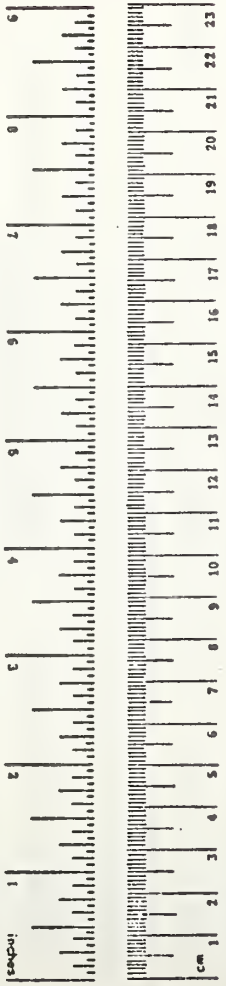

Approximate Conversions from Metric Measures

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		
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l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
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m^3	cubic meters	1.3	cubic yards	yd^3
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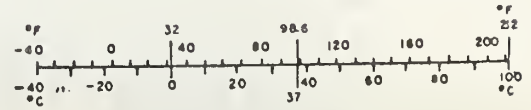

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READER'S GUIDE

The Danville Project began operations on December 1, 1975. This report was finalized in April 1977 and covers the first thirteen months of Phase I, through December 31, 1976. Phase I has tested one set of conditions in a user-side subsidy experiment providing a discount to handicapped and elderly persons on door-to-door shared ride taxi services.

As of January 1977, the regular taxi fares were increased and the project discount rate was also changed. In the future, the project may expand to test a user-side subsidy with other modes and other user groups; in addition, discount rates, or subsidy levels, may change. As the project evolves, evaluation reports will ensue.

The first chapter of this report is an Executive Summary; the next three chapters describe the objectives of the demonstration, the demonstration setting and the project operations; Chapters 5 through 8 provide the basic technical analyses which, in turn, lead to the summary and conclusions in Chapter 9. Various appendices and references concerning data collection activities follow.

1. EXECUTIVE SUMMARY

Phase I of the Danville, Illinois, SMD project has been a successful demonstration of the user-side subsidy concept. Handicapped and elderly persons were certified to receive discounts, up to some monthly limit, on shared ride taxi services provided by local taxicab companies. The user-side subsidy implied that the user was directly subsidized rather than a public or private operator of the service. Consequently, the operator was required to seek out and serve the needs of the user in order to receive the subsidy. The total fare charged by the operator, made up of user payment and project subsidy, was expected to cover all costs.

The concept was proven to be a workable one in that all three local taxicab operators accepted contracts with the project and provided services to those eligible for the discount. A charge slip system was used for reimbursement purposes. All reimbursement and monitoring systems worked successfully.

Project levels of service were very good, including the fact that service was available 24 hours a day, seven days a week at an average user discounted payment of $.31 per trip. Target group response was very favorable--with a significant market penetration in terms of project registration (40% of those eligible). On the other hand, average project use per person was only moderate (4 trips per user per month)--considerably less than the monthly limit allowed. There was some use of the project in excess of the limit, but not to a significant extent.

Project registration and project use were most strongly related to the availability of alternative transportation modes. Those with the fewest transportation alternatives used the project the most. The project also served predominantly poor persons.

The project was very cost-effective in providing door-to-door service at a total real cost (less than $1.60 per passenger trip) that was significantly lower than what publicly operated dial-a-ride would have cost. In addition, no extensive outlay of capital funding was necessary for creation of a new service.

Approximately three-quarters of all users reported that they do not have difficulties using buses. These data suggest that greater cost-effectiveness would be gained if the user-side subsidy for this target group was applied to multiple modes (including fixed route services) on a price-disciplined basis. Such applications need to be tested in order to evaluate consumer and supplier choices under those conditions. As demonstrated to date, the potential for user-side subsidies to meet the needs of transit dependent persons and to stimulate supply of cost-effective services is great.

The project impact on the travel behavior of users was very small. Project trips amounted to less than 10% of daily trip-making. The project increased total trips by less than 1.5%, shifted less than 3.5% of old trips from other modes, and provided a savings on 5% of old trips previously taken by taxi at full fare.

The impact on the taxi operators was an increase of 15% in overall business. On-board time and motion studies indicate that project trips are as profitable for the operator and the driver as non-project trips.

The City of Danville has been very pleased with the project and has made application to the federal government to expand the test of user-side subsidies to include all persons on a fixed-route bus system.

2. INTRODUCTION

2.1 OVERVIEW

Phase I of the Danville, Illinois User-Side Subsidy Demonstration Project (IL-06-0034) is an SMD user-side subsidy test in which special groups are provided with fare discounts on privately operated, shared ride taxi services. The special transit dependent groups served in Phase I are the elderly (65 years of age and over) and the handicapped of all ages. "User-side subsidy" means that the user of the taxi service is directly subsidized rather than a public or private operator of the service. It is expected that the total fare charged by the operator covers all costs.

Those whose trips are subsidized are certified as eligible for the subsidy, are issued identification cards (without photographs), and use taxi service in the usual way; however, they pay only a discounted amount of the fare--approximately 25%. The remainder of the standard fare is recorded against their identification number on a "charge slip" which is used to reimburse the taxi operator out of project funds. There is a $20 monthly limit of regular fares upon which a person may receive discounts. There are no limitations on the purposes for which the trips are made. The charge slips are keypunched and data processed to verify weekly invoices from the taxicab companies and to monitor use of the project by individuals. All registration procedures can be handled by phone and mail.

2.2 OBJECTIVES

The Danville Project as implemented to date directly serves one of the five SMD Program objectives, namely, to improve ser-

vice for transit dependent persons--in this case, the elderly and handicapped.

Locally, the City of Danville will be assessing the demonstration in terms of how much it would cost them to finance some form of the Reduced Taxi Rates (RTR) Program, as it is locally referred to, after the demonstration. At present, such service for the handicapped and elderly, or some submarkets of these groups, is being analyzed as a possible component of an overall city-wide public transit service.

In a national perspective, this project is undertaken at a time when federal law (Urban Mass Transportation Act of 1964, as amended, Section 16(a)) requires that public transportation be accessible to elderly and handicapped persons. One prevalent response to these requirements is the implementation of a publicly operated dial-a-ride system, a door-to-door demand-actuated bus system with moderately high costs per passenger trip. This project tests the cost-effectiveness of an alternative approach involving the use of already existing, privately operated, shared ride taxi services.

2.3 INNOVATIONS

The single project innovation, to date, is the institution of a user-side subsidy (up to some monthly limit) for certain transit dependent persons to use privately operated, door-to-door, shared ride taxi service. As such, the innovation is, relatively speaking, a simple set of institutional relationships between government, transportation suppliers and transit consumers which results in a price reduction to the consumer and retains the traditional private market incentives for the suppliers.

As already stated, a user-side subsidy is paid directly to the user for individual passenger trips taken and does not supply a system-wide subsidy to an operator (i.e., a provider-

side subsidy) in order to make certain specified transit services available. The transit operator cannot take subsidies for granted and receives revenue only to the extent that he serves the needs of individual passengers who, in effect, hold the power of subsidy. It is hypothesized that user-side subsidies may provide a greater incentive for efficient use of existing transportation resources while providing funding agencies with the flexibility of selective application of subsidy by type of person (e.g., by income, age, handicap criteria), by mode, by class of service, by type of trip, by time of day or day of the week, and by total number of subsidized trips per person.

The shared ride aspect of the taxi service is an integral part of the concept being tested since it is the only taxi service that qualifies as mass transit and is eligible for federal subsidies. The shared riding, of course, only applies to those rides that can be efficiently shared in time and space; there is no requirement for pre-scheduling trips. Such shared riding was already a part of the taxi operations in Danville before the project began and applies to both project and non-project trips. Most taxi operations in other cities, however, do not include this feature.

In addition, for the sake of federal subsidies, it is required that the privately operated transit service must be provided on a regular, predictable and continuing basis so that consumers can easily know when the service is available and what service characteristics to expect.

SMD demonstration projects now being planned for Kinston, North Carolina, Lawrence, Massachusetts and Montgomery, Alabama will make further tests of the user-side subsidy concept while studying the appropriate role of the private transportation provider.

The project in Kinston will provide a user-side subsidy on taxis to handicapped and elderly persons. The subsidy mechanism will be discounted tickets and the discount will be 50%. Kinston is a small urban community with 43 independent cab operators and no other form of public transportation. The demonstration will provide an opportunity to observe effects of user-side subsidies on competition among suppliers of the same mode in a free-entry licensing environment.

The Lawrence and Montgomery demonstrations will also permit the user to make choices between local transportation suppliers based on cost and level of service differences. An identification card will be issued to elderly and handicapped persons, which they can then use to purchase half-fare rides on either bus or taxi transportation services. The Lawrence fixed-route bus system is privately operated. The Montgomery area is served by a municipally-owned bus system with 22 buses operating on 16 routes. There are four large taxi companies (21 to 24 vehicles each) and several smaller operators. In addition, the Danville demonstration may be expanded in the future to a user-side subsidy for all Danville residents on fixed route bus service.

2.4 EVALUATION ISSUES

The user-side subsidy is a relatively new concept in the transit services field. It has potentially broad application in terms of serving many different subgroups on different modes in many different institutional settings. Consequently, there are many issues to be dealt with in the application of this new concept. This section is intended to raise a broad spectrum of issues relative to possible applications of the concept and to note which ones are being addressed in the Danville demonstration. The issues are aggregated into three categories

of concern vis-a-vis the user-side subsidy:

1. What is the workability of the concept in the real world?
2. What is the cost-effectiveness of the concept in tandem with using privately operated transit services?
3. What are the impacts on all groups involved?

2.4.1 Workability

One primary issue of concern is the basic workability of the user-side subsidy concept for improving mobility and the feasibility of implementing the concept in particular settings. This involves the following considerations: who is to be subsidized under what circumstances and how they are to be identified; the modes and classes of service that are available and how to subsidize them equitably; alternative methods for the subsidy mechanism itself; the potential for fraud and counter-measures instituted; the level of service provided by the transit operators; and the response of the target group, the general public, governmental institutions and public and private organizations.

2.4.1.1 Who and What Is to Be Subsidized - To date, user-side subsidies have primarily been applied to taxi service for "handicapped and elderly" persons. This is the case in Phase I of the Danville project and in many other similar experiments.[1] Seemingly, it will continue to be a popular use of the concept. In these cases, how are the targeted subgroups to be defined, identified and registered for the subsidy program? What modes are to be subsidized? And what limits are to be placed on the use of the subsidy?

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1. Kirby, R. & Tolsan, F. "Improving the Mobility of the Elderly and Handicapped through User-Side Subsidies," The Urban Institute, (UI-5050-4-4), January 1977.

The issue of defining and identifying transportation handicapped persons and their classes of service requirements is, of course, an important issue in the transit field today--due to planning requirements for federal subsidies. Danville project participants and non-participants were interviewed about their handicaps and their ability to use different forms of transit, and this data should help. However, in the Danville case, there was no regular fixed route bus service available in the city at the start of the project. Consequently, there has been no issue of competing modes and the possible desirability of separating out subgroups who might be able to use different modes (at different costs) in different situations. All persons over 64 years of age (regardless of handicaps) and a broad definition of "handicapped" persons were eligible for the program. And only one mode or class of service was subsidized. Later expansion of the program to include multiple modes and all persons in Danville may raise the issues of equitable discounts across modes and providers.

There are no income restrictions on eligibility in the Danville demonstration; however, project participants and non-partipants were interviewed about income and the project trip data has been aggregated by type of user. The Danville project does not place limits on the purpose, the time of day, or day of the week for subsidized trips. Again, however, data have been collected on the types of trips served and the time of day and day of the week that trips are taken. There is a limit on the total amount of discounted fares per person per month. This raises the issue of what the frequency distribution of project trips is and the effects of a limit on those persons who need more trips. All of these data should help persons in other areas to decide what limits, if any, to institute on a user-side subsidy.

2.4.1.2 Subsidy Mechanism - In theory, there is a multitude of methods to institute a user-side subsidy, and the methods used may be highly relevant to the project objectives to be served. In addition, the particular fare structure used by the transit operators may affect the application of specific subsidy mechanisms. Thus, what are the ways in which such a subsidy can be instituted with minimal administrative costs to the project staff and transit operators, with a high level of service to target group users, and with effective controls on monthly use by target group individuals and fraud on the part of anyone?

The method most commonly considered for the actual subsidy mechanism is the pre-purchase of discounted tickets or tokens by registered users. In contrast, the Danville project tests the use of a "charge slip" method which eliminates the pre-purchase of tickets and thereby maximizes the level of service to users. It also shifts the project administrative burden from sales and distribution of tickets to computer accounting and monitoring of individual use, shifts the transit operator administrative burden from collection, change-making, and accounting of tickets to the writing-up and accounting of charge slips, and provides only an after-the-fact monitoring and enforcement of individual use. The administrative feasibility and economy of such a method are being tested in Danville.

2.4.1.3 Fraud Control - One of the most important issues in terms of workability of the user-side subsidy is the question of fraud. In all cases, there is some possibility for fraud on the part of individuals in the community or the providers of the subsidized service. The issue of fraud involves a) the screening of eligible persons, b) individual use of project subsidies beyond the monthly limit, and c) fraudulent

creation and redemption of charge slips. Are the eligibility requirements suitably enforced? Is the limit on individual use enforceable and how well does the after-the-fact monitoring of individual use work in the case of charge slips? What are the theoretical and practical possibilities for fraud on the part of drivers and operators; are there any known cases of such fraud? And what are the costs associated with each form of fraud control? All of the above questions are pertinent to any user-side subsidy and are addressed in the Danville demonstration.

2.4.1.4 Response by All Parties Involved - As already stated, a user-side subsidy is a contractual arrangement between transit providers, target group users of the service and a funding agent. In Phase I of the Danville demonstration, the providers are local taxicab companies, the target group users are handicapped and elderly persons, and the funding agency is the City of Danville. How do local providers respond to the concept of a user-side subsidy? Is there active competition involved? How do the negotiations between the funding agency and the providers proceed? What arrangements have to be made for the reimbursement of the providers; how are cash flow problems handled? How are drivers and other transit personnel involved in the process? How does the city government respond in terms of accounting procedures, fraud controls and regulations on level of service? What role should the funding agency play in terms of guaranteeing a certain supply and level of service to the target group who are the intended recipients of the subsidy? And how do target group persons respond in terms of registration and use of the project subsidy? Are the limits on project use respected? What role, if any, does general public opinion play in terms of decision-making about who is eligible and how the project is operated? And how do social

service agencies respond to the project and vice versa? Again, all of these questions are relevant to any use of a user-side subsidy and are addressed in the Danville demonstration.

2.4.1.5 Level of Service by Provider and Project Staff - The workability of a user-side subsidy, of course, depends a great deal on the level of service provided by whatever modes and providers are included in the project and the extent to which the project lowers user payments. In Phase I of the Danville project, door-to-door trips on a shared-ride taxi service are subsidized at an approximate 75% discount. There was no project related change to any of the other service characteristics. It is important to note, however, what levels of service are provided and to what extent they change during the project for non-project related reasons. In addition, how well do the administrative procedures involved in the registration process and the subsidy mechanism work? What opinions do target group persons have about the service provided by the taxi operators and the project staff?

It is expected that traditional taxi service in standard five-passenger vehicles will provide accessibility to most handicapped and elderly persons. Some subgroup of severely disabled, however, will not be served through the present project innovation--given that there are no specially designed vehicles (with lifts or ramps) in use by the present taxi operators. In theory, the user-side subsidy concept could be applied to such special service if it was available or was to be made available by private operators. The fares, user share and subsidies amounts might be different for such trips, but the concept would be the same. This issue has not been addressed in the Danville project to date, except for data collected on the proportion of all target group persons who report that they would have difficulty in using taxis.

2.4.2 Cost-Effectiveness

The second general issue of concern in the demonstration is the cost-effectiveness of providing increased transit service via a user-side subsidy. Thus, what is the total cost per passenger trip of providing transit services in this manner? This involves both governmental administrative costs in providing the subsidy and the private operators' fares. In addition, what is the total cost of the project, given project demand and the use of limits?

During Phase I the project aimed at improving mobility for handicapped and elderly persons via traditional shared ride, door-to-door taxi service. The demonstration thus allows us to compare the costs of such service in comparison to other forms of publicly operated dial-a-ride or conventional fixed route services.

Again, it is assumed that operator fares are set at a level such that all costs of providing the service are covered. If additional subsidies, hidden or otherwise, are involved, then the cost of those subsidies needs to be accounted for in any such comparison.

2.4.3 Impacts

The third general issue of concern in the demonstration is the impacts of the project on individuals and organizations involved. Thus, who does the project affect and in what ways? In the Danville demonstration, the individual groups expected to be impacted in separate ways are:

1. Target group users and non-users of the project subsidy
2. Relatives and friends of project users
3. Social service agencies that serve target group users
4. Taxi operators and drivers
5. Non-target group users of taxis

6. General public

7. Governmental funding and regulatory agencies

2.4.3.1 Target Group Users and Non-Users - The project innovation could have one of three broadly defined impacts on travel by target group users. The first possible impact would be to provide a monetary savings on taxi trips that would have been made, in any case, without the project innovation. This is not a change in travel behavior, but rather a savings in the cost of transportation. The second possible impact would be to increase the proportion of tripmaking that is made by taxi, resulting in a shift from possibly less desired modes. In comparison to other modes (e.g., auto driver or passenger, bus, agency transport, walking, etc.), traditional door-to-door taxi service with a subsidy may provide a price-competitive mode that benefits users through a) increased convenience in choice of time and destination of tripmaking, b) increased safety in terms of accidents and crime, and c) increased comfort. At the same time, use of taxis may involve some loss, such as greater wait time or problems with driver courtesy, that may be incurred along with other benefits; however, mode shift in the direction of greater taxi use would indicate some overall increased benefit to the target group. The third possible impact of the project would be an increase in overall tripmaking due to the decreased physical and economic barriers to travel. Increased tripmaking could be beneficial in terms of increased opportunities and conveniences for the target group resulting in an improved life-style; such increased tripmaking may involve an increase in old types of trips or an addition of new types of trips.

There may be intangible, but psychologically valid, benefit to target-group persons who sign up for the project but do not use the subsidy. The impact may amount to an assurance

of a back-up method for transportation at reduced cost in the event that other modes are not available. Those who do not sign-up may or may not have heard of the project. It is important to know to what extent the total target group is aware of the project and the reasons why some persons do not use the project.

2.4.3.2 Relatives and Friends - In tandem with the above travel behavior impacts on the users, there could conceivably be substantial "ripple" effects on users, friends, relatives, and the interrelationships involved. New patterns of dependence and independence may result. It should be noted, however, that the exact impact may be hard to assess in terms of benefits or losses depending on the particular social values held by the individuals. For example, greater independence on the part of a target group person could be welcomed by all concerned as a benefit or could be seen as an erosion of desired familial interdependence.

2.4.3.3 Social Service Agencies - The project may decrease the demand for and the cost of social service agency and/or volunteer provision of paratransit service. In addition, there is the potential for coordination of these resources. Other services may be impacted by an increase in access to them through an increase in transportation options provided to target group persons.

2.4.3.4 Taxi Operators and Drivers - The primary impact of the project innovation on operators and drivers will be increased business from a certain sector of the public. This sector may or may not be as profitable a sector to serve as the general public. The increased demand in and of itself may cause changes in operating efficiencies and may or may not have an effect on levels of service for non-project trips. In addition, new service standards, accounting procedures, and institutional interrelationships may evolve from governmental involvement via subsidies. Private enterprise competition may be increased or

thwarted, depending on the inter-dynamics between private operators, the governmental sources of the subsidy, public transit operators, the various private operators, social service agency transit operators, and governmental regulatory agencies. All private operators may not participate in such a program. Alternatively, competition among suppliers for the increased business may have beneficial effects on service standards and fares. The financial prospects for operating taxi or "flexi-cab" services may improve and provide stability in an industry already hard-pressed to find and keep a viable market. On the other hand, governmental involvement with private enterprise can sometimes decrease productivity, add paper work and confuse consumer, operator and taxpayers alike as to qualifications, fraud controls, identification requirements, reimbursement procedures, service standards, data and auditing requirements, etc.

2.4.3.5 Non-Target Group Taxi Riders - As indicated, the increased demand on taxi services by the project may result in changes to taxi operations in general and therefore may affect the levels of service experienced by non-target group taxi riders. In the simplest form, this may amount to one rider experiencing additional delay due to an RTR rider signing a charge slip for a project trip. In its most complex form, the general level of service may be impacted and affect all taxi riders.

2.4.3.6 General Public - Oftentimes, the issue of "welfare" is connected to a user-side subsidy program. This is especially true in cases where a particular subgroup is singled out as the beneficiary. There could be individual and community-wide concern as to who should benefit and to what extent and for what type of trip purpose. Eligible users may avoid the program

on the basis that it will identify them as "needy" or "poor." The community as a whole may wish to constrain eligibility with respect to income levels, subsidy level and type of trip. In the case of a user-side subsidy for all persons using transit (single mode or multi-modal), the user-side aspect may focus greater community attention on exactly the amount of subsidy provided to each transit rider; in contrast, system-wide or provider-side subsidies, as presently used, are not as readily translated into per passenger trip subsidy cost by the general public. Hence, the additional focus and clarity provided by the user-side subsidy may or may not affect the general public's attitudes about transit subsidies. An additional issue is the extent to which the general public is able to distinguish between a user-side subsidy and a provider-side subsidy.

2.4.3.7 Governmental Funding and Regulatory Agencies - What impact does the project have on the City of Danville? What new roles are required and how does the City Council view the project? How does the City financial and accounting department feel about fraud control? What impact, if any, does the project have on the regulatory process between local government and transit providers? Are local and state governments interested in funding such a program with or without federal contributions?

2.4.4 Summary

In summary, then, the Danville demonstration provides some information on practically all of the issues cited above. The workability of the user-side subsidy is explored and described in Chapters 4 through 6 of this report; the cost-effectiveness of the concept is examined in Chapter 7; and the impacts of the project are assessed in Chapter 8.

2.5 EVALUATION OVERVIEW

The user-side subsidy concept, as already described, is a relatively new one in the transit field. Consequently, the demonstration is an experimental investigation of the issues already cited. This section will describe what methodological steps are being taken to evaluate each of the issues.

2.5.1 Measurement of Workability

The workability of the project is to be assessed and measured in four ways as described below.

2.5.1.1 Description of the Site - Local planning agencies have provided data on demographic, land use, weather, transportation and institutional characteristics.

2.5.1.2 Description of Project Operations and Development - Data from first-hand observation and interviews with those involved is used to describe the following: the eligibility criteria used; the registration procedures followed; the subsidy mechanism chosen; the potential for fraud and fraud controls used; the response of government, taxi operators and drivers, social service agencies, and the general public.

2.5.1.3 The Level of Service Provided by the Cab Operators - Monthly reports are made on the number of licensed vehicles available and driver hours of service provided. In addition, periodic before and after on-board taxi surveys are used to monitor service characteristics for actual trips (e.g., wait time). Interviews with project users and non-target group taxi riders are used to ascertain their perceptions of project and taxi levels of service.

2.5.1.4 The Response on the Part of the Target Group - Time series data on registration and project demand are analyzed. Trips were recorded by cab company, date, time and user I.D. number. Interviews with target group participants and non-participants provide an assessment of accessibility to the project mode, a socio-economic profile of users and non-users, and reasons for non-use of the project by some.

2.5.2 Measurement of Cost-Effectiveness

The cost of the user-side subsidy concept in tandem with shared ride taxi service will be computed on the basis of fares charged by the public operators plus an estimate of project staff costs for operating and monitoring the project--aside from costs connected with evaluation of the project. In addition, the revenue/cost picture for the largest cab operator is examined for information on total operating costs for all trips served. Productivity, in terms of passenger trips served per driver hour, is also examined.

2.5.3 Measurement of Impacts

2.5.3.1 Target Group Users and Non-Users - Periodic surveys have been conducted with project users. The primary purpose of these surveys is to assess the impact of the project on travel patterns of those who use the project. The intent is to quantifiably measure trip frequencies by mode and purpose, before and during the project. The initial interview took place at the time of certification or registration for the project for each person who signed up. This interview included an inventory of three day's worth of trip making. Time series data on the project ridership would then be monitored for frequency of project use to determine the potential impact of

project trips on overall trip making.* Sample sizes required to measure statistically significant changes at a confidence level of .95, given the standard deviation in trip rates, could then be calculated. Decisions on "after" survey activity would follow.

It was recognized that accurate measurement of project impact on travel patterns may be very difficult and costly due to 1) large standard deviations in trip rates for handicapped and elderly persons and 2) possible moderate impact of the project. These issues are dealt with more fully in Chapter 8 on impacts of the project to date.

Other possible impacts on travel patterns, such as changes in origins and destinations and time of day, have been considered but are equally difficult to measure with statistical reliability. User perceptions of such changes as well as overall impact are documented through the interviews.

A scientifically selected control group is ruled out because all target group persons in the City of Danville are being offered the project service. In such cases, it is hypothetically possible to form a "comparison" panel of target group persons who do not sign-up for the project; this requires a "before" screening of the general population for target group persons for the initial interview and follow-up interviews with both users and non-users (matched or not matched on socio-economic variables). At the time of the Danville

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* One needs to consider the fact that project trips could be used one of three ways: a) a new trip, b) a mode shift for an old trip taken by mode other than taxi, c) a cost savings for a trip already taken by taxi. In addition, (b) or (c) above could be combined with a change in origin-destination or time of day for a more desired "substitute" trip.

evaluation design, this line of attack was rejected because of the cost required in assembling the required sample size of target group persons. Subsequently, however, there are some number of persons (approximately 500 persons) who have registered but have not used the project. Data on these persons can potentially serve as non-control, comparison group data.

In addition to the interviews with the above cited group of persons who registered but did not use the project, the project staff also conducted a one-time "after" survey of the general public to find target group persons who had not yet registered. These persons were interviewed as to their socio-economic characteristics and the reasons for not using the project.* Public awareness of the project was also surveyed.

2.5.3.2 Relatives and Friends - A measurement of impact on relatives and friends would be the mode shift, if any, on the part of project users from passenger trips with relatives or friends as drivers to project taxi trips. Again, such measurement is difficult to manage with any statistical reliability, given the previously mentioned problems of high standard deviations and low overall impact on the part of the project.

2.5.3.3 Social Service Agencies - Before and after surveys have been conducted with all social service agencies serving handicapped and elderly persons in Danville. These interviews have primarily focused on the issue of what impact, if any, the project has had on demand for paratransit services provided by these agencies. In addition, agency personnel have been interviewed concerning the workability of the project for their clients and what impacts they perceive that the project has had on their clients.

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* In contrast to measurement of changes in travel behavior, these questions can be answered with relatively small sample sizes.

2.5.3.4 Taxi Operators and Drivers - The project's impact on overall taxi volumes is monitored through the time series data on total project and non-project taxi trips for all three taxi companies. In addition, on-board surveys before and after the project are used to determine what share of all taxi trips are attributable to the target group. These same on-board surveys have been used to compare project and non-project trips in terms of their demand characteristics (i.e., load and unloading time, trip distance, fare, tip, etc.) to determine the relative revenue generation of the two types of trips. Drivers and operators are interviewed as to their perceptions of project impact. The response of the operators to increased demand is measured in terms of service provided and levels of service maintained.

2.5.3.5 Non-Target Group Taxi Riders - The on-board surveys have also been used to document the level of service as perceived by those who ride taxis but are not eligible for the subsidy - to see if regular taxi riders attribute any changes in service to the project.

2.5.3.6 General Public - The "after" general household survey (used to screen for eligible persons who did not register for the project) was also used to solicit comments and opinions on the project from a representative sample of the general public.

2.5.4 Data Collection Activities to Date

Project ridership and subsidy costs are available for the first thirteen months of the project (December 1975 through December 1976). Project ridership figures are compiled on the basis of a complete inventory of all trips as they are recorded on charge slips (date, cab company, I.D. numbers, regular full fare, user share of full fare). Data on total

driver hours, trips by all persons, vehicle mileage and revenue from all trips are available on a monthly basis for the largest cab company (Red Top) from January 1972 up to the present; all these data are also available for the other two cab companies beginning with this project. Total taxi demand, alone, has been researched for the other two companies for the year previous to the project.

Driver hours are recorded differently by the different companies: Red Top Cab Company records "in" and "out" times for all breaks taken during the day; Courtesy Cab Company records just one "in" and "out" for the whole day for each driver and thus includes non-revenue or non-service time; Brown Cab Company is an owner/driver operation and driver hours are not reported separately. Cost figures are available only for Red Top Cab Company.

The surveys completed to date as discussed are described more fully in Appendices D through K.

2.5.5 Scope of the Report

This is a final evaluation report written on the basis of the previously cited data collection efforts and analysis of the data by Crain & Associates. All of the evaluation issues are addressed in this report. The analysis of one of them--impact of the project on travel patterns of target group persons--has encountered methodological problems due to measurement processes and the moderate frequency of project use. At present, it is not possible to use "before" and "after" daily trip data to accurately measure exactly in what ways project use has affected travel behavior by mode and by purpose. However, it is possible to report the magnitude of the project trips as a proportion of all daily trip-making, as well as users' perceptions of impacts. Estimates are made of the breakdown of project trips into 1) subsidy on old taxi trips, 2) shift from other modes and 3) new trips never taken before.

All time series data are expected to be accurate to within ± 5%. The survey samples have turned out to be highly representative of the universes sampled with contact rates generally in excess of 80% and response rates, once contacted, in excess of 90%. The major problem in the survey data, to date, is the measurement of trip rates by mode and frequency in the certification interviews. This problem is more fully discussed in Chapter 8 on Impacts.

2.6 ORGANIZATIONAL ROLES

The Danville project (IL-06-0034) is funded under a U.S. Department of Transportation, Urban Mass Transportation Administration (UMTA) Services and Methods Demonstration grant. Urban Institute assisted in the initial conceptualization, site selection and grant application. The project is staffed and implemented by the Planning Department of the City of Danville, Illinois. Transportation Systems Center (TSC) of the U.S. Department of Transportation is responsible for evaluation of the project. Crain & Associates is acting as subcontractor to TSC for the evaluation effort; while writing the Evaluation Plan, Crain & Associates also acted as a consultant to the City of Danville in drawing up the Project Implementation Plan.

The transportation services are provided in the traditional shared ride taxi mode by the local taxicab companies in Danville: Red Top/Yellow Cab Company (20 vehicles), Courtesy Cab Company (10 vehicles) and Brown Cab Company (1 vehicle). All three initially signed contracts; Courtesy Cab Company subsequently ceased all taxi operations in Danville during the fifth month of the demonstration, leaving only two suppliers.

The total project funding is $348,554, of which $34,024 is provided by the City of Danville and the remainder is provided by UMTA. The project was scheduled to consist of a

three month planning phase and a 21 month demonstration phase. Some adjustments to the latter figure and the total funding may result due to possible expansion of the demonstration.

3. DEMONSTRATION SETTING

3.1 GEOGRAPHIC AND DEMOGRAPHIC CHARACTERISTICS

The City of Danville, Illinois, is a self-contained, small urban community located approximately 130 miles south of Chicago and 80 miles west of Indianapolis. It has an area of 12.9 square miles, 67% of which is developed, and a (1970) population of 42,600 persons. The 1973 population estimate for Danville is the same as 1970--indicating that there is no present growth in population.[1] The region is characterized by relatively low density, single family housing and widely dispersed development. There are industrial parks that concentrate most industrial activities (see land use map, Figure 3-1).

The breakdown of the 1970 census population in round numbers by age category and an estimate of the handicapped under 65 years of age is as follows:

TABLE 3-1. DANVILLE POPULATION BY AGE (1970)

Age Category	Number	Percent of Total Population (%)
0 - 4	3,300	7
5 - 15	8,800	21
16 - 20	3,700	9
21 - 54	16,900	40
55 - 59	2,200	5
60 - 64	2,100	5
65 & over	5,600	13
	42,600	100
Handicapped under 65[a]	1,900	4.5

[a]estimate provided by local rehabilitation agency personnel.

The population eligible for the RTR program is estimated to be comprised of 5,600 persons who are 65 and over plus 1,900 handicapped persons who are under 65. The total of 7,500 persons amounts to 18% of the total population of

[1] U.S. Department of Commerce, Bureau of the Census.

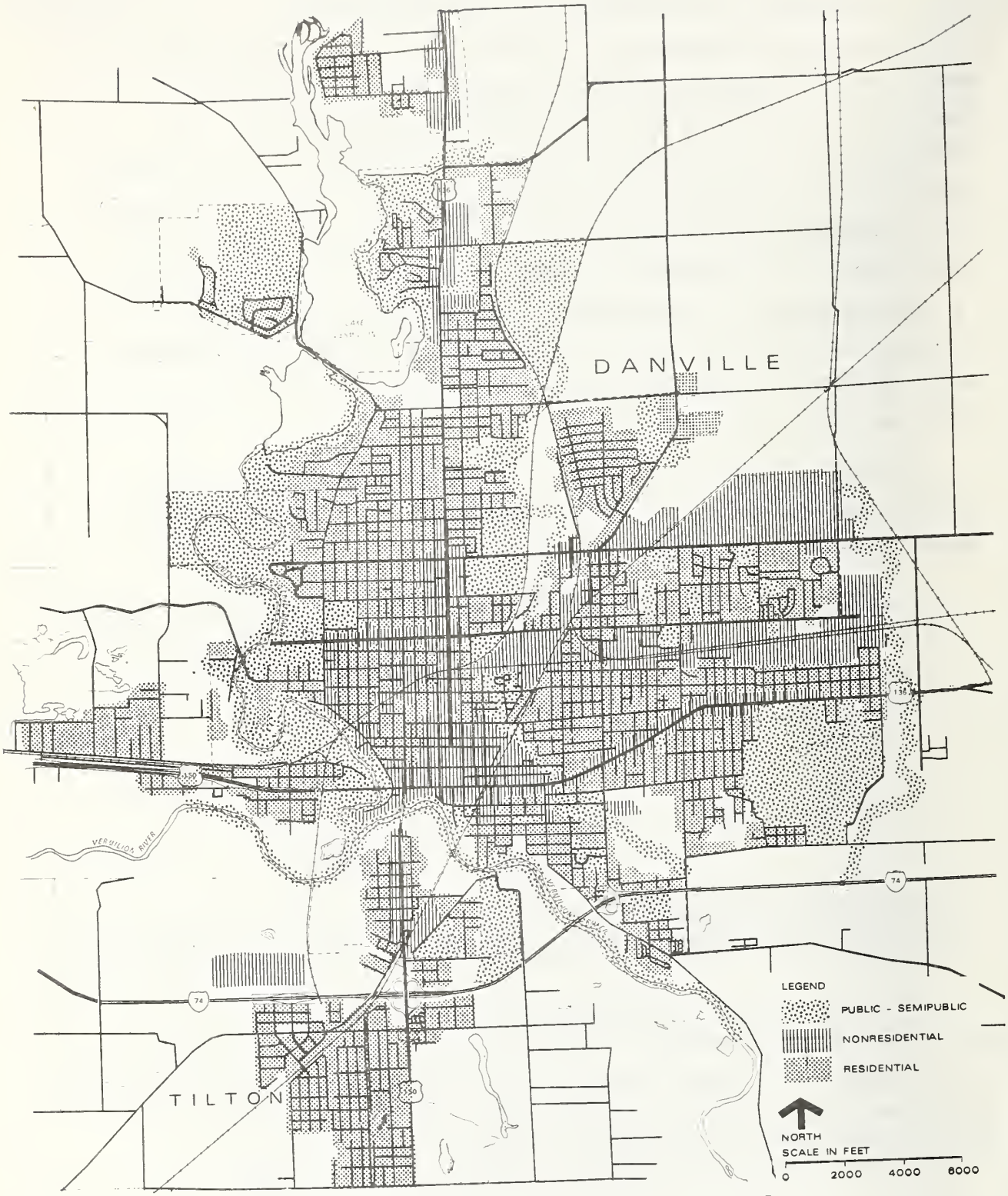

FIGURE 3-1. LAND USE MAP, DANVILLE, ILLINOIS

Danville.* The fraction of the total population that is 65 years of age or older, at 13%, is higher than the national average of 10%.

In 1970, the Danville median family income of $9,658 was not significantly different from either the national median family income of $9,433 or the median family income of $10,020 for the North Central States.

3.2 TRANSPORTATION CHARACTERISTICS (Pre-Demonstration)

3.2.1 Automobile/Highways

Household ownership of automobiles in Danville is the same as for the nation as a whole; some 20% of all households have no car available. Approximately half of all eligible target group persons (handicapped and elderly over 64 years of age) have a driver's license and the use of an automobile. State driver licensing policy requires persons over 69 years of age to pass the regular driving tests every three years.

Traffic congestion in Danville is only moderate when compared to bigger cities. There is a uniform street grid which is intersected by railroad tracks at various points. Peak period traffic intersecting with train traffic causes the most serious traffic congestion. The supply of parking spaces is more than adequate.

Interstate highway I-74 runs east and west, south of the city and is not a major local traffic corridor; major north-south streets cross it. The Vermilion River, North Fork River and Lake Vermilion all border the developed area of

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* This figure is confirmed by the Fall 1975 Agency Survey (including institutional homes) and the August 1976 General Household Survey.

Danville and present natural travel barriers in the area; there are only two roadways which connect Danville to Tilton. In general, Danville's automobile traffic suffers from circulation problems (due to natural and man-made barriers) more than congestion.

3.2.2 Bus Transit

During the period of time covered in this report, there was no form of regularly scheduled public transit service in the City of Danville. Due to financial problems, the Bee Line Transit Company, which was operating eight buses, terminated all service in November of 1970.

3.2.3 Taxicab Services

The taxicab companies in Danville are regulated on a franchise basis by the City Council which approves changes in fares and other items of service. There are no statutory limitations on either the maximum number of vehicles or the number of companies. The cab companies operate in the traditional taxicab mode with calls being handled by a dispatcher and assigned to drivers.

Before the demonstration, three taxi companies operated in Danville. One company (Red Top/Yellow Cab Company) had 19 licensed vehicles and carried slightly over 70% of the city's taxi trips. A second company (Courtesy Cab Company) had 10 licensed vehicles and slightly over 25% of the taxi patronage. The third cab company (Brown Cab Company) operated one vehicle and carried less than five percent of the ridership. The first and third companies are older and well established in the community, while the second one had been licensed only during the previous two years. Brown Cab Company primarily serves the Black community and much of its business is prescheduled, repeat patronage.

The total of 30 licensed cabs for the three companies serve a total population of 46,500 in three communities (Danville, Tilton and unincorporated Central Park) over a service area of 15.9 square miles. This averages out to one active taxi vehicle per 1550 persons and 1.9 square miles. This coverage is comparable to that existing in communities of similar size as surveyed by the International Taxicab Association, in which there is one licensed taxicab per 1800 persons.[2] On the basis of a survey conducted by the City in the summer of 1975, it is estimated that 1.5% of all vehicle trips in Danville are taken by taxi.

In early 1974, with the beginning of the energy crisis, the cab companies received permission from the City Council to introduce shared riding. In this case, each ride is charged the applicable zone fare. The only exception to the rule is that a person may refuse to share a cab if another occupant appears to be intoxicated.

Thus, there is both group riding and shared riding in Danville. In the former case, two or more persons ride together from the same origin to the same destination. Any multiplicity of origins or destinations causes the rides to be treated as shared rides and separate fares are charged. Approximately 25 - 30% of all fare trips are shared.*

Table 3-2 contains data from the pre-demonstration on-board survey, indicating the impacts that shared riding has on taxi rides in Danville:

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[2] Economic Characteristics of the Urban Public Transportation Industry, Institute for Defense Analysis for the U.S. Department of Transportation, February 1972, pp. 2 - 39.

* This and all following figures on fares and level of service are the result of analysis of the pre-demonstration on-board survey conducted in the fall of 1975 (see Appendix E).

TABLE 3-2.

MEAN TRAVEL SPEED BY EXCLUSIVE VS. SHARED RIDES

	Exclusive Rides	Shared Rides	Differences
(a) Origin to Destination Trip Distance	2.27 miles	3.16 miles	+39%
(b) Origin to Destination Trip Time	6.72 min.	9.87 min.	+47%
(c) Vehicle Speed (a÷b)	20.3 mph	19.2 mph	-05%
	(n=384)	(n=126)	

The above figures for exclusive and shared rides indicate that shared riding, on the average, increases travel distance by 39% and increases travel time by 47%. The increased travel time for shared rides is due to both the detouring involved and the extra pick-up and drop-off time associated with multiple origins and destinations.* These impacts occur on approximately 25% to 30% of all rides (i.e., those shared). The net effect, then, on all taxi riders is approximately a 10% to 40% increase in the average travel time.

The present fare system is based on four zones: #1 = $.75, #2 = $1.25, #3 = $1.50, #4 = $1.75. (See Figure 3-2.) The fare charged is for the higher priced zone, whether it is the zone of origin or the zone of destination. Any trip beginning and ending within a zone is charged the fare for that particular zone. Mileage beyond the city limits is charged at $.40 per mile. Group riding allows additional passengers with an additional charge of $.15 per person. There is no charge for additional passengers who are under 12 years of age. Drivers are paid a commission of 40% of all fares; Red Top guarantees a minimum of $1.90 per hour.

*This assumes that average actual origin to destination distance for shared rides is approximately equal to that for non-shared rides.

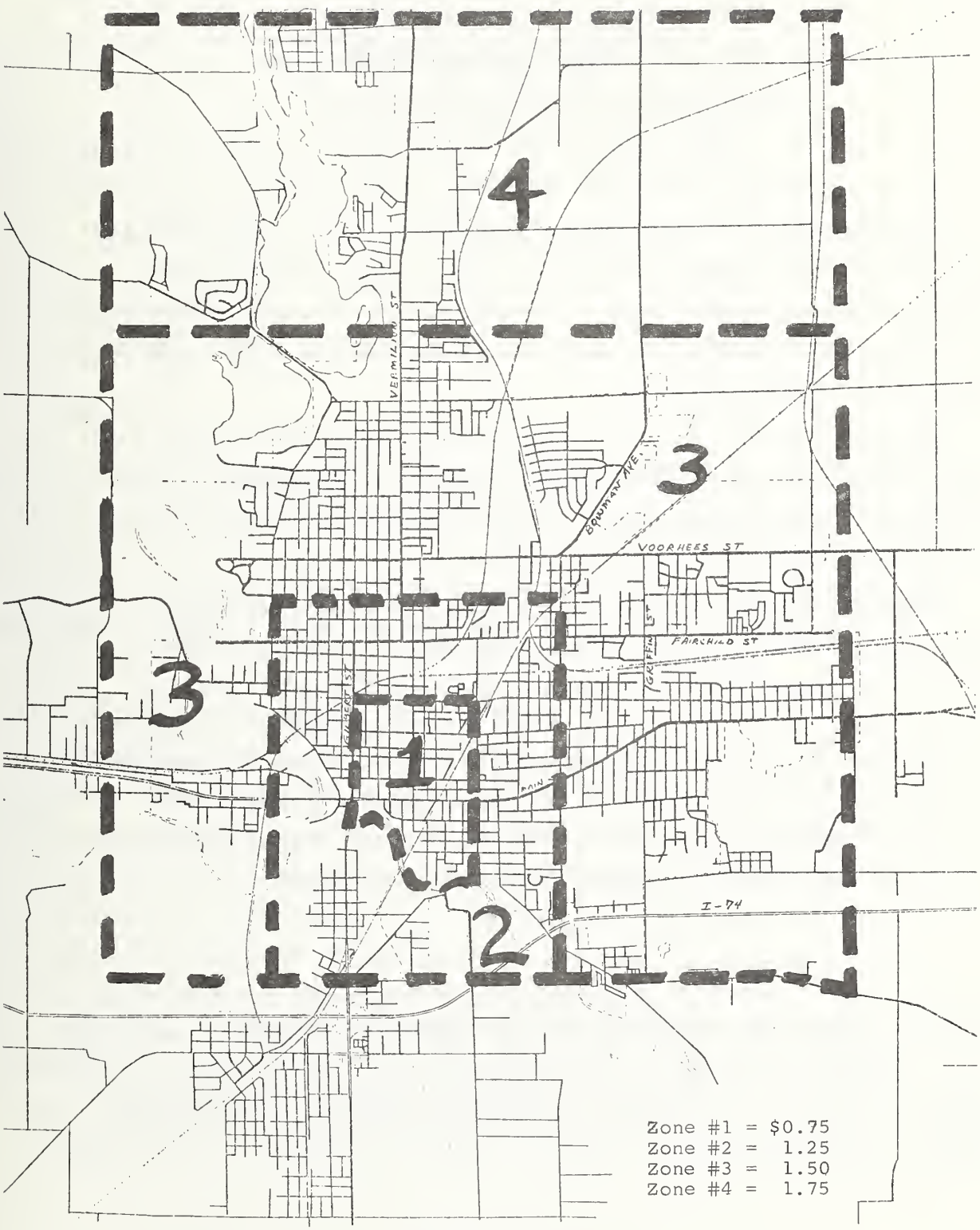

FIGURE 3-2.

TAXI ZONES IN DANVILLE, ILLINOIS

The above fare structure, along with consumer demand characteristics and tipping behavior, results in the following costs to users, as observed in the pre-demonstration on-board survey:

$1.23 Mean Fare Per Passenger Trip

.05 Mean Tip Per Passenger Trip

.54 Mean Fare Per Passenger Mile*
(shortest route distance)

.02 Mean Tip Per Passenger Mile

The average wait time from telephone call for immediate service** to the vehicle arrival time at the origin was 9 minutes; this ranged from 1 minute to 30 minutes; the median wait time was 7 minutes. Loading and unloading time together averaged 2.3 minutes.

The net, direct origin to destination average speed of travel for consumers was 18 miles per hour; exclusive rides averaged 20 mph, while shared rides averaged 14 mph when detouring is taken into consideration.

Consumer perceptions of taxi service reported in the survey were, by and large, very favorable. Approximately 90% of all riders reported being "very satisfied" with waiting time, convenience, safety, driver courtesy, comfort and reliability of the taxi service. This favorable response was reported by more than 95% of all Danville riders over 64 years of age. Less than 3% of all riders reported being "not satisfied" with the taxi service in some way.

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* Based on mean direct origin to destination distance, assuming no other rides are being served at the same time, of 2.3 miles.

** Almost 90% of all requests for service are by telephone and request immediate pick-up as soon as possible; in all other cases, an appointment is made or a cab is hailed on the street or found at a cab stand.

Taxi ridership, as measured by the surveys during the hours of 7 AM to 7 PM, was comprised as follows:

TABLE 3-3.

PRE-DEMONSTRATION TAXI RIDERSHIP
BY RESIDENCE AND AGE

	%
Non-Danville Residents	13
Danville Residents	
Age 5 - 15	6
16 - 20	10
21 - 54	43
55 - 64	11
65 & over	17
Total	100

Some 3% of all riders were Danville residents under 65 years of age who had a noticeable handicap. Including those 65 and over (17%), the survey indicated that approximately 20% of daytime taxi ridership was already attributable to the handicapped and elderly target group before the demonstration began.

3.2.4 Special Transportation Systems

Eleven social service agencies provide some amount of paratransit services to their clients. This amounts to some 3,000 one-way passenger trips per week during school months (i.e., including children in Special Education Programs). This drops to 1,500 trips per week during the summer. The services are provided in vehicles owned by the agencies and through purchase of transportation services from the local cab companies. The total number of paratransit vehicles operated by the agencies is 8 automobiles or station wagons, 2 vans without lifts and one van with a lift.

Eligibility requirements and levels of service vary from one agency to another. However, in general, their eligibility requirements are similar to the project's (i.e., handicapped and elderly), and most of their clients live in the City of Danville. No fare is charged in any of the cases. Approximately 60% of all such rides are regularly scheduled for school or workshop participants; in all other cases, rides are to be pre-scheduled two days in advance; other ride requests with less reservation time are accommodated only if possible. The services operate Monday through Friday during daytime hours only.

3.3 INSTITUTIONAL BACKGROUND

Since November 1970, the City of Danville has been without regularly scheduled urban public transit service. Such service had previously been offered by the Bee Line Transit Company, a private carrier, but was abandoned in Danville for the same reasons that bus services have been reduced or abandoned throughout the nation during the past 25 years-- declining patronage and revenues in the face of increasing costs.

When the system could no longer operate from passenger revenues, the City of Danville stepped in temporarily with financial assistance. Between August and November of 1970, the City provided about $9,000 to subsidize the operating losses of Bee Line Transit. However, in November 1970, voters rejected a referendum ballot to establish a three-cent property tax to continue the subsidy program. Bee Line, therefore, discontinued service. At the time of termination, the company operated eight buses over a series of fixed routes, two of which still paid for themselves. The adult base fare was 25 cents and children rode for 15 cents. Later attempts by a private operator to run a self-supporting minibus service failed

in a matter of months. Many older and handicapped persons found the vans that were used in this latter attempt to be inconvenient for boarding and unboarding.

During this time taxi service continued to be provided by Red Top Cab Company (95%+ of total volume) and Brown Cab Company. Taxi zone charges ranged from $.65 to $1.50 per trip during this time or an average of approximately $1.00 per passenger trip.

In early 1974, three important changes occurred in provision of taxi services: 1) fares were raised from a range of $.65 to $1.50 to a range of $.75 to $1.75; 2) Courtesy Cab Company began operations in Danville and immediately secured 25% of the market away from Red Top Cab Company; and 3) the energy crisis of that winter and rising fuel prices led the City Council to allow shared riding as part of the taxi service. Total patronage did not change in any significant manner due to the fare increase or shared riding.

No significant changes in transit options occurred in the period from January 1974 until the fall of 1975, at which time the RTR program came into existence.

3.4 EXOGENOUS FACTORS

3.4.1 Weather

The weather patterns in Danville are seen as an influencing factor in two ways. First, there is the "usual" weather, including seasonal variations, that may affect project demand. And second, significant changes from the usual weather patterns are seen as an additional exogenous factor that may affect project demand further.

Danville's "usual" weather patterns are hot, humid and rainy summers, mild spring and fall periods, and cold, rainy and snowy winters. There are seasonal patterns in total taxi

volumes which are hypothesized to be a function of weather patterns as well as other seasonal factors (e.g., vacations, holidays). Taxi usage, traditionally, is highest in winter and lowest in summer with spring and fall acting as transitions between these two points. A seasonal adjustment factor for each month of the year has been developed from two years of continuous time series data on total taxi rides in Danville before the demonstration--during a time when there were no fare changes or significant changes in levels of service. The data is limited in that it is only for two years and may or may not accurately reflect seasonal patterns for taxi use by subgroups of the taxi riding populations (e.g., handicapped and elderly persons). However, it is the best information available at this time on seasonal variation and is used in this report in an attempt to isolate the seasonal variation factor that affects patronage levels.

To control for possible changes to the normal weather patterns, data on temperature range, mean temperature and total precipitation by month have been collected for the period of January 1972 to the present. The project's Phase I period of time (December 1975 through December 1976) is best characterized as slightly drier than the year before and significantly colder than usual in November and December--the now famous "winter of 1976" experienced throughout the East and Midwest. The decreased temperatures resulted in a much greater amount of snow than normal. In summary, the weather experienced by project participants has been slightly more moderate than usual from December 1975 through September 1976 (i.e., with less precipitation), but much more severe than usual in November and December 1976 (i.e., with very cold and snowy weather).

In contrast to the normal increase in taxi use during winter, it is hypothesized that the severe weather of the

past winter may have inhibited total travel by all modes by the target group; the effects are expected to be greatest among the elderly. Analysis of the data in Chapter 6 on project demand attempts to take this hypothesis into consideration.

3.4.2 Economic Conditions

No detailed data have been collected to date on economic indicators over time in the Danville area. It can be assumed, however, that Danville has experienced the same recession and recovery from recession that the country as a whole has experienced in the years from 1972 to the present. In the case of Danville, which depends on blue-collar industry to a great extent, the impact of the recession has been significant. Countering this to some extent is the fact that Danville has received a substantial amount of federal and state aid per capita for urban renewal--second only to the city of Chicago in the state of Illinois.

There has been no dramatic change in social programs for the handicapped and elderly that might have affected their income and therefore their project ridership to date.

3.4.3 Transportation Alternatives/Pricing

There has been no change in transportation alternatives or pricing except one--the cessation of operations of Courtesy Cab Company in April of 1976, the fifth month of the project. This caused an immediate decrease in level of service which was gradually restored by Red Top Cab Company increasing service after that time. By the eighth month of the project the pre-April level of service was re-established.

The discontinuation of service by Courtesy Cab Co. was a sudden one with only a few weeks of notice given to the project staff. Red Top Cab Company essentially had no time to prepare for the change in demand that it was required to handle. Subsequently, it took one month to obtain insurance

and licenses for two more cabs and another month for a third new cab. Concurrently, Red Top Cab Company's normal maintenance personnel availability happened to decrease at the same time as there was a need for more mechanical and maintenance work on all vehicles due to their increased usage. Consequently, it took several months to restore previous levels of service.

4. RTR PROJECT OPERATIONS AND DEVELOPMENT

4.1 PROJECT DESCRIPTION

All Danville residents who are either handicapped or 65 years of age or older are eligible for the Reduced Taxi Rates program which provides a discount on the cost of taxi rides. The discount applies to any rides in or around the City of Danville. Those having Taxi Discount Identification Cards (Figure 4-1) are able to use a taxi whenever they want to, showing their ID card, paying for their share (a round-numbered amount) with cash and charging the remainder of the standard fare to the project on a specially designed charge slip (Figure 4-2). Both the user's ID number and signature are required on the charge slip, a copy of which is given to the user. The remaining charge slip copies are then turned in by the drivers to the taxi operators, who in turn, are reimbursed by the City on a weekly basis. The charge slips are keypunched and data-processed to verify invoices from the taxicab companies and to monitor monthly use of the project by individuals. Various management reports are also generated with the data. A few items of data on total volumes and driver hours for each month are requested of the companies.

The Danville taxi fare structure is zone-based with four zones covering the whole of the city; there are additional charges for mileage beyond the city limits and various extra service items. All items of service, other than tips to the driver, are covered by the discount policy. Tips are at the discretion of the user and are paid in full by the user.

The full fare, discounted fare, subsidy amount and discount rate for each zone and service item during Phase I of the project* are presented in Table 4-1:

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* Full fares and RTR discount fares changed in January, 1977. These changes and their effects on project demand will be the subject of later evaluation reports.

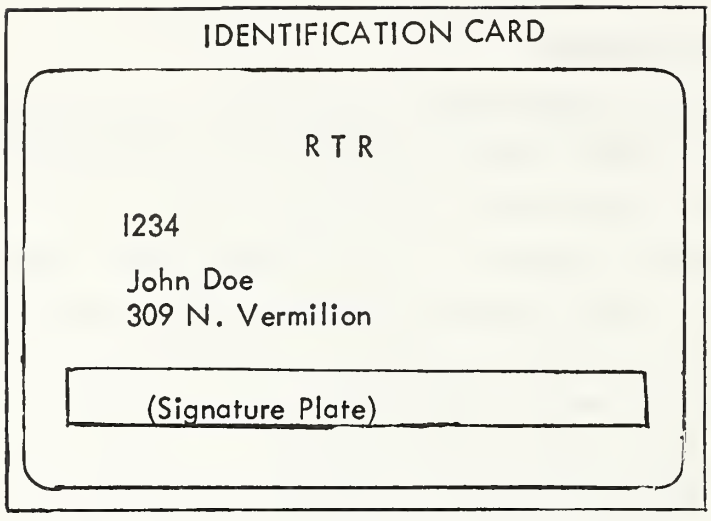

FIGURE 4-1. IDENTIFICATION CARD

DANVILLE CHARGE SLIP

(Cab Company Name)

DATE: _____ TIME: _____ ☐ a.m. ☐ p.m.

I.D. # (1) _____ (4) _____

(2) _____ (5) _____

(3) _____

TOTAL FARE: $_____

RIDER SHARE: $_____

DRIVER: _____

RIDER: _____

(Signature)

FIGURE 4-2. DANVILLE CHARGE SLIP

TABLE 4-1. RTR PROJECT DISCOUNTS - PHASE I (13 months)

Service Item	Full Fare	RTR User's Payment	Subsidy Amount	Percent Discount(%)
Zone 1	$.75	$.25	$.50	66.7
Zone 2	1.25	.30	.95	76.0
Zone 3	1.50	.40	1.10	73.3
Zone 4	1.75	.50	1.25	71.4
Extra Miles	.40/mile	.10/mile	.30/mile	75.0
Extra RTR Riders Over 1	.15/each	.05/each	.10/each	66.7
Packages Over 2	.10/each	.05/each	.05/each	50.0
Wait Time	6.00/hour	1.50/hour	4.50/hour	75.0
Deliveries	.25 + fare	(25%)	(75%)	75.0

The zone-based RTR user payments range from $.25 to $.50 plus additional charges; the subsidy amount ranges from $.50 to $1.25; and the discount rate ranges from 66% to 76%. For convenience sake, an RTR user's share of total fares that amount to $2.00 and over are figured out on a "fare table" that is available in the taxicab. A regular fare between $2.00 and $3.00 results in an RTR user fare of $.75; a regular fare between $3.01 and $4.00 results in an RTR user fare of $1.00, etc. In the event that an RTR user group rides with non-RTR taxi riders, the basic zone fare is discounted, but the total $.15 for extra passengers is charged for the non-RTR riders. This policy results in some cross-subsidy to non-RTR riders who group-ride with RTR riders. However, this was determined to be the only practical solution given the myriad possible combinations of RTR and non-RTR members group-riding. A simplified and easily understood discount policy was sought for the sake of drivers and riders alike.

There is a limit of $20 worth of rides at face value (regular fare) that can be discounted by each RTR member per month; participants agree to this rule when signing up for the program. Computer processing of the charge slips allows monitoring of this limit by individual ID number. In cases of group riding by RTR members, the total fare is split among all ID numbers recorded on the charge slip; this has the effect of extending each person's use of the project within the $20 limit. Thus, RTR members can increase their benefits under the project by group riding with each other.

Elderly persons are certified on the basis of age, regardless of whether or not they are handicapped. A permission slip signed by the applicant allows the project to verify age through the local Social Security office. Those under 65 who are handicapped are certified on the basis of the Eligibility Criteria which were based on similar criteria drawn up by the San Francisco Bay Area Task Force on Handicapped Definitions. A one-page form is filled out and signed by a doctor or social service agency counselor. All certification and processing of identification cards can be done by phone and mail--participants are not required to come in to the project office. Copies of the forms and Eligibility Criteria are provided in Appendix B, along with copies of letters sent to those who use the project over their limit.

Different colored ID cards were used for the elderly, the permanently handicapped and the temporarily disabled. This was to help drivers stop illegal use of cards by the wrong persons, e.g., a person using a blue card should appear to be over 65 years of age; ID cards for the temporarily handicapped were embossed with an expiration date.

There are several points in the process of certification, use of ID cards and charge slips, redemption of charge slips and monthly computer printout of data when fraud control and quality control become important considerations. The following list summarizes elements of control instituted in the project:

1. Certification

   a. Address checks for Danville residences; correct addresses required for receipt of ID cards by mail; correct phone number required for phone interview

   b. Social Security Administration verification of birthdate for those elderly who are certified by mail and phone (sample)

   c. Signature on application card, agreeing to the rules of the project including monthly limit

   d. Unique ID numbers, connected to a person's name, address, and telephone number which are recorded in a master file

2. Use of ID Cards

   a. ID cards color coded for visibility control of who uses them

   b. ID number, name, address and signature on ID card

   c. Driver's reluctance to honor improper ID cards

   d. Driver's reporting of suspicions of misuse of ID cards

   e. Charge slips coded by cab company

   f. Date, time and ID numbers recorded - specific individuals connected to specific trips charged to project on specific cab companies

   g. Name of driver required on charge slip

   h. Signature of rider - to correspond with signature on ID card

3. Redemption

   a. Copies of charge slips are provided to the project

   b. Charge slips are data processed and tabulated to confirm invoices to the project

4. Monthly Computer Printout

   a. Use of program over the $20 limit reported

   b. Analysis of trends by cab company

There are three key points in the process where a serious level of fraud can take place: 1) misuse of ID cards by taxi riders, 2) fraudulent creation of trips by the driver and 3) fraudulent creation of trips by the cab company owner.

In the first case, all reasonable controls, other than use of photographs on ID cards, were utilized.

In the second case, personal profit to the driver for fraudulent creation of trips would be very small in comparison to the risks involved. The driver would have to create fictitious trips with appropriate ID numbers and signatures. He would then have to call these trips in to the dispatcher, pretending that someone was getting into his cab and requesting a ride. The dispatcher should become suspicious of too many such calls--given that less than 10% of all rides are generated in this manner. The driver would then have to deposit 25% of the fictitious fare in the envelope--as the user's share. Later, he would receive only 40% of the fictitious fare in return as his commission. His net illegal profit on any fictitious charge slip would be 15%. Ten fraudulent trips a day, at an average regular fare of $1.50 would then net the driver only $2.25. In the meantime, there are ten slips which he has forged--an unlikely risk for the small return. He would also be losing valuable time pretending to serve customers and not being assigned real customers by the dispatcher (at full 40% commission).

In the case of fraud on the part of the taxi owner, there is more opportunity for him to create sufficient fraudulent trips, profiting 100% on each one. But then he would have to make up an ID number, name of rider, name of driver, and individual signatures. Data from on-board surveys and analysis of time series data can be used to uncover any significant attempts at

fraud on the part of a company.

In all cases of fraudulent creation of trips, there is the threat of computer monitoring on incorrect ID numbers, overuse by some one ID number (in which case someone is called and asked about their trips), and periodic interviewing of users about trips taken. All parties involved are made aware of the use of the data processing system to monitor for potential fraud.

The cost of the above elements of fraud control are small. Most are integrated into procedures that are required in normal administration of such a program. The charge slip system itself (using ID numbers) acts as a fraud control mechanism.

4.2 PROJECT EVOLUTION

Late in 1973, officials of the City of Danville met with representatives of the Illinois Department of Transportation to discuss methods for restoring transit service to Danville. This eventually led to a federal grant for a transit study and for the preparation of a Transit Development Plan (TDP) to provide comprehensive transit planning. The TDP was finalized in the winter of 1976 and called for the City to apply to the State and Federal Government for capital and operating funds to support a fixed route bus system with 10 conventional buses. Surveys and comparisons with other downstate Illinois cities indicated that sufficient need and demand for such services exist. Public opinion on the part of the citizenry was in favor of some generalized public transit service with subsidy.

In the midst of preparation of the TDP, the City of Danville was approached by UMTA as a potential site for the user-side subsidy/taxi-discount project. One of the characteristics of the site that recommended itself was the lack of any other form of public transit other than taxis. On the basis that the demonstration would take place in the interim--before any actual

bus system could be implemented--the City and UMTA proceeded with the experiment.

The original grant application for the demonstration was written so that a wide range of age groups, including all persons under 21 and over 54 years of age, and handicapped persons of all ages could be made eligible for the user-side subsidy. This total group of persons amounted to 23,750 persons over five years of age, or approximately 56% of the total population of Danville. Projections for ridership had been made on the basis of Dial-a-Ride and other experiments similar to this one in other parts of the country. A budget for subsidy monies was then determined.

At the time of the writing of the Implementation Plan it was decided that the project should be staged to control for the unknowns in potential demand. Given the ease with which the new service could be used (i.e., taxi service is a known commodity to the public) and the high discount (70 to 75%), it was thought that demand might build up too fast to be adequately handled by the cab companies, the project staff, and the budget for subsidies. A priority was set for the system to be tested for all persons 65 years of age or older and all handicapped persons under 65 years of age. This first target group was then comprised of approximately 7,500 persons, depending on the estimated size of the handicapped population under 65 years of age.

In the absence of a fixed route bus system in Danville, it was decided not to deny use of the project to those handicapped and elderly who could, at times, use conventional transit. Thus, a wide definition of "handicapped" persons and all persons 65 years old and over were eligible--using definitions common to many "Reduced Transit Fare" programs for handicapped and elderly persons on conventional transit. In addition, no restrictions were put on the income of those who could participate and no restrictions were placed on the type of trip

served. The City project staff and federal officials focused on the project as a cost-effective type of public transit service for particular transit dependent subgroups and not as a social welfare program to serve particular types of trips.

Consideration was given to the feasibility of coordinating the RTR project and social service agency paratransit services (e.g., via third party payments). However, no particular arrangements resulted. This was partially due to conflicting goals and operating procedures and partially due to the limited scope of the RTR subsidy per person per month; that is, the agencies could not rely on the RTR project to subsidize their clients' daily transportation needs. Consequently, the agencies responded to the project as a new, additional resource for their clients for non-agency or "discretionary" trips. And, indeed, there was a great deal of cooperation between social service agencies and the RTR project in terms of registering eligible clients. The above issues are discussed further in Section 8.4, concerning project impacts on the social service agencies.

Another departure from the grant application at the time of implementation was a switch from the use of "taxi tickets" to a "charge slip system" whereby eligible persons would pay their share at the time they take a ride instead of periodically purchasing discounted tickets. This change was not a change in the concept being tested, but rather an administrative innovation.

The change eliminated the need for monthly or periodic distribution (or sale) of tickets to eligible persons through outlets, etc. Correspondingly, users are not required to pay their shares until the ride is actually taken; in the ticket systems users must buy their tickets and plan for their use ahead of time. Thus, the charge slip method eliminates the administrative distribution workload and provides a higher level of service for the user. The charge slips also facil-

itate a data processing system in which rides are recorded and stored by ID number for each person registered in the program. Ridership data can then be analyzed by type of user, time of use, etc. The data processing system is also used to monitor the users' adherence to the $20 limit on total fares per person per month. It is estimated that the data processing costs are approximately equal to what the costs would have been in distributing and accounting for the tickets.

The relative costs to the cab companies in administering the bookkeeping and billing are seen as equal in either case. The only drawback is the time required in the cab for the charge slip to be filled out and signed by the user. This, naturally, increases the unloading time. However, in the case of using tickets, there would have been certain problems in handling tickets of different denominations and providing change.* In considering these problems, it was decided that charge slips would be a more efficient mechanism than tickets. This determination was reinforced by the fact that charge slips had previously been used on Danville taxis for welfare and commercial customers and, thus, the taxi drivers were accustomed to the concept. The project staff has encouraged project users to facilitate the charge slip procedures as much as possible by having their ID cards ready for use in filling out the charge slips.

At one point, local City officials expressed concern about the potential for fraud in the project, i.e., that charge slips could be fraudulently made up by drivers of cab company owners. The issue presented itself in terms of whether or not the project should spend approximately $1,600 to purchase mechanisms similar to those used to imprint commercial bank credit cards onto charge slips; there would have to be one such mechanism for each cab. This would then require an actual ID card for

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* The use of tickets or tokens is complicated in a system with a zone or variable fare structure as opposed to a situation in which a flat fare is negotiated.

a charge slip to be written and thereby discourage fraudulent charge slips. Other than the expense, the only drawback to these machines would be that drivers would have to spend more time processing each charge slip.

After discussing these issues, it was decided that there was, in actuality, little potential for fraud, particularly in the case of the cab drivers who would receive only a 15% return on any fraudulent trip (i.e., 40% commission, less the 25% user share; see Section 4.1). However, it was felt that some potential for fraud did exist, and it was decided that the project would use plastic ID cards, which could be used with credit card machines, if it was decided at some later time that fraud might be occurring. Documentation needs for reimbursement were satisfied with a three-part charge slip: one copy for the RTR rider, one copy for the cab company and the third copy for the City of Danville.

Initial contacts were made individually with the cab companies. Several other discussions took place with the three cab companies together. Two of the companies readily accepted the project as a beneficial service to the community which would mean increased volumes for their business. There was no resistance on their parts for the data collection activities involved in the project. The other taxi operator was less enthusiastic about the project and complained about the paperwork involved. The competitive situation, however, forced this one operator to match the other two companies in their acceptance.

Subsequently, all three cab companies contracted with the City of Danville to honor the use of the RTR ID cards and charge slips.* In all other respects, taxi service was to stay the same as traditionally franchised by the City. There was no negotiation concerning a different fare for RTR trips.

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* See Appendix C for a copy of the contract agreement.

The project staff did not offer to cover any additional administration costs, due to the project, which were expected to be absorbed by the cab operators for the sake of increased business as with all other commercial charge customers. At the same time, it was also understood by the project staff that the two largest cab companies were already losing money in stiff competition with each other, and, therefore, no decrease in fares was contemplated. Potential cash flow problems were solved, in principle, with a weekly billing and payment process; no initial prepayment or deposit was made by the project.

The project staff met with the cab drivers and dispatchers of each company and explained the project and operating procedures for the charge slips. Again, initial reactions ranged from the very negative to the very positive. Many concerns were voiced about the time involved in filling out charge slips, getting riders to sign the charge slips, etc. Most questions were answered to the satisfaction of the drivers; some questions would have to await experience; and some complaints could not be solved. Experience with the already existing charge slip system for commercial and social service agency customers helped pave the way for the RTR project. In addition, it could be demonstrated that the RTR procedures were an improvement over charge systems already in existence.

Public acceptance of the project was mostly favorable as indicated by telephone calls to City Hall, letters to the local newspaper, editorials and other coverage by newspapers and radio stations. The prospect of serving youth on taxis through the project met the greatest opposition. Few adults in town were in favor of such a proposal; it was generally assumed that the expense would be greater than operating a fixed route bus system and that there was no need to provide door-to-door service for non-handicapped youth. Interestingly enough, the

cab operators themselves were not enthusiastic at the prospects of serving youth under the project--due to fears of being "overrun" by demand of a sort that was undesirable for business purposes. "Youth" were associated with crank calls, no-shows, vandalism, and low tipping, and, consequently, the youth market was the least desirable as seen from the standpoint of the operators.

An advertising program was designed with the local newspaper, with the project being called "RTR" for Reduced Taxi Rates. Figure 4-3 on the following page presents the initial advertising placed in the newspaper on November 9. Smaller ads were placed in the paper during the next week. Through advertising, word-of-mouth, and normal newspaper coverage, the project had wide exposure from the beginning. One week of radio advertisements, four times a day, were aired in January. And in February approximately 50 posters were distributed in poorer neighborhoods and senior citizen meeting places.

Registration began on November 10 and continued at a high rate. The City's telephone lines were continually tied up for two weeks by persons calling for information and application forms. No additional telephone lines had been installed, but the inconvenience to the overall City Administration was short-lived. Newspaper coverage helped eligible persons to understand why it was difficult to get through to the project staff.

The registration was very large from the beginning. A total of 1200 persons signed applications, were given ten minute certification interviews (to survey socio-economic/demographic characteristics and "before" travel behavior), and were issued ID cards -- all in the first three weeks. There were as many as twelve different persons working on the large registration in those weeks, including volunteers from

REDUCED TAXI RATES

MIDAS

Now Available in Danville!

If you are 65 or over . . . or handicapped you may qualify!

MIDAS

This zone chart shows what you'll pay for cab rides under this subsidized project.

ZONE NO.	REGULAR RATE	"RTR" RATE
1.	75¢	25¢
2.	$1.25	30¢
3.	1.50	40¢
4.	1.75	50¢

Rides to other areas comparably reduced.

Reduced Taxi Rates

Some things you'll need to know:

MIDAS

1. You MUST live within the City of Danville.

2. Eligible persons may receive rides totaling $20 in face value during any month.

3. Charge slips will be issued at the time of the ride and will be available in all cabs.

4. The City of Danville will provide forms for handicapped persons to become certified.

5. An I.D. card will be required. I.D.'s may be obtained by calling the number below.

"Reduced Taxi Rides" in Danville is a unique test program sponsored by the Federal Government and the City of Danville. If you use the service and it works, it may be continued beyond the initial 21 months. Critical mobility for All who need transit at a Bargain for everybody in the Simplist way

446-0803

EXTENSION 60

FIGURE 4-3. RTR ADVERTISEMENT

the eligible groups who had, themselves, already registered. Another 500 persons were registered during the month of December.

The first batches of ID cards were mailed out during the last week of November, and the first project trip took place on December 1st. Since that time, the basic project systems have worked successfully with a minimum of problems or administrative cost. Levels of service, demand volumes, costs of the project and impacts are further analyzed in the following chapters.

4.3 CURRENT STATUS

During the third project month (February, 1976) UMTA and the project staff decided to consider expanding the use of the user-side subsidy concept to new groups on other modes with an estimated lower cost per passenger trip (e.g., jitneys or fixed route). This was deemed more important than the possibility of extending eligibility to other groups (i.e., youth and those 55-64) for subsidies on taxis. This decision grew out of consideration for Danville's overall transit needs, as documented in their Transit Development Plan (TDP), and the relative costs of door-to-door, demand actuated service vs. other transit modes--again, as estimated in the TDP. Subsequently, the TDP has been finalized and the City of Danville is pursuing an application for an expanded use of the user-side subsidy to cover all persons on a full scale transit system. Private transit providers are being asked to consider providing such service and to estimate likely fares that would cover costs.

In the meantime, the original RTR project proceeded with no structural changes through December 1976 (thirteen months of ridership). The second largest cab company did discontinue operations in the fifth month of the demonstration--for reasons not related to the project. In the fall of 1976, the largest cab company filed for an increase in fares and won acceptance from the City Council for a modified version of his request. At that time, the project staff and UMTA officials decided to lower the RTR discount rate, in conjunction with the regular fare increase. The purpose was to test subsidy and demand levels that could be financed locally after the demonstration. These changes were made beginning in January 1977. The effects of these changes will be analyzed in later evaluation reports.

At present, federal funding for the RTR project is scheduled to end in August 1977. The City of Danville is approaching the State of Illinois for continued funding of the program in some form after that time.

5. TAXI LEVEL OF SERVICE DURING THE RTR PROJECT

5.1 INTRODUCTION

The pre-demonstration taxi level of service characteristics have been described in summary form in Chapter 3. This chapter focuses on level of service characteristics over the life of the project to date in a before-after comparison with the pre-demonstration data. The primary purpose is to establish the characteristics of transit supply available during the project in preparation for interpreting project demand to be reported in the next chapter.

The project innovation directly affected only a price change and payment method for some rides.* All other changes or developments in level of service have been exogenously determined by cab company operators and drivers. In particular, the discontinuation of operations by Courtesy Cab Company caused the most significant change in level of service outside of a price change.

The issue of whether or not an increase in project demand, itself, may influence overall levels of service will be discussed with other impacts of the project in Chapter 8.

5.2 PRICE (AND PAYMENT METHOD)

The one major project-induced change to the level of service for project users has been a change in price and payment method. The discount is approximately 75% of all charges and

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*The effects of shared riding on level of service have been described in Chapter 3 for the sake of transferability of the project innovation to environments presently without shared ride taxi service.

applies to total regular fares up to $20 per month. This limit allows approximately 14 - 16 trips per month at average fares to be discounted per person.

The payment method, on the one hand, provides a high level of service through use of charge slips; no pre-purchase of discounted ride tickets is required. On the other hand, it requires a charge slip to be filled out at the time of deboarding which may cause extra delay in unloading and discomfort if the project user has difficulty signing for the trip or understanding the transaction.

5.3 COVERAGE

The only significant change in coverage of taxi service occured when Courtesy Cab Company discontinued operations during the fifth month of the project, eliminating one dispatcher and ten licensed vehicles. Demand on the part of the target group and other riders immediately decreased in response to the decline in service.* During the following three months, Red Top Cab Company gradually restored previous coverage, which was continued during the rest of Phase I. Brown Cab Company (accounting for less than 5% of all demand) did not significantly change its mode of operation during this time period, except to add one licensed vehicle in the thirteenth month.

Table 5-1 presents the basic data on the number of calls for service, the total driver hours of service, the total dispatcher hours and the total vehicles licensed per month for Red Top and Courtesy Cab companies--beginning with one month before the project and extending through Phase I. Available information from Red Top previous to that time is provided for comparison purposes. At two points in time during the project, supply decreased relative to demand volume. In January 1976,

*These data are presented in Chapter 6.

TABLE 5-1. TAXI SUPPLY VS. DEMAND

Month	Red Top Cab Company						Courtesy Cab Company					
	Calls for Service [a]	Driver Hours [b]	Dispatch Hours	Licensed Vehicles	Calls/ Driv Hr	Calls/ Disp Hr	Calls for Service	Driver Hours [a]	Dispatch Hours	Licensed Vehicles	Calls/ Driv Hr	Calls/ Disp Hr
	(000)	(000)	(000)				(000)	(000)	(000)			
1972-73	Monthly Range:				3.6-4.5		(Not in operation)					
1974-75	"	"			3.1-4.7		(Data not available)					
Nov. 75	19.1	5.3	0.70	19	3.6	27.3	7.0	4.3	0.70	10	1.6	10.0
Dec. 75	23.7	6.2	0.75	19	3.8	31.6	8.9	4.7	0.75	10	1.9	11.9
Jan. 76	24.7	4.9	0.75	20	5.1	32.9	10.0	4.8	0.75	10	2.1	13.3
Feb. 76	22.9	5.6	0.70	20	4.1	32.7	12.8	7.7	0.70	10	1.7	18.3
Mar. 76	24.9	8.0	0.75	20	3.1	33.2	9.9	3.8	0.75	10	2.6	13.2
Apr. 76	25.5	6.7	0.70	20	3.8	36.4	8.9	3.3	0.50	10	2.7	17.8
May 76	29.7	7.5	0.75	22	4.0	39.6	(discontinued operations)					
Jun. 76	27.5	7.0	0.70	22	3.9	39.3						
Jul. 76	26.1	6.9	0.75	23	3.8	34.8						
Aug. 76	27.2	7.1	0.75	23	3.8	36.3						
Sep. 76	27.4	7.0	0.70	24	3.9	39.1						
Oct. 76	28.3	7.4	0.75	24	3.8	37.7						
Nov. 76	29.1	7.3	0.92 [c]	24	4.0	31.6						
Dec. 76	32.3	8.0	0.93	24	4.0	34.7						

[a] Calls for service, rather than passengers, is the unit of demand most directly experienced by the cab companies; the system wide ratio for passengers per call for service surveyed is 1.2.

[b] Driver hours are counted differently at the two companies: Red Top figures include only driver time available for service; Courtesy figures include breaks and meal time.

[c] In November 1976, Red Top began using a telephone operator in addition to their dispatcher.

supply of driver hours was very low in comparison to demand. This shows up in figures for both companies (5.1 and 2.1 respectively). This is attributed primarily to a flu epidemic at the time which caused a significant decrease in labor availability. At the same time, however, Red Top Cab Company added a licensed vehicle which allowed for an increase in the absolute number of vehicles available during daytime peak periods.

Then on April 23, 1976, Courtesy Cab Company discontinued operations which greatly increased the ratio of calls per dispatcher hour for Red Top (by 20%). Red Top did not add new dispatchers or telephone operators at that time, but did plan to do so for expected increases in demand during the fall and winter, as they had done before Courtesy Cab Company began operations in 1974. Calls during peak hours for Red Top increased from a range of 50 to 75 per hour before the demonstration to a range of 75 to 100 after Courtesy Cab Company discontinued operations. This is expected to have had some effect on dispatching effectiveness, at least initially; however, a study of other shared ride taxi operations with similar dispatching technology has found that a dispatcher can dispatch about 100 to 150 calls per hour on a continued, hour-to-hour basis.[1]

The Red Top Cab Company owner observes that the increase in demand for his services was not as great as he had anticipated and that while the dispatching system was strained, the most serious lack of supply was in vehicle availability during peak periods. This does not show up in the monthly ratio of calls per driver hour which did not go above four in May, June or July (five drivers were hired from Courtesy Cab Company). The vehicle availability during peak daytime periods, however, did

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[1] An Organizational and Environmental Review of Two Privately Owned, Shared Ride Taxi Systems, The University of Tennessee Transportation Center, October 1974, p. 4.

go down with discontinuation of service by Courtesy. Whereas there were anywhere from 22 to 26 vehicles available from both companies during peak daytime periods before April, in May the maximum available vehicles numbered 18 to 22. Beyond this limitation, there were problems in keeping all licensed vehicles (which had dropped from a combined 30 to 22) in service due to loss of a mechanic by Red Top Cab Company during this time. In addition, there was the problem of not having sufficient time to plan for acquisition of new vehicles, insurance and licenses.

The combination of decreased dispatcher hours and decreased vehicle availability led to a serious decrease in level of service during daytime periods in May. By August, Red Top had three more vehicles and a mechanic and had restored the previous level of service during daytime periods. Additional dispatching help was added in November for winter demand.

5.4 TRAVEL TIME

There are no time series data that directly report on the travel time component of level of service.* However, in addition to the analysis of supply already discussed, two on-board surveys have been conducted, one in the fall of 1975 (before the demonstration began) and one in August 1976 (nine months into the project), to provide a before-after comparison of taxi operations and level of service.

The conclusion drawn from these two surveys is that the level of service offered in August 1976 is the same as that provided before the project began. Thus, while level of service deteriorated at the peak of the January demand and immediately after Courtesy Cab Company discontinued service, there are no reasons to expect that the level of service hasn't been comparable to pre-demonstration conditions at all other times.

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* Driver envelopes and dispatcher sheets, together, could not be relied upon for analysis of wait time or total travel time.

In our analysis, travel time has been broken down into four overall components as follows:

1. Wait Time - the difference between the time a rider desires to travel and the time that a taxicab is available to the rider.

2. Loading Time - the time that it takes for a rider to board the taxicab once it is available.

3. Origin-to-Destination Time - the time it takes the taxicab to arrive at the destination, once the rider and driver are seated.

4. Unloading - the difference between the time the taxicab arrives at the destination and the time it is ready to leave again (after the fare has been paid and the rider has deboarded).

The first component, wait time, is made up of different operational elements depending on the method by which service is requested. In the case of our on-board surveys, almost 90% of calls for service were by telephone and requested pick-up as soon as possible.*

In another 5% of cases, a passenger either waited at a regular cab stand area or approached a cab that was waiting for passengers; in another 3% of cases, a taxi was hailed on the street. These 8% of all cases are categorically different from telephone requests for immediate service in terms of waiting time. No evaluation effort has been undertaken to measure wait time in these situations or to measure availability of cabs at cab stands.

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*Wait time, in this case, is operationally broken down further into dispatching time from call-in time to time of driver assignment and driver response time from time of assignment to arrival time at the origin.

In some 3% of cases surveyed, an appointment time for pick-up had been made, either on a one-time or regular basis. In these cases, cab arrival time at the origin can be compared to desired appointment time.

Table 5-2 presents the mean figures for the various components of travel time, origin-destination distance, and resulting speed in the two surveys. Origin-destination mileages and times are noted for shared and non-shared rides separately, and all wait time figures are for only those cases where immediate service was requested by telephone. The percent of all requests for service that were shared is also noted.

Table 5-2 indicates little difference in service times during the two surveys. Dispatching time is higher in August as expected. Total wait time, however, is not significantly different from the pre-demonstration survey. There is an additional average one minute origin to destination time for all trips in August, with a proportionately smaller increase in origin-to-destination distance for all trips. Using non-shared rides as an indication of effective origin to destination distance and all rides for an average time, we arrive at a net effective speed for riders of 17.6 mph in August 1976 vs. 18.4 mph in fall 1975. This relatively small change can be accounted for by the slight increase in shared riding which helps to explain the higher dispatching time and corresponds to the fact that slightly fewer vehicles are available at peak periods. None of these differences are statistically significant.

The data from the above cited surveys also indicate that the Danville shared ride taxi services, on the average, are competitive with automobile travel for the origin to destination travel speed. If one assumes that taxi vehicle speed for an exclusive, not shared, ride (approximately 21 miles per hour) is comparable to private automobile vehicle speed, then shared riding (in 25% to 30% of all cases) reduces the overall average taxi speed by less than 15% (i.e., 18.4 mph in the pre-demo

TABLE 5-2. BEFORE-AFTER COMPARISON OF TAXI TRAVEL TIME AND DISTANCE

	Pre-Demonstration Survey[a] (Oct/Nov 1975)		During Demonstration Survey[a] (August 1976)	
	All Trips	Not Shared	All Trips	Not Shared
1. Time (minutes)				
a. Dispatching	4.3		5.0	
b. Driver Response	4.5		4.2	
c. Waiting	8.8		9.2	
d. Loading	1.3		1.2	
e. Origin-Destination	7.5	6.7	8.5	7.2
f. Unloading	1.0		0.8	
Total	18.6		19.7	
2. Distance (miles)				
a. Origin-Destination (O-D)	2.5	2.3	2.6	2.5
3. O-D Travel Speed (miles per hour)				
a. Vehicle Speed	20.0	20.6	18.4	20.8
b. Net Effective Rider Speed, O-D	18.4	20.6	17.6	20.8
4. Percent Shared Rides	25%		30%	

[a]Sample size for dispatching time is 100 cases in both surveys; otherwise there is a sample size of 526 in the pre-demonstration survey and 402 in the August 1976 survey.

survey and 17.6 mph in the during-demo survey). This result, of course, is a direct product of the amount and efficiency of the shared riding.

5.5 LEVEL OF SERVICE AS A FUNCTION OF DEMAND AND SUPPLY

As already indicated, the RTR project discounts have been made available to all eligible persons on any taxi rides at any time up to a total of $20 of regular fares per month. The availability and responsiveness of the service at any one time, of course, depends on the supply of taxi vehicles and the demand for rides that exists at that time. The responsiveness of the service also depends on the geographical configuration of supply and demand, the efficiency of the dispatching system and the amount of shared riding assigned by the dispatcher.

Data from the two surveys cited above* indicate that wait time, and the dispatching component in particular, begins to increase with some consistency as the calls for service per driver hour begin to exceed 4. Below that figure, it is estimated that the ratio of demand to supply accounts for less than 20% of the variance in wait time. The cab operators, themselves, have their own formulas by which to judge if the supply is adequate for the demand. These formulas and their supply decisions usually revolve around the extent to which the dispatcher is backlogged in his assignment of rides. As shown in Table 5-1, Red Top Cab Company has averaged from 3.6 to 4.5 calls per driver hour on a monthly basis during that time when it served 95% of the market (1972-73 and post-April, 1976).

The ratio of demand to supply, of course, is also a measure of productivity for the cab operator. The interdependence of levels of service and productivity in a demand-actuated system is further explored in Section 7.4 on operator costs and productivities.

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*Red Top Cab Company data only.

6. RTR PROJECT DEMAND

6.1 INTRODUCTION

The response of the target group to the RTR project has been substantial in terms of registration with the project and taxi ridership using the project discount. At the same time, project use by individuals, on the average, has been moderate in comparison to what the program limits would have allowed. This chapter discusses the numbers and types of persons who have registered and actually used the system and project ridership trends. Weather and taxi level of service changes are taken into account in analyzing these trends.

6.2 REGISTRATION

After fourteen months of registration, 3,000 persons have registered for the project. Of these, approximately 2,500 (or 83% of those registered) have used the project discount at least once during that time (i.e., "users"). And of all those registered at any one time, only about 50% use the project discount during any particular month. Thus, there are those who have registered but who have not yet used the project discount and there are those who have used the project discount at least once but do not use it every month. Figure 6-1 presents the available monthly data on the total number of persons registered, project to date, and the total number of persons who have used the project at least once, project to date. It also shows the number of persons who used the project at least once during each month.

The total target group population that is eligible for the project is estimated to be 7,500 persons (see Section 3.1). Based on the figures already cited, then, the market penetration (after fourteen months of registration and thirteen months of ridership) is as follows:

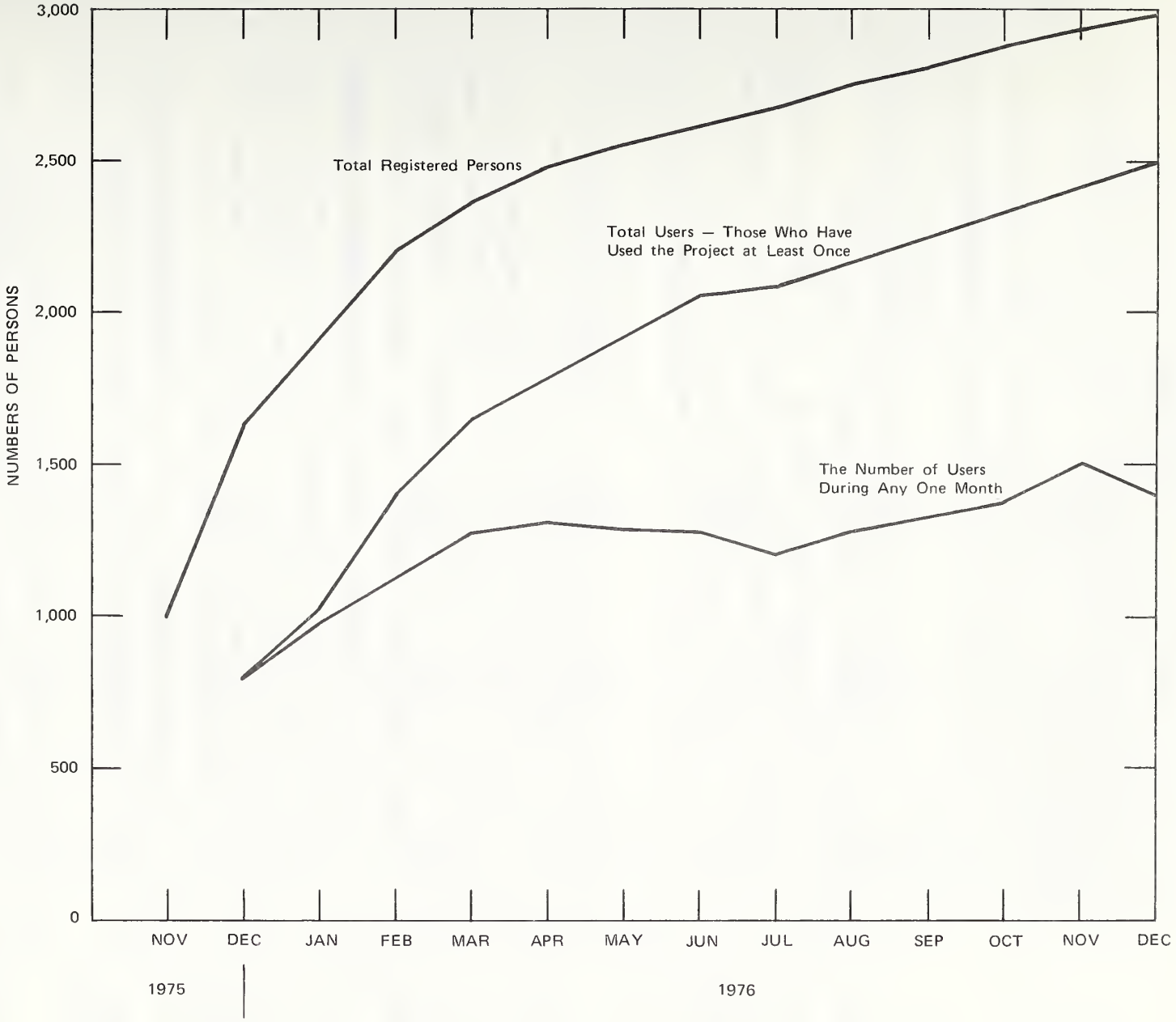

FIGURE 6-1. RTR PROJECT REGISTRANTS AND USERS

1. Two-fifths of the eligible population has registered (7% of total population of Danville)
2. One-third of the eligible population has used the project at least once--"users" (6% of total population of Danville)
3. One-fifth of the eligible population uses the project during any one month (3.5% of total population of Danville)

Interviews at the time of registration indicate that 82% of all registered persons are over 65 years of age; the remaining 18% are handicapped and under 65. In addition, one-fourth of the elderly registered report that they are handicapped. Table 6-1 compares registered persons* and non-registered, eligible persons who were interviewed in the general household survey.

The registered group has a greater fraction of females, has significantly fewer transportation alternatives and has significantly lower household income than those persons who have not registered. Only one-quarter of those registered have independent mobility as drivers compared to three-fifths of those not registered; one-half of those registered depend on others for rides as opposed to one-third of those not registered; and one-sixth of those registered report not driving and not receiving rides from others in contrast to only a few percent of those not registered. In addition, the low income status of those registered is very apparent. Almost twice as many registered persons (73%) as non-registered persons (41%) live in households with less than $5,000 annual income.

Eleven percent of all eligible persons report physical problems in using taxis. Twice as many non-registered persons report problems--13% vs. 6% for those registered. This turns out to be one of the reasons some persons have not signed

*Registered persons and users have approximately the same socio-economic make-up (see Table 6-1).

TABLE 6-1. SOCIO-ECONOMIC CHARACTERISTICS OF ELIGIBLE POPULATION (Danville, Illinois)

	Registered Persons	Registered Users	Eligible, Not Registered	All Eligible[a]
(Sample n) =	(2352)	(2074)	(213)	
	(%)	(%)	(%)	(%)
A. Age and Handicap				
65 & Over, Handicapped	19	18	17	18
65 & Over, Non-Handicapped	63	62	67	65
Under 65, Handicapped	18	20	16	17
	100	100	100	100
B. Sex				
Male	29	N/A	40	36
Female	71		60	64
	100		100	100
C. Alternative Transporation Available				
Not Driver/ Receives No Rides	16	18	3	7
Not Driver/Receives Rides	59	60	36	44
Driver/Auto Avail/Rides	25	22	61	49
	100	100	100	100
D. Difficulty Using Taxis				
Cannot/Great Difficulty	1	1	4	3
Some Difficulty	5	5	9	8
No Difficulty	94	94	87	89
	100	100	100	100
E. Difficulty Using Buses				
Cannot Use	7	7	10	9
Great Difficulty	5	5	4	4
Some Difficulty	12	12	10	11
No Difficulty	76	76	76	76
	100	100	100	100
F. Annual Household Income				
Under $5,000	73	75	41	52
$5,000-$10,000	24	25	42	36
Over $10,000	3		17	12
	100	100	100	100
G. Employment Status				
Unemployed-Looking For Work	1	N/A	1	1
Working Full Time	1		5	4
Working Part Time	6		9	8
Keeping House-Retired/Other	92		85	87
	100		100	100

[a] Figures for All Eligible persons came from combining answers from those registered with answers from a telephone survey of non-registered eligible persons.

up for the project. As expected, a larger fraction of all eligible persons report that they would have problems using buses if they were available--24% of both those registered and not registered. From a transportation planning standpoint, it is important to note that three-quarters of those registered report no problems in using buses and, consequently, may not require premium door-to-door service for a majority of trips. When the questions on taxis and buses are crosstabbed, 20% of those registered report that they would have more difficulty using buses than taxis. This fraction of those registered, then, would directly benefit, in terms of accessibility to transit, by the project taxi mode. It must be remembered, however, that answers to the question about buses are on a hypothetical basis since there is no present bus service in Danville.

The significance of the above cited market penetration is best understood in light of the transportation alternatives available to the total eligible target group and project users as reported in the surveys (see Table 6-1, item C). Almost half of all eligible persons are drivers, have an automobile available and may or may not receive rides; approximately one-seventh of these persons are project users. Some 44% of all eligible persons are not drivers but report that they receive rides from others; almost half of these persons have become users. And finally, some 7% of all eligible persons are not drivers and report that they do not receive rides from others; almost all of these persons (85%) have become project users. Market penetration, as a fraction of eligible persons who become users, is most strongly affected by the availability of alternative transportation.

This view of market penetration is further reinforced by the primary reasons given by those who chose not to register, as presented in Table 6-2 (from the August 1976 household survey):

TABLE 6-2. PRIMARY REASONS FOR NON-REGISTRATION
(n = 213)

		%
1.	Don't need to--have alternative transportation	68
2.	Didn't know about the project	9
3.	Intend to--just haven't gotten around to it	3
4.	Don't need to--don't travel much	3
5.	Can't use taxis for physical reasons	3
6.	Not interested in subsidized program	3
7.	Other reasons	11
		100

At that point in time 33% of all eligible persons who had not signed up for the project reported that they did not know about the project. However, once informed about it, only 9% reported that they might have signed up if they had known about it. The remaining 24% had a different primary reason for not registering.

In all, slightly over two-thirds of those who had not registered by August 1976 (ten months into the project) report that they do not need the project because they have sufficient alternative transportation for their trips.* Three percent report that they do not travel very much and might be presumed to have sufficient transportation for those trips. Another 3% report that they are not interested in being subsidized for their trips. And an additional 3% report not signing up due to physical barriers in using taxis. In summary, approximately three-quarters (77%) of those not registered in August, had specific

* It should be kept in mind, additionally, that Danville has no regular bus system during this time period.

reasons for not registering that primarily had to do with availability of alternative transportation resources for the trips they took. Half of the remaining quarter were persons who report that they are just about to sign up or would have already if they had known about the project; the reasons for the other half are unknown.

In August, some 35% of all eligible persons had registered. Given that 65% were not registered, the survey results indicate that half of all persons eligible at any one time (75% x 65%) would not be interested in registering for the project. This suggests a possible limit to market penetration in terms of registration. By the end of 1976 (during Phase I) 40% of the eligible persons had registered, indicating that perhaps four-fifths of the potential market had been penetrated.

Again, Figure 6-1 pictures the growth curve of registrations. Over half of all persons registered during Phase I were registered by the end of the second month. Over 80% were registered by the end of the sixth month. During the last eight months of Phase I, there has been small but steady growth in registration; however, some of this growth (up to 20%) is due to persons becoming 65 years of age, handicapped or unable to drive for the first time. Projections of the remaining growth trend indicate that the 50% penetration level would be reached at the end of another year.

Figure 6-1 also indicates a relatively stabilized curve in terms of the total number of persons who use the project during any one month. During December 1976 approximately 47% of all registrants used the project that month; this figure has never exceeded 54% or been lower than 46% in any of the previous months.

6.3 PROJECT RIDERSHIP

6.3.1 Volumes

Project trips are reported in two ways. Each charge slip accounts for one project fare trip, i.e., a trip for which one basic fare is charged, regardless of the number of riders. This is a key figure in terms of the project's impact on taxi operations. Project person trips are all trips made by RTR members on project fare trips and are counted by the ID numbers recorded on the charge slips. This is a key figure in terms of the project's impact on the target group. The ratio of the two indicates the amount of group riding. Shared riding is not a factor here, since shared rides are charged separate fares and are counted as separate fare trips.

In the Danville project, the volume of project person trips is approximately the same as for project fare trips--with a factor of 1.05 RTR passengers per project fare trip. There is also an average of .15 non-RTR passengers (friends and relatives who are not eligible target group members) who group-ride with RTR passengers.* This amount of group riding has remained constant throughout the project and is comparable to that found in the on-board taxi survey done before the project began. There has been no significant change in group riding by RTR members as a result of the project--and RTR person trips exceed RTR fare trips by only 5%.

Total number of project fare trips for each month of the project is depicted in Table 6-3 and Figure 6-2. Both unadjusted and seasonally adjusted data are provided. The seasonal adjustment factor used is one derived from total taxi volume for all riders in Danville in previous years. This adjustment factor may or may not accurately re-

* This, in effect, is the cause for some cross-subsidy of non-RTR passengers on RTR fare trips, as discussed in Chapter 7.

TABLE 6-3. TOTAL PROJECT ONE-WAY FARE TRIPS BY MONTH

	Total Project Fare Trips (Not Adjusted) (000)	÷	Seasonal Adjustment Factor[a]	=	Seasonally Adjusted Project Fare Trips (000)
December 75	4.2		1.17		3.6
January 76	5.7		1.16		4.9
February 76	6.5		1.05		6.2
March 76	7.9		1.13		7.0
April 76	8.0		1.05		7.6
May 76	7.1		1.00		7.1
June 76	7.3		.97		7.5
July 76	7.4		.91		8.1
August 76	7.5		.92		8.2
September 76	7.8		.92		8.5
October 76	8.1		.97		8.4
November 76	8.2		1.00		8.2
December 76	8.4		1.17		7.2

[a]This factor is drawn from analyses of total taxi demand, all riders, in previous years before the demonstration.

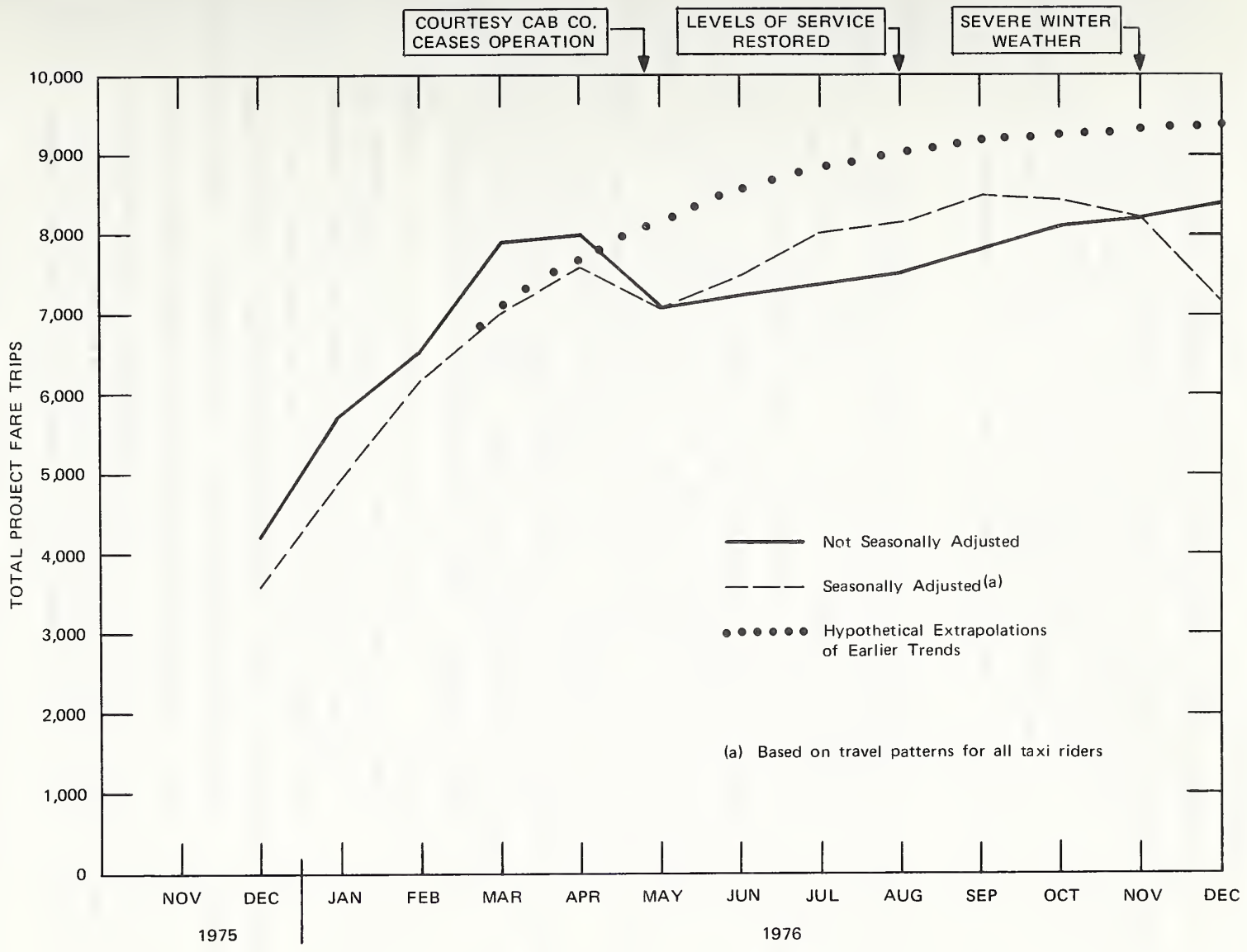

FIGURE 6-2. RTR PROJECT RIDERSHIP TRENDS

present seasonal patterns for subgroups (e.g., target group users). However, it is the best information we have on seasonal patterns at present.

Both the unadjusted and seasonally adjusted curves show steady and dramatic growth of project use during the first five months of the project with some slowing of the growth rate starting in March. During this time there is a similar growth pattern for registered users and the number of persons who use the project in any one month, as already depicted in Figure 6-1.

There is no noticeable effect on project demand due to the decrease in supply of driver hours in January. However, the decrease in project demand in May is attributed to the decrease in level of service following the discontinuation of operations by Courtesy Cab Company during the latter part of April.* During the succeeding three to five months, project demand increased back to and exceeded pre-May levels. The seasonally adjusted curve indicates a more rapid recovery of demand. July through September data suggest that project demand was returning to the growth curve experienced before the drop in level of service during May. This is consistent with the fact that pre-May levels of service were successfully being restored. A hypothetical extension of the seasonally adjusted pre-May demand curve over time is indicated by the dots (...). October through December data can be interpreted in two ways, depending on the curve being analyzed. The unadjusted data suggests that project demand is gradually increasing at a slow but steady rate. In contrast, the seasonally adjusted curve suggests that there was less than the expected wintertime increase in taxi ridership by RTR members. We hypothesize that such a decrease could have been caused by the severe 1976 winter weather. There is no other known

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* A similar decrease was experienced with non-project trips.

exogenous or project related factor to account for such a trend. There were no significant changes in level of service during this time. If the weather hypothesis is correct, then a return of normal weather should cause a return of the seasonally adjusted demand curve to previous levels. Beginning in January 1977, however, there has been a price change which will also be affecting demand. This data will continue to be tracked in seasonally adjusted and unadjusted curves.

For purposes of the present analysis, however, it is reasonable to conclude that project demand, as a result of the user-side subsidy, was stabilizing during the last eight months of Phase I. Whether one looks at the seasonally adjusted or unadjusted curves, one sees that the growth curve of project trip volumes corresponds to the growth curves of the number of registrants and users during any one month (Figure 6-1). As already discussed, the market penetration in terms of registration and adoption of the service which can realistically be expected--given alternatives available to the target group--may have been almost complete (i.e., in excess of 80%) by the end of Phase I. This conclusion is further supported by the fact that market penetration in terms of average trip making also appears to have stabilized at an early period of time.

In summary, then, project demand in Phase I has reached the level of approximately 8,500 passenger trips per month. Two factors exogenous to the project are credited with depressing the overall volume of demand: 1) a temporary, three month decrease in taxi levels of service due to Courtesy Cab Company discontinuing operations and 2) severe winter weather beginning in November, 1976. Short term projections of the demand curves (beyond Phase I) indicate that volumes would remain below 10,000 trips per month.

6.3.2 Frequency

In general, the median and mean use per person per month is moderate, in comparison to the total number of trips (approximately 15) that could be taken within the $20 limit on total fares discounted per month. For those who use the project during any one month (e.g., 1,400 persons in December 1976), mean project use has ranged from 5.6 to 7.1 passenger trips per person per month; the median use for this group is roughly four passenger trips per month. The mean figure is approximately 4 passenger trips per person per month for total users to date, and approximately 3 passenger trips per person per month for all persons registered. The medians in the last two cases are even lower.

Table 6-4 lists the frequency distribution of average person trips per month in the program (through July 1976) for all persons registered and all persons who have used the project at least once. As the table indicates, at least half of all registered persons at that time had averaged less than 1.5 project trips per month; half of all those who have used the project at least once have averaged less than about 2 project trips per month. The distribution is quite skewed and, although we have focused on the mean value, the reader should note that the median is significantly lower.

The frequency of trip making varies by type of user. Table 6-5 breaks down the mean project trips per person per month by socio-economic and demographic sub-groups. The figures are for project users, i.e., those who have used the project at least once.

As can be seen from the table, those who are under 65 and handicapped take almost twice as many trips per person as do elderly persons. Predictably, those who drive take the fewest trips (1.3). Furthermore, there is a significant difference between non-drivers who report receiving rides from others (4.1) and non-drivers who report not receiving such rides (5.9).

TABLE 6-4. FREQUENCY DISTRIBUTION OF PERSON TRIPS (ONE-WAY) PER RTR MEMBER PER MONTH REGISTERED IN THE PROGRAM THROUGH JULY 1976

Trips Per Person Per Month	Percent of All Registered Persons (%)	Percent of All Users (%)
Zero	19	-
.1 - .49	21	26
.5 - 1.49	16	20
1.5 - 2.49	9	11
2.5 - 3.49	5	6
3.5 - 4.49	5	6
4.5 - 5.49	4	5
5.5 -10.49	12	15
10.5 -15.49	6	8
15.5 -20.49	2	2
20.5+	1	1
	100	100
Range	0 to 30	.1 to 30
Median	1.1	1.9
Mean	3.1	3.8
$20 Limit ≃	15	15

TABLE 6-5. MEAN PROJECT USE BY TYPE OF USER, PROJECT-TO-DATE THROUGH JULY 1976

	Fraction of Total Users	Trips Per User Month	
Age/Handicap			
65 & Over, Handicapped	.18	3.7	
65 & Over, Not Handicapped	.62	3.1	
Under 65, Handicapped	.20	6.1	
Alternative Transportation Available			
Not Driver/Receive No Rides	.18	5.9	
Not Driver/Receives Rides	.60	4.1	
Driver/Auto Avail/Rides	.22	1.3	(lowest)
Ability to Use Taxi vs Bus			
No Difficulty Either Mode	.75	3.8	
Taxi Less Difficult Than Bus	.21	3.9	
Others	.04	3.7	
Transit Handicapped & Self Perception as Handicapped			
Problems W/Bus & "Handicapped"	.18	4.2	
Problems W/Bus & "Not Handicapped"	.07	2.9	
No Problems W/Bus & "Handicapped"	.20	5.5	
No Problems W/Bus & "Not Handicapped"	.55	3.2	
Type of Primary Handicap			
Emotionally Disturbed	.08	6.4	(highest)
Walking Problems/Aids	.07	4.3	
Arthritis	.05	4.0	
Cardiac Ills	.03	4.6	
Mental Retardation	.03	3.4	
Blindness	.02	6.3	
Household Income Per Person			
Less Than $2,500 Per Person	.28	4.1	
Less Than $5,000 Per Person	.62	3.8	
$5,000 to $10,000 Per Person	.09	3.3	
Over $10,000 Per Person	.01	3.6	

Those who report more difficulties using buses vs. taxis do not take a significantly different number of trips than others. However, difficulties with buses, coupled with self-perception as "handicapped", does seem to make a difference. Those who see themselves as handicapped and report problems using buses take an average of 4.2 project trips per person per month while those who have problems with buses but who do not see themselves as handicapped, take 2.9 trips per person per month.

Handicapped persons who qualify as emotionally disturbed (most under 65) have the highest usage rate of all subgroups, i.e., 6.4 project trips per person per month. Blind persons also have a similar usage rate - 6.3 project trips per person per month. Most other types of handicapped persons fall in the range of 3 to 4.5 trips per person per month.

In terms of household size and annual income, those who live in households with less than $5,000 per household member do take more trips than those with more income per person, but the difference is not large.

In summary, there is no subgroup that takes more than 7 project trips per person per month, which is considerably less than the allowable monthly limit.

6.3.3 Time of Day, Days of Week and Period of Month

Table 6-6 and Figure 6-3 present the frequency of distribution of project trips by time of day. The data, in this case, are all trips taken in January, February, and March 1976. Morning and afternoon periods experience equal volumes with the largest single demand hour being the noon hour. Approximately 20% of all project trips fall outside of the daytime hours of 7 AM to 6 PM.

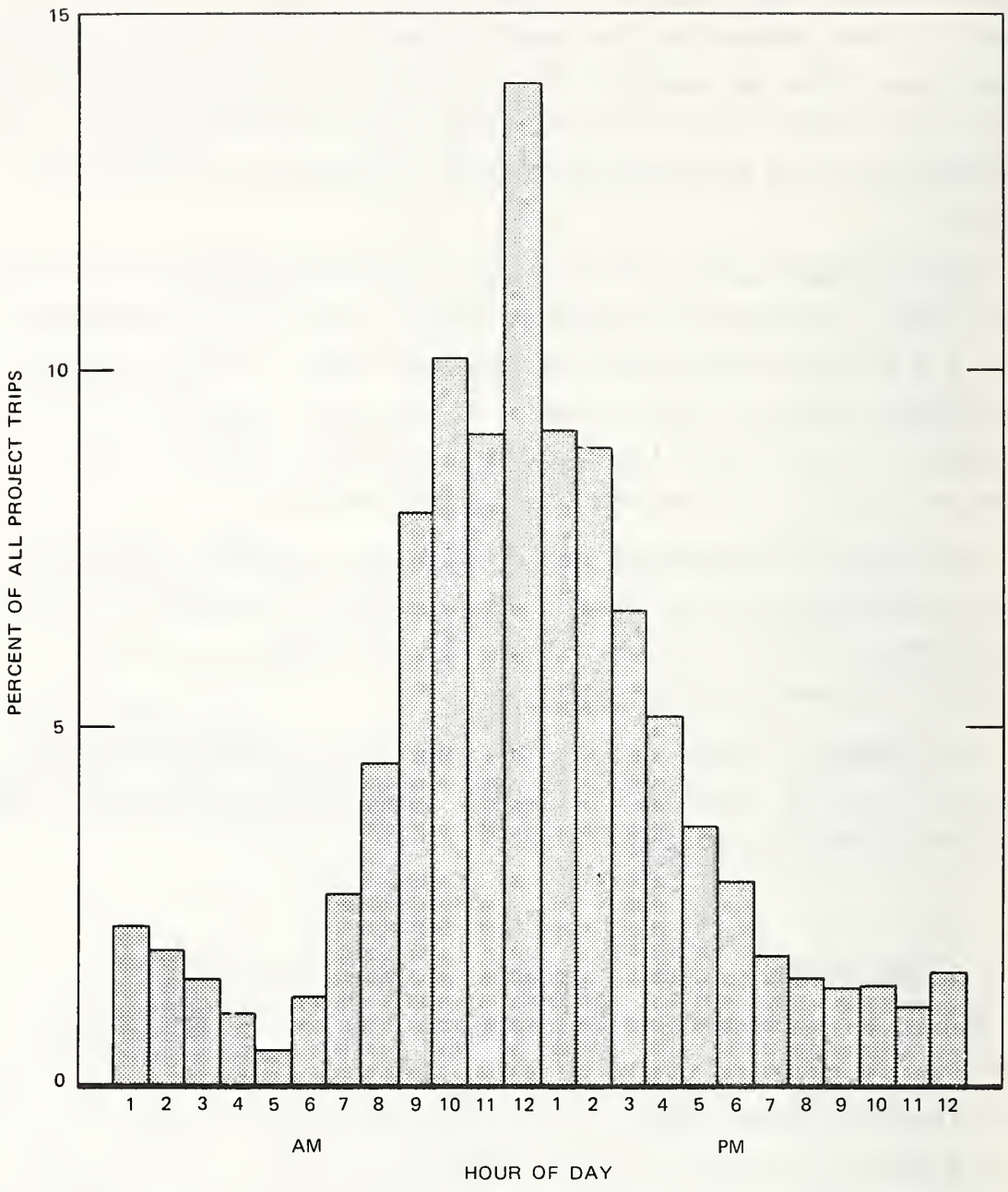

FIGURE 6-3. RTR PROJECT TRIPS BY HOUR OF DAY
(January Through March, 1976)

TABLE 6-6. PROJECT TRIPS BY TIME OF DAY[a]

Time Period	Percent of Total (%)
1 AM - 7 AM (6 hrs)	8
7 AM - 12 PM (5 hrs)	34
Noon hour (1 hr)	14
1 PM - 6 PM (5 hrs)	33
6 PM - 1 AM (7 hrs)	11
	100

[a]January through March 1976.

Table 6-7 presents the frequency distribution of project trips by day of the week. There is not a great deal of variation between weekdays; weekend project ridership levels are approximately two-thirds that of weekdays. The distribution of trips by hour of day and day of week indicates that approximately 45% of all project trips take place outside of the normal agency sponsored paratransit service hours of 9 AM to 5 PM Monday through Friday.

TABLE 6-7. PROJECT TRIPS BY DAY OF WEEK[a]

Day of Week	Percent of Total (%)
Monday	15
Tuesday	17
Wednesday	15
Thursday	14
Friday	17
Saturday	12
Sunday	9
	100

[a] These figures are based on the thirteen weeks from January 1 through March 31, 1976: each day of the week is represented equally during this period of time.

Table 6-8 provides the distribution of project trips over weeks of the month. The greatest use of the project is at the beginning of the month, with a continual decline until the last few days when volumes increase again.

TABLE 6-8. PROJECT TRIPS BY WEEK OF THE MONTH[a]

	Percent of Total (%)
First week (1st through 7th)	29
Second week (8th through 14th)	23
Third week (15th through 21st)	21
Fourth week (22nd through 28th)	18
-- (29th through 31st)	9
	100

[a]May and November, 1976.

6.3.4 Project Trips by Zone

Table 6-9 reports the frequency distribution of project trips by zone and amount of fare charged.

TABLE 6-9. PROJECT TRIPS BY ZONES

Regular Fare	Zone	Percent of Total (%)
.75 - 1.10	1	7
1.25 - 1.40	2	45
1.50 - 1.70	3	45
1.75+	4	3
		100

6.3.5 Project Trips by Carrier

At the time when all three cab companies were operating, Red Top Cab Company carried approximately 69% of all project passengers, Courtesy Cab Company carried 30.5% of all project passengers, and Brown Cab Company carried .5% of the total. These proportions are roughly the same as for all taxi riders, with Courtesy proportionately carrying slightly more project

passengers. Since Courtesy Cab Company discontinued operations, Red Top is now carrying 97% of all project passengers and Brown is carrying 3%.

6.3.6 Project Use Over the $20 Limit

In discussing the frequency distribution of the average of person trips per person per month, Table 6-3 reports that some 3% of users have consistently taken more than 15 project trips per month for all months that they have been in the project. This is due to the fact that 35 persons have consistently taken discounted rides on total regular fares of from $20 to $25 per month and that another 30 persons have consistently taken discounted regular fares in excess of $25 per month. The overuse (i.e., regular fares over $20 per month that are discounted) by these persons accounts for approximately 5% of all fares discounted. Overuse of the project is primarily by those under 65--who account for 38 of the 65 overusers. Of the 38, 17 persons are eligible for the project due to emotional disability and account for a great deal of the overuse. The response of the project staff is discussed in Section 8.8.

6.3.7 Project Use by Trip Purpose

Tabel 6-10 presents the available on-board survey data concerning trip purposes for RTR riders.

TABLE 6-10.

PROJECT TRIPS BY PURPOSE
FALL 1976 ON-BOARD SURVEY (7AM-7PM)
(n = 232)

	Percent of Total (%)
Shopping	33
Personal Business	21
Visit/Social	17
Medical/Dental	15
Work	7
Church	3
Other	4
Total	100

7. RTR PROJECT PRODUCTIVITY AND ECONOMICS

7.1 INTRODUCTION

Through December, 1976, the Danville demonstration project has spent approximately $164,500. This has been made up of a) front-end planning and implementation expenses, b) monthly administrative costs (aside from any expenses incurred due to the federal evaluation), c) user-side subsidy costs for the actual rides and d) staff and survey costs in connection with the federal evaluation. The front-end and monthly operating administrative costs have been estimated separately from the federal evaluation expenses to present a more accurate picture of project costs from a local perspective; some money for local evaluation efforts has been included in the former. The breakdown of the total amount is as follows:

TABLE 7-1. RTR EXPENDITURES BY CATEGORY
(August 1975 - December 1976)

A.	Front-End Planning and Implementation	$14,000
B.	Monthly Operating Administrative Costs (13 months)	19,500
C.	User-Side Subsidy (94,100 Fare Trips)	96,000
	SUBTOTAL	129,500
D.	Federal Evaluation Surveys and Staff Time	35,000
	TOTAL	$164,500

Figures A, B and C are further explained below and are converted to administrative and subsidy costs per passenger served. This latter ratio provides one measure of productivity for the project. This figure includes both RTR members and non-RTR passengers who group ride with RTR members--for these passengers also receive some cross-subsidy on the

basic fare, which is subsidized whenever an RTR member is riding. The philosophical issues and practical aspects involved in the process of this analysis are considered below.

In addition, an analysis of taxicab operations is provided to further explain project productivity. In the process of this latter analysis, an operating loss on the part of the largest taxi operation is added to the above cited costs to present a total real cost associated with project trips. This combined figure is what the cost of project trips would have been if fares did cover all operating costs (which is the assumption in a user-side subsidy system).

7.2 PROJECT ADMINISTRATIVE COSTS

Here, we are interested in estimating the administrative costs to operate the program outside of costs incurred due to UMTA evaluation and data collection efforts. There are two types of administrative costs: 1) front-end design and implementation costs, and 2) monthly monitoring costs.

The front-end costs are estimated to be approximately $14,000 total. Table 7-2 itemizes the costs incurred in such a project.

TABLE 7-2. PROJECT FRONT-END COSTS

System Design and Coordination (1.5 person-months, overhead and consultant services)	$5,500
Equipment for Imprinting Cards	3,000
Plastic ID Cards (3,000 @ $115/thousand)	350
Other Supplies	150
Initial Registration Effort (200 hrs @ $5)	1,000
Advertising	1,500
Computer Program Design	2,500
TOTAL	$14,000

Such front-end costs can be averaged over all project trips taken during a program. Assuming an average of 8,500 passenger trips per month for a 24 month period, or approximately 200,000 passenger trips total, the front-end costs would be approximately $.07 per passenger trip. This unit cost changes, of course, depending on project demand (which is related to eligibility requirements, discount rate, and other levels of service) and length of time for the program. In this case, we have used an arbitrary program length of two years and the "stabilized" project demand at the end of Phase I.

Monthly administrative costs are estimated as $1,500 per month and are itemized in Table 7-3. Again, these costs are estimated on the basis of what it would cost to operate such a project, outside of costs associated with data collection for the UMTA evaluation; some costs for local evaluation are included, however. The salary costs have been corroborated by

TABLE 7-3. MONTHLY PROJECT ADMINISTRATIVE COSTS

Salaries		
10% Project Manager (@ $18,000/yr)	$150	
20% Assistant Manager (@ $12,000/yr)	200	
25% Secretarial/Clerical (@ $6,000/yr)	125	$475
Benefits		
@ 15%		75
Overhead		
Office and Phone	100	
Charge Slips (10,000 @ $15/thousand)	150	
Data Processing (keypunch & reports)	500	
Advertising and Outreach	100	
Local Evaluation Surveys	100	950
Total		$1,500

cost figures for a similar monitoring task in the case of the El Cajon Express (El Cajon, California).[1]

Based on an assumed level of 8,500 passenger trips per month, monthly administrative costs amount to another $0.18 per passenger ride.

The two types of administrative costs together, then, add approximately $0.25 cost per passenger trip.

7.3 PROJECT TRIP COSTS

7.3.1 Costs per Passenger Trip

The total non-discounted fares charged on RTR project fare trips has averaged $1.39 per fare trip. The total subsidy amount paid by the project has averaged $1.02 per fare trip; and the total RTR and non-RTR user share has been $0.37 per fare trip. These fare trips have carried an average of 1.05 RTR members and .15 non-RTR members (or 1.2 persons total).* There has been no significant change in these figures from month to month, (as discussed in Section 6.3.1).

The resulting fare per passenger trip (i.e., 1.2 passengers per fare trip) is $1.16 total fare, made up of $0.85 project subsidy (73% discount) and $0.31 user payment. There is, in effect, some subsidy of non-RTR members who group ride with RTR members. This has resulted from the decision to discount the total basic zone charge any time that an RTR member is riding. Thus, the need for the basic vehicle trip is attributed

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[1] Small City Transit: El Cajon, California, City-Wide Shared Ride Taxi Service; U.S. Department of Transportation, UMTA, May, 1976, p. 8.

* In those cases where RTR members and non-RTR members are group riding, the total basic zone fare is discounted; the non-RTR member(s) are charged the full extra $.15 for extra passengers--at no discount.

to the RTR member, and additional non-RTR riders are not charged any of the basic fare at regular rates, but are charged as additional passengers at the regular rate ($0.15). This was also found to be the only operationally feasible policy to follow in the case of the existing fare structure in Danville.

Given that 12.5% of all passengers benefited are non-RTR members (.15 ÷ 1.2), that proportion of total subsidy costs benefited persons other than those registered. Therefore, the true cost per RTR passenger trip is 12.5% higher than the costs cited here, if 1) only RTR passenger trips are to be accounted as a benefit and 2) there is no operationally feasible way of eliminating the subsidy to non-RTR members who group-ride with RTR members. However, for the purposes of presenting the overall project and taxi productivity, we have decided to include non-RTR passengers who group-ride with RTR members. This analysis assumes that there is some additional benefit realized by the project in subsidizing non-RTR passengers who group-ride with RTR passengers or that it is possible to eliminate such subsidy if there is no benefit to the project.*

Table 7-4 indicates the effect of adding in the two types of project administrative costs. Again, the administrative costs are based on projected average ridership of 8,500 passenger trips per month, and front-end costs are averaged over 24 months.

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* Thus, three approaches are possible here: 1) depending on feasibility, eliminate subsidy benefits to non-RTR passengers who group-ride with RTR members; 2) count such non-RTR member passenger trips as target group trips to be benefited by such a project (e.g., as escort trips for handicapped and elderly persons) or 3) accept the extra cost of carrying non-RTR members and assume there are no benefits in carrying non-RTR members (i.e., add 12.5% to the figures cited here).

TABLE 7-4. PROJECT COSTS PER PASSENGER TRIP (Actual Fares and Costs Incurred by Users and Project)

	Cost per One-Way Trip
Total Fare per Passenger Trip	$1.16
Administrative Monthly Operating Cost	.18
TOTAL OPERATING COST	$1.34
Administrative Front-End Cost	.07
TOTAL COSTS	$1.41

The sources of payment are cited in Table 7-5.

TABLE 7-5. SOURCE OF PAYMENTS PER PASSENGER TRIP

$1.41	TOTAL COSTS
- .31	User Payment
$1.10	Total Project Subsidy
$.85	User-side Subsidy
.18	Monthly Administrative Subsidy
.07	Front-end Administrative Subsidy

Note that the $.18 administrative cost per passenger trip amounts to 17% of the total operating cost for the project, which is $1.03 per passenger trip. Total project payments and total trip costs include an additional $.07 if one adds in the project front-end capital costs.

A recent financial report for Red Top Cab Company indicates that during the fiscal year of July 1975 through June 1976, the company (which includes an Avis franchise and a school district bus contract in addition to taxi service) had a net operating loss of approximately $13,000 to $14,000. Examination

of this report suggests that the taxicab operations, alone, may have incurred an operating loss of $30,000 to $40,000. This loss is relative to a total taxi revenue of $400,000. The larger loss figure of $40,000 represents a requirement for an additional 10% increase in fares to cover costs without a profit margin. This picture of operating losses was confirmed by the owner of Courtesy Cab Company before he discontinued operations. Additionally, most cost items (i.e., fuel and vehicle parts) have increased dramatically since the last fare increase and institution of shared riding in January, 1974.

However, data for taxi revenue and some items of cost for Red Top (accounting for approximately 90% of all operating expenses) have been analyzed on a month-to-month basis for the last 20 months and indicate that the net monthly operating income has been improving over that period. This trend is further supported by the fact that the financial statement for the previous fiscal years (1974-75) shows a larger operating loss, by a factor of two, than the last fiscal year. One interpretation of the financial reports would be that competition between Red Top and Courtesy Cab Companies (the latter entered the market in January 1974) led to net operating losses for both cab companies. Subsequently, during the last twenty months there has been a gradual increase of operating income for Red Top, which can be attributed to increasing taxi volumes in general (including RTR Project trips during the last nine months) and an end to the competition with Courtesy in April. Thus, it is not completely clear that operating income would not eventually become positive on a yearly basis. Of course, there is no way of predicting this trend, nor what effect an increase in fares (to offset present losses) would have on demand or entry of other taxi service suppliers.

In any case, on the basis of net operating losses over a two year period, Red Top Cab Company has just recently requested a fare increase of $.25 for each fare zone. This would have the effect of raising the average total fare of $1.16 for RTR project passenger trips by $.21 ($.25 ÷ 1.2) to $1.37 for an 18% increase. If the Red Top financial statement is credible, as it appears to be, this fare increase would then begin to provide a normal profit return on investment, if the increase does not alter demand. The net effect on total operating costs for RTR project trips would be to increase them from $1.34 to $1.55 per passenger trip. These figures are provided to assist the reader in understanding what the real operating costs of project trips are, regardless of the source of payment (i.e., government subsidy, user fare or cab company loss). The resulting figures (see Table 7-6) still remain low in comparison to most other similar transit services.[2]

TABLE 7-6. TOTAL REAL COSTS PER PASSENGER TRIP (Adjusted to Account for Private Supplier Operating Loss)

	Total Trip Cost
Fares (including proposed increase)	$1.37
Administrative Monthly Cost	.18
TOTAL OPERATING COST	1.55
Administrative Front-End Costs (averaged over 21 months)	.07
TOTAL COSTS	$1.62

One other minor modification to the figures given in Table 7-6 is in order. There is some tipping cost associated

[2]Small City Transit Characteristics: An Overview, Kendall, Misner, Stearns & Waksman, U.S. Department of Transportation, UMTA, May 1976.

with the use of taxi service; this aspect of the service was not changed or discounted by the project. In Danville, tipping on the part of the project users adds less than $.05 cost per passenger trip. This, of course, leads to less return for drivers than is the norm in the industry.

7.3.2 Costs Per Passenger Mile

The average length of project trips measured in the August 1976 on-board survey was approximately 2 miles from origin to destination. The costs per passenger mile would then be half of those cited for passenger trips.

7.3.3 Subsidy Costs by Type of User

Table 7-7 accounts for all subsidy costs by twelve subgroups indicating the income level of the project user, whether or not the user has problems in using conventional transit and to which age and handicap subgroup the user belongs. "Poor & Low Income" refers to all persons who live in households with less than $5,000 annual income per household member; "Middle & High Income" refers to those who live in households with greater than $5,000 per household member. "Transit Handicap" refers to those who report at least some difficulty in using conventional buses. The "Age & Handicap" categories are those under 65, those 65 and over who identify themselves as handicapped, and those 65 and over who identify themselves as non-handicapped.

This table allows the decision-maker to understand what proportion of subsidy costs can be attributed to different segments of the user population. The numbers in parentheses give the percent of all registered persons who fall into each sub-category. For example, all persons under 65 account for approximately 18% of all registered persons and almost 30% of all subsidy costs. Those who are poor or have low incomes account

TABLE 7-7. DISTRIBUTION OF PROJECT SUBSIDY COSTS BY TYPE OF USER: INCOME/TRANSIT HANDICAP/AGE AND HANDICAP CATEGORIES
Through July 1976

Income by Transit Handicap by Age & Handicap Categories	Percent of Subsidy		
Poor & Low Income (89.3)[a]	90.5%		
Problems Using Buses (21.5)		22.5%	
Subgroup 1: 65 & over, Handicapped (9.5)			7.7%
Subgroup 2: 65 & over, Not Handic. (6.0)			5.5
Subgroup 3: Under 65, Handicapped (6.0)			9.3
No Problems Using Buses (67.8)		68.0	
Subgroup 1: 65 & over, Handicapped (7.4)			7.0
Subgroup 2: 65 & over, Not Handic. (50.0)			44.0
Subgroup 3: Under 65, Handicapped (10.4)			17.0
Middle & High Income (10.7)	9.5		
Problems Using Buses (2.3)		2.2	
Subgroup 1: 65 & over, Handicapped (1.3)			0.9
Subgroup 2: 65 & over, Not Handic. (0.5)			0.4
Subgroup 3: Under 65, Handicapped (0.5)			0.9
No Problems Using Buses (8.4)		7.3	
Subgroup 1: 65 & over, Handicapped (0.7)			1.0
Subgroup 2: 65 & over, Not Handic. (6.7)			3.8
Subgroup 3: Under 65, Handicapped (1.0)			2.5
	100.0	100.0	100.0

Transit Handicap Categories Alone	
Problems Using Buses (23.8)	24.7%
No Problems Using Buses (76.2)	75.3
	100.0

Age & Handicap Categories Alone	
Subgroup 1: 65 & over, Handicapped (18.9)	16.6%
Subgroup 2: 65 & over, Not Handic. (63.2)	53.7
Subgroup 3: Under 65, Handicapped (17.9)	29.7
	100.0

[a] Numbers in parentheses indicate the percent of all registered.

for 90.5% of all subsidy costs. Those who are poor or low income and have problems using buses account for 22.5% of all subsidy costs. A very large proportion of subsidy (44%) is consumed by low income persons 65 and over, who report no handicaps and no problems using buses. And in fact, 75.3% of all subsidy was consumed by all persons who reported having no problems using buses.

Of course, in the case of Danville at present, no conventional transit system exists. If the project is successfully expanded into a multi-modal test of user-side subsidy, an opportunity may occur to test consumer choices on the basis of price-discipline separating different modes on the basis of cost and level of service provided.

7.4 TAXI OPERATION COSTS AND PRODUCTIVITIES

The cost figures for RTR passenger trips are quite low in comparison to most publicly operated dial-a-ride systems and even most taxicab operations. One reason is the administrative efficiency of the user-side subsidy mechanism. And the other reason is the efficiency and low cost of the Danville taxicab operations. Table 7-8, on the next page, presents operating data for Red Top Cab Company for all taxi operations during the '75-'76 fiscal year. The total operating costs had to be estimated out of total expenses covering both taxi and bus contract operations.*

As Table 7-8 indicates, the total operating costs per passenger trip are $1.38 while the vehicle productivity is approximately 4.5 passengers per driver hour. These particular cost and productivity figures can be attributed in large part to:

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* It has been assumed that the School District Bus Contract nets Red Top a 15% operating profit; remaining expenses are charged to taxi operations.

TABLE 7-8. RED TOP CAB COMPANY (ALL TAXI SERVICE) REVENUES, COSTS AND PRODUCTIVITY, FISCAL YEAR JULY '75 - JUNE ' 76

Operating Cost per Month	$37,500[a]
Driver/Vehicle Revenue Hours per Month	6,092
Vehicle Miles per Month	92,917
Fare Trips per Month	22,718
Passenger Trips per Month	27,262[b]
Passengers per Fare Trip	1.2[b]
Operating Cost per Vehicle Hour	$6.16
Operating Cost per Vehicle Mile	.40
Operating Cost per Fare Trip	1.65
Operating Cost per Passenger Trip (one-way)	1.38
Passengers per Vehicle Hour	4.48
Passengers per Vehicle Mile	.29
Guaranteed Minimum Driver Wage per Hour	$1.90
Average Commission per Driver Hour	2.23
Average Cost per Driver Hour due to Minimum Wage	.07[c]
Average Total Cost per Driver Hour to the Operator	2.30
Average Tipping per Driver Hour	.20
Driver Revenue per Driver Hour	2.50
Operating Revenue per Month	33,800[a]

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[a]Note that these revenue and cost figures add up to a loss of $44,000 for the fiscal year.

[b]Passenger trips are estimated on the basis of survey data indicating 1.2 passengers per fare trip.

[c]These are labor costs incurred in those cases where a driver's commission does not meet the minimum wage of $1.90 an hour.

1. Low labor costs
2. Flexible labor rules
3. Efficient dispatching system
4. Use of standard five-passenger vehicles
5. Low overhead costs
6. Shared Riding

The 4.5 passengers per driver/vehicle hour figure deserves special attention. This figure is "low" in comparison to goals set and oftentimes reached by publicly operated dial-a-ride systems. However, it should be noted that in a demand-actuated system, increased productivity of this sort over a certain limit can have an inverse relationship to levels of service in terms of pick-up time and travel time. This is in direct contrast to a fixed route system that may increase productivity while increasing levels of service or not affecting levels of service at all.

Furthermore, labor costs in a privately operated taxi system are often on the basis of commission (as in Danville). In this case there is not as much incentive, as there is in a salaried labor situation, for the operator to maximize productivity at the expense of levels of service--which would decrease demand. The driver is actually the one who has the incentive for increased productivity, for his commission per hour increases with the more trips served. Thus, the operator and drivers, together, create a supply situation such that two conditions exist: 1) sufficient levels of service are maintained to attract customers and 2) an operating environment exists in which the drivers earn enough to make it worth their while.

Of course, it is to the operator's advantage to maximize productivity (saving in vehicle costs, etc.) but only up to that point where demand is adversely affected by lower levels of service. An operator of a demand-actuated system with salaried drivers, on the other hand, may find himself in the

situation where he must increase productivity to cover labor costs, only to find himself without a market for the level of service that results. It may be that the 4.5 passengers per vehicle hour is a desirable productivity level for such an operation as the one in Danville, given the dispatching technology and shared riding that exists there.* Time series data on monthly productivity, as expressed in calls for service per driver hour, are provided in Table 5-1.

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* See discussion of "Level of Service as a Function of Demand and Supply" in Section 5.5.

8. PROJECT IMPACTS

8.1 INTRODUCTION

This chapter discusses impacts of the project on the following groups in Danville: 1) Target Group Users and Non-Users, 2) Relatives and Friends, 3) Social Service Agencies, 4) Taxi Operators and Drivers, 5) Non-Target Group Taxi Riders, 6) General Public and 7) Governmental Agencies.

8.2 TARGET GROUP

As previously stated in Chapter 6,

1. 40% of the eligible population has registered;
2. 33% of the eligible population has used the project at least once;
3. 20% of the eligible population use the project during any one month.

Approximately 3% of all eligible persons have indicated that they either have great difficulty in using taxi service or find it impossible to use standard passenger vehicles. Another 8% report having some difficulty in using taxis. The main difficulties reported are with accessibility to the vehicle via the normal passenger door which provides a barrier for those in wheelchairs and/or those who have difficulty stooping and bending. Otherwise, the door-to-door feature and relative comfort, quiet, and stability of cab riding provides a high level of service to most transit handicapped persons. Twenty percent of those registered reported that they have less difficulty using taxis than conventional buses. Less than 1% indicated that buses were easier to use.

8.2.1 Users

In a summer phone survey, those who had signed up for the program reported a high degree of satisfaction with the project--

only 2% rated it as "fair" or "poor"; 57% rated the program as "excellent" and 41% rated it as "good". Over 9% reported no problems with registering for the project, using the ID card, signing the charge slips, or with the cost of project trips. Four percent reported problems with the monthly limit; 7% reported problems with driver courtesy and 14% reported problems with the promptness of taxi service. With regard to the latter, however, those who used taxi service before the project began were asked to rate the present taxi service in comparison to before. While 7% rated it as "worse", 55% rated it as the "same" and 40% rated it as "better".

As already indicated in Chapter 6, some 3% of all users consistently use the project beyond the monthly limit on individual use. In addition, there are those persons who attend agency programs on a daily or almost daily basis who cannot depend on the project for all such transportation needs. The monthly limit, however, has not affected most RTR members as indicated in Table 6-4.

In the same survey, users were asked if the project had affected them in any of the following ways:

TABLE 8-1. USER PERCEPTIONS OF IMPACT,
(Summer Phone Survey)

(n = 203)

		Yes	No
1.	Take more trips now?	41%	59%
2.	Less dependent on others for ride?	58	42
3.	Drive less often now?	7	93
4.	Able to take more trips during a particular part of the day?	30	70
	a. Morning (13%) b. Afternoon (14%) c. Night (3%)		
5.	Able to take trips which couldn't be taken before?	43	57

The above figures, of course, are generalized perceptions on the part of users based on their actual experiences with the project. While a significant proportion of users report being helped in certain ways, the magnitude of the impact is limited to the actual trips taken.

Project use by those registered amounts to less than 10% of all their daily tripmaking. The mean use, project-to-date, is 0.1 project trips per person per day. This compares to approximately 1.0 total vehicle trips per day, or 1.2 total trips, including walking trips, as measured in the certification interviews. The picture does not change significantly if one looks only at users, who average .13 project trips per person per day. Furthermore, no significant growth occurred in project use for any subgroup.

Project trips can basically be used in one of three ways:

1. As a wholly new trip, adding to total trip making
2. As a mode shift for an old trip previously made by a mode other than taxi
3. As a payment shift for an old trip previously made by taxi.

A fourth additional impact could be subsitution of a better destination or time for an old trip previously made by either taxi or another mode. Since all project trips amount to 0.1 trips per registered person per day, the amount of each of the above changes has to be some subset of that total. This then defines the overall maximum impact to date.

At this time, it is difficult to determine (in a statistically reliable manner) the exact distribution of project trips into the above cited categories. It was initially planned to perform "before" measurements of trip making via certification interviews, and "after" measurements during the project. The specific measures were to be frequency of trips per day per person by purpose and by mode. At the time of the initial plan, there was some possibility that project impacts would not

be large enough to accurately measure changes with statistical significance without very large samples and many days of trip making surveyed. One difficulty is the statistical variances (i.e., exceeding the mean) in trip-making by the target group.

Subsequent to the initial measurement of "before" data, four factors have worked against the analysis:

1. some possible bias in the "before" data due to its being taken at the time of certification,
2. only one day of trip making adequately surveyed in the "before" data,
3. even higher than expected variances (i.e., larger than the means),
4. less than 10% of all daily trips of the registered target group persons are project trips.

The problems of such measurements are being investigated with methodology being designed and priced for future applications.[1]

One of the alternative methods tested was the use of a fall 1976 on-board survey (Appendix K). This focused upon project trips being made by RTR members and how they would have been taken before the project. Table 8-2 presents a summary of the data from that survey.

TABLE 8-2. IMPACT OF PROJECT ON TRIPS BEING TAKEN, FALL 1976 ON-BOARD SURVEY

(n = 225)

	%
Would not have taken trip	15
Would have taken trip by:	
Taxi at full fare	50
Walk	15
Driven by relatives	10
Driven by friend	6
Other	3
Driving	1
	100

[1] D. Koffman and P. FitzGerald, "Transit Dependent Mobility Measurement"--a technical memorandum prepared for U.S. DOT/TSC, September 1976.

Approximately 15% of all project trips are new trips, 35% would have been taken by another mode, and 50% are trips that would have been taken by taxi at full fares. Since project trips are less than 10% of all daily trip making on the part of users, new trips due to the project amount to 1.5% of all trip making. The mode shift was primarily from walking and being driven by relatives and friends; little impact was made on driving by the target group.

A subset of the sample (n = 168) was asked if they thought that they would have taken "this type of trip" less often or at the same frequency before the project. About half thought that they were now taking this type of trip more often. RTR riders were also asked if they were taking this trip at the same time and to the same destination as they would have before the project. Eighty percent report taking the trip at the same time; 10% report taking the trip at a better, more convenient time, under the project; 5% report a different time, but it wouldn't have made any difference; and 5% didn't know. Less than 2% suggested that they were going to a different location than they would have before the project; 93% report the same destination and the rest did not know.

These data from the fall on-board survey agree with the data from the summer phone survey of users reported in Table 8-1. In the phone survey, those who reported being able to take new trips with the help of the project reported frequency of purposes for the new trips in the following order:

TABLE 8-3. PURPOSES OF NEW TRIPS
SUMMER PHONE SURVEY

(n = 203)

Shopping	38%	Church	5%
Visit	18	Social Activities	5
Medical	11	Emergencies	4
Personal Business	8	Other	11

Similar data comes from the fall 1976 on-board survey. In that survey, the purpose of each trip was recorded along with whether or not the trip would have been taken before the project. Of the 37 trips that would not have been taken or might not have been taken before the project began, approximately 50% were shopping trips, 20% were visiting trips, 15% were for personal business and 10% were for medical trips. All other purposes accounted for only 5%, mostly for church. Thus, shopping, personal business, visiting and medical trips are the types of trips that have been increased the most and in that order.

8.2.2 Non-Users

As already indicated some 7% of those eligible have signed up for the project but have never used the project discount. These persons report that they have registered for security reasons so that they will have a low cost alternative in the event that their other transportation alternatives fail them. Another 60% have not registered and presumably have not benefited as target group persons.

A majority of all eligible persons (users and non-users) report that they have not seen or heard an advertisement for the project. It is interesting to note that more non-registered persons have been exposed to each type of advertisement than registered persons:

TABLE 8-4. EXPOSURE TO ADVERTISING

Those who report exposure to:	Registered (%)	Non-Registered (%)
Newspaper Ads	47	55
Radio Ads	25	30
Poster	7	12
(n =)	(246)	(213)

Almost a quarter of all persons 65 years of age and older reported not being aware of the project, nine months after it had begun. These persons make up roughly one-third of those eligible who have not registered. However, only 9% of those eligible who are not registered report "non-awareness of the project" as the primary reason for not having signed up. The remaining 24% reported other primary reasons.

Of the 213 eligible persons who were not registered and who were interviewed in the August 1976 survey, 16% reported that they had used a taxi since the previous December, when the project began. These persons were further asked how often they took taxi trips and, in particular, how many taxi trips they took during the previous month of July. The responses have been expanded to the universe of all such persons (comprised of approximately 5,000 persons at that time). The resulting estimate of taxi usage by eligible persons, not registered, is 1,100 person trips during July, 1976 (not seasonally adjusted), or 3.4% of all taxi trips during that month. This also amounts to approximately 14% of all RTR project person trips during that month (i.e., 7,735).

Furthermore, 62% of these taxi trips were taken by persons who reported that they did not know about the project discount and that they would sign up for the project, now that they knew about it; another 2% of these trips were taken by persons who said that they intend to sign up, but haven't gotten around to it yet. Thirty-six percent of these trips were taken by persons who report other reasons for not signing up. This suggests that almost two-thirds of these trips are potential RTR trips if all persons knew about the project. Seasonally adjusted, this would amount to another 800 project fare trips per month or another 10% on top of the present level of 8,000 to 9,000 project fare trips.

8.3 RELATIVES AND FRIENDS

As indicated in Chapter 2, there are possible "ripple" effects of the project on the target group's use of relatives and friends for transportation. There has been some shift of trips from "being driven by relatives and friends" to taxi--approximately 15% of all project trips. And since project trips amount to approximately 10% of all trip making by project users, the impact is on less than 2% of all trip making by users.

The certification data indicate that transportation was provided by relatives and friends for about 40% of all daily trips. Thus, the project has caused a shift in less than 5% of such cases.

8.4 SOCIAL SERVICE AGENCIES

The particular target groups served by the project are often provided paratransit services by public and private social service agencies. As already noted in Section 3.2.4, some 3,000 target group passenger trips per week are served during school months in this manner. Consequently, there is the issue of how the RTR project would interface with the social service agency programs. In theory, improved public transit services for handicapped and elderly persons might decrease or eliminate the need for costly agency provision of paratransit services to their clients; alternatively, agency resources for transportation services could possibly be coordinated and funneled into one cost-effective transportation system.

These goals were not achieved in the Danville project for a couple of reasons. To begin with, the monthly limit on RTR project use by individuals prevents persons from relying on the project for a discount on more than 15 trips per month on the average. This number of trips is not sufficient for persons who need transportation to an agency program on a

daily basis; the agency trips, alone, would generate 40 trips per month. Group or subscription riding on the part of several clients of the same agency, of course, might allow the project subsidy to extend to all agency trips at the $20 monthly limit. This would be due to the fact that four persons in combination could receive discounts on $80 worth of rides per month which could conceivably cover 40 group rides at a $2 average fare per trip. This would work only in the case of highly organized group riding or subscription riding at a discount. That is, if each rider has a slightly different origin or destination, separate fares are normally charged; in the case of regular subscription service, however, a special fare can normally be negotiated with the cab company. Even with such organization, the RTR project obviously could not apply to all the trip needs of such persons--including non-agency trips. Consequently, the monthly limit on project use by individuals prevented other agencies from relying exclusively on the new RTR project for the transportation needs of their clients. It should also be remembered that all of the agency programs provided services to their clients for free while the RTR project would pay only 75% of the fare. In the light of these realities, the agencies chose to see the RTR project as a new, additional resource for their clients to take non-agency or discretionary trips. As such, the agencies have been enthusiastic in their outreach efforts to see to it that their clients are aware of the new resource.

Some agencies requested that the project be designed so that they could make "third party" payments in place of the RTR user payment for individuals taking a trip to their agency. The reason for the request was so that certain clients with very low incomes would be able to travel for free--at least on agency oriented trips. The operationalization of this concept would require an additional "marker" or designation on the RTR charge slip for billing by the cab company or the RTR

project to that agency. The RTR project staff were unwilling to do the billing themselves since they didn't want the project to be held responsible for delineating between agency and non-agency trips; part of the rationale for this resistance was that, if possible, the RTR project was not to be associated with any type of trip--all trip needs were to be served equally. In addition, the project staff were not willing to act in a leadership capacity in further complicating the reimbursement procedures for the cab companies. It was suggested that the agencies were free to negotiate whatever arrangements were possible with the cab companies for third party billing to agencies, independent of the RTR reimbursement process. Another proposal, to accomplish the same goal of agency participation, was for the agencies to be able to buy ride tickets or tokens through the RTR project (at 75% discount) to be used by clients (at further discount up to 100%) for agency trips. Two obstacles prevented this: 1) the charge slip mechanism (with no tickets or tokens) which was chosen partially due to complications in change-making on taxis with tickets and 2) requirements for policing the limit on individual use of the project within the $20 limit; i.e., not favoring clients who have an RTR ID card and also receive any number of tickets from an agency. This plan also would have implicated the RTR project in subsidizing more of a certain type of trip on the part of the target group. The project staff did not want to be in the position of subsidizing a trip only if the trip were taken for a particular purpose.

The problem from the agencies' perspective was their administrative inability to reimburse individuals for trips made to their agency; they were required by their program guidelines to spend "transportation monies" directly for transportation services and not through clients. They were also interested in the prospect of one overall billing to themselves. However, none of the agencies involved directly contacted the cab companies concerning the possibility of third party payments on

RTR trips that were also agency trips. A few of the agencies already had arrangements with cab companies for services to their clients for agency trips. None of these arrangements were changed or amended to coordinate them with the RTR project.

In summary, then, the coordination and consolidation of the RTR project and agency paratransit services have been hindered to varying degrees by the following:

1. RTR limit on individual use of the subsidy
2. The disparity between 75% RTR discount and 100% agency discount
3. The inability of the agencies to reimburse their clients directly for trips to that agency
4. The unwillingness of the RTR project staff, agency personnel or cab company operators to lead a negotiation effort on third party payments
5. The disparity in emphasis: the RTR project on all trips, and agencies on client trips to their services

A slight benefit to one paratransit provider (Tele-Care) is that there is an additional alternative to suggest to the client if an emergency trip cannot be handled by their operation. Otherwise, all social service agency involvement in paratransit is equal to pre-demonstration levels or has increased since that time.

The one difficulty that agency personnel reported with the project is the confusion on the part of some clients with the $20 limit. Consequently, some agency counselors have had to provide a liaison between their clients and the RTR project staff on this issue.

8.5 TAXI OPERATORS AND DRIVERS

Project impact on the suppliers includes two issues for discussion. One issue is the effect on overall demand levels and how this might in turn affect operations and/or

profitability of operations. The second issue concerns the particular characteristics of project demand and whether or not these particular types of trips tend to pay for themselves more or less than non-project demand.

8.5.1 Increase in Total Taxi Trips

The most complete history on ridership volumes is available for Red Top Cab Company, going back to December of 1971. Up until January 1974 and after April 1976, Red Top has accounted for greater than 95% of all taxi business. In January of 1974, Courtesy Cab Company began operations and secured 25-30% of all taxi business away from Red Top through April 1976. Records for Courtesy, however, could only be found back through October of 1974. Brown Cab Company has always had less than 5% of all Danville taxi ridership and records have been researched back through December 1974.

Figure 8-1, with Red Top and Courtesy Cab Company figures combined, presents the most complete and consistent picture possible at this time (again, accounting for more than 95% of all demand). Both seasonally adjusted and unadjusted figures for total taxi trips and project trips are plotted. As can be seen by the graphs, there was a significant increase in total taxi volumes during the first five months of the project (December 1975 through April 1976). Following the discontinuation of operations by Courtesy Cab Co. and the resulting decrease in level of service, there was a decrease in total demand as indicated by both the seasonally adjusted and unadjusted curves. The demand level of total taxi trips after the change in operations is higher than pre-demonstration levels of demand but lower than those achieved during February, March and April.

Table 8-5 attempts to quantify the increases in total volumes from one year to the next, and compare them with total project demand. All figures in this case are seasonally adjusted

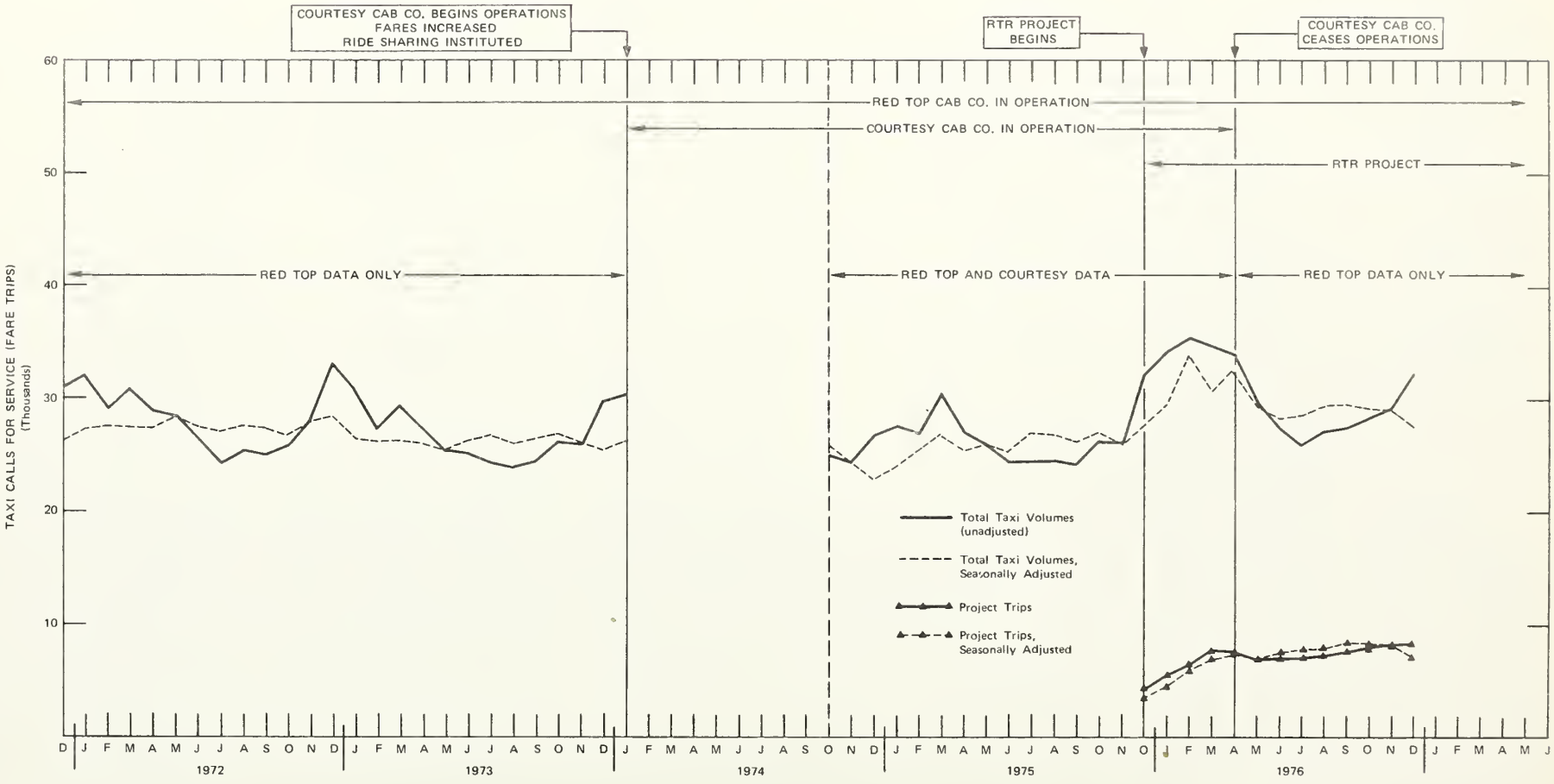

FIGURE 8-1. TRENDS IN TAXI RIDERSHIP (Red Top/Courtesy Cab Companies)

TABLE 8-5. PRE- AND POST-DEMONSTRATION TAXI VOLUMES
Red Top & Courtesy Data Combined
Seasonally Adjusted Figures
(000)

PREVIOUS YEAR		LATEST PERIOD OF TIME				
	Trips	Trips	Increase #	Increase %	Project Trips	
		PRE-DEMONSTRATION				Red Top & Courtesy
	(1974)	(1975)				
October	26.0	27.2	1.2			
November	24.3	26.1	1.8			
TOTAL	50.3	53.3	3.0			
Average/Mo	25.2	26.7	1.5	(6%)		
		DEMONSTRATION BEGINS				
December	23.0	27.9	4.9		3.6	
	(1975)	(1976)				
January	24.0	29.9	5.9		4.8	
February	25.7	34.0	8.3		6.1	
March	27.1	30.8	3.7		7.0	
April	25.6	32.8	7.2		7.4	
Subtotal	125.4	155.4	30.0		28.9	
Average/Mo	25.1	31.1	6.0	(24%)	5.9	
		COURTESY ENDS OPERATIONS				Red Top Only
May	26.1	29.7	3.6		7.0	
June	25.3	28.4	3.1		7.4	
July	27.1	28.7	1.6		7.9	
August	27.0	29.6	2.6		7.9	
September	26.3	29.8	3.5		8.3	
October	27.2	29.2	2.0		8.1	
November	26.1	29.1	3.0		8.1	
	(1974)[a]					
December	23.0	27.6	4.6		6.9	
Subtotal	208.1	232.1	24.0		61.6	
Average/Mo	26.0	29.0	3.0	(12%)	7.7	
		TOTAL PHASE I				
TOTAL	333.5	387.5	54.0		90.5	
Average/Mo	25.7	29.8	4.1	(16%)	7.0	

[a] In this case, the figure for two years previous is used since December of 1975 would reflect the influence of the project.

and are separated into three periods:

1. pre-demonstration --only two months of comparative data here since Courtesy Cab data begins with October 1974;
2. first five months of the demonstration where both Red Top and Courtesy are in operation;
3. the next eight months of the demonstration after Courtesy discontinued operations.

As stated, total taxi volumes for Brown Cab Co. during all of this time have not been large enough to affect the overall analysis.*

The two months of pre-demonstration data presented in Table 8-5 and seven pre-demonstration months of figures for Red Top alone, not shown here, indicate that there was an increase occurring in taxi volumes before the demonstration began. The best estimate is that there was occurring a year-to-year increase of 1,500 to 2,000 trips a month, seasonally adjusted, for an increase of 6% to 8% over the previous year.

Starting in December 1975, there is a dramatic increase in total taxi volumes, averaging 6,000 trips per month for five months. A similar growth in project trips took place at the same time. The only significant deviation from this trend is in March (with an increase of only 3,700 total trips) which cannot be explained at this time. There is no comparable slowing of project demand during that month, and there is no other known reason for non-project demand to drop during that month.

Starting in May, the increases in total taxi trips, over the previous year, became smaller. At the same time, project trips continued at a high rate, averaging 7,700 per month for the next eight months. Thus, while there was some decrease in

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* Beginning in July 1976, Brown Cab Company did begin to increase volume and more so in December when an additional vehicle was added.

May, project trips seem to have adjusted rather quickly back to the pre-May trends, as already described in Chapter 6 (Figure 6-2). In contrast, non-project demand seems not to have regained all of its pre-April volume.

The above interpretations are supported by analyses of data from the pre-demonstration on-board survey and surveys with target group persons later in the project. On a seasonally adjusted basis, the pre-demonstration on-board survey indicates that approximately 5,500 fare trips with target group persons aboard were taken in the fall of 1975. Again, on a seasonally adjusted basis in July of 1976, RTR members took 7,900 fare trips using project charge slips (time series data) and reported an additional 400 taxi fare trips taken without RTR subsidy (sample n = 246); eligible, but not registered, persons (sample n = 213) reported 1,200 non-project taxi fare trips in July (seasonally adjusted). The total, then, in July is 9,500 fare trips by target group persons, or 4,000 additional target group fare trips over the fall 1975 figure. The increase is assumed to be due to RTR members, a small sample (n = 246) of whom report just such an increase in taxi trips if expanded to the universe of all RTR members.

These data indicate that out of the monthly 5,500 target group fare trips taken before the project, 1,600 of them were not transferred to a project subsidy basis (400 by RTR members and 1,200 by non-RTR members). The remaining 3,900 old target group taxi fare trips were then transferred to a project subsidy basis and 4,000 fare trips (7,900 - 3,900) were added to demand. The conclusion is that project trips were made up of approximately 50% old taxi trips and 50% new taxi trips. These are the same proportions found in the fall 1976 on-board survey already discussed.

In summary, then, the suspected maximum increase in total trips attributable to the project during Phase I is in the neighborhood of 4,000 trips per month, or 15% to 16% of total

demand before the project. The owners of Red Top and Courtesy Cab Companies attributed an approximate 15% growth in business to the RTR project. It was obvious to each that new demand had been created and that new customers were being served that had never been regular users. There was no discernible difference; however, between the new users and old target group users, i.e., the increase in business was attributed to handicapped and elderly persons in general, and not to any particular type of handicapped or elderly persons.

Both owners reported that the operating income situation immediately improved for both cab companies, as is supported by the available Red Top data. However, the increase in demand due to RTR business does not seem to have had any dramatic effect in terms of keeping cab companies in business or lowering or stabilizing fares. While the RTR project definitely helped Courtesy Cab Company, their longstanding financial losses forced discontinuation of operations when new, higher insurance rates came into effect. And, as already discussed, Red Top is now requesting a fare increase. Brown Cab Company has likewise benefited from the RTR program but it has not, in and of itself, significantly changed their market situation. The discontinuation of Courtesy operations may have larger and more long-term effects in increasing their market.

8.5.2 Demand Characteristics of Project vs. Non-Project Trips

By the end of Phase I, project trips amounted to approximately 28% of all taxi trips. Approximately half of these trips are trips previously not made by taxi and are new demand with specific target group trip characteristics. Also, all project trips require a new payment method which will cause some extra cost in delay at unloading time and in office accounting time for the charge slips.

An on-board survey was conducted in August 1976 specifically for the purpose of comparing project and non-project trips

from the standpoint of operational costs (i.e., driver time and vehicle miles) and revenue (i.e., fare and tip). This survey confirmed what had previously been found in the pre-demonstration on-board survey, i.e., that target group (i.e., handicapped and elderly) fare trips, and RTR project trips as a subset, do differ significantly from non-target group trips, or non-project trips, on specific demand characteristics, but do not significantly differ in terms of revenue generated per unit of operational cost.

Table 8-6 presents the mean values for mileage, trip lengths in time, fares and tips for project and non-project trips surveyed in August. The revenue to the operator and drivers in each case is then compared to units of time and mileage involved in serving each group.

Both project and non-project trips averaged 1.2 persons per trip. Thirty-six percent of project trips happened to be shared with another trip (project or non-project) in contrast to 28% of non-project trips. This may be due to the fact that the pick-up mileage and times (assignment to origin) are shorter, and average trip lengths and fares are less in the case of project trips. Thus, project trips are concentrated more in the central operating area of the taxicab service. Project riders do take more time loading and unloading (including time for charge slip processing) than non-project riders. However, when total time spent serving project and non-project trips is considered and divided into driver revenue, the resulting ratios are the same; the same result occurs if one looks at mileage associated with the two types of trips.

These data indicate that the revenue return to driver and taxi operator is comparable for both project and non-project trips. The non-project trips have slightly higher revenue production for the driver; the project trips are slightly more profitable for the operator.

TABLE 8-6.

MEAN CHARACTERISTICS OF PROJECT AND NON-PROJECT TRIPS

(August 1976 On-Board Survey)

	Project Trips	Non-Project Trips
Miles from:		
Assignment to origin	.90	1.25
Origin to destination	2.50	2.90
Subtotal	3.40	4.15
Time (Mins.) from:		
Assignment to origin	3.87	4.42
Loading time	1.54	1.04
Origin to destination	8.50	8.90
Unloading time[a]	.98	.72
Subtotal	14.89	15.08
Revenue (dollars):		
Fare	$1.35	$1.54
Tip	.02	.05
Driver commission (40%) Plus tip	.56	.67
Ratios:		
Tip as % of fare	1.0%	3.0%
Driver revenue per total minutes[b]	$0.038	$0.04
Fare per total miles[b]	$0.40	$0.37
% Shared	36%	28%
Sample (n)	(157)	(265)

[a] Includes time for fare payment and/or charge slip processing.

[b] These are not complete figures, as "dead-head" time and miles are not included and there is overlap due to shared riding; however, these figures help to provide a comparison between project and non-project trips.

However, two factors are not considered in these computations: (a) any differences in the amounts of "dead-head" or "non-revenue" mileages that could be associated with each type of trip and (b) any differences in frequency of ride sharing. Both of these are difficult to account for but both clearly enhance the profitability of project trips. Project trips tend to be closer to downtown; non-project trips often involve more remote locations (see differences in "assignment-to-origin" and "origin-to-destination" mileages). Therefore, one would expect that the non-project trip would tend to contribute more to dead-head mileage than would a project trip.

The larger effect would be caused by the higher frequency of shared-ride project trips, 36% as compared to 28% of non-project trips. The figures in Table 8-6 include a greater degree of double counting of both travel minutes and travel mileage in the project trip computations. If this double counting were removed from both columns there would be comparatively larger increases in the driver revenue and the fare-per-mile ratios for project trips.

Thus, it seems clear that project trips are as profitable to the driver and operator as non-project trips. The target group user does require slightly more loading and unloading time, but this is more than offset by their centrally located origins and destinations and the resultant greater shared riding.

Of course, there is some added cost to the cab operator in the accounting of the charge slips to be reimbursed by the City. There are no data on how much work is added here, and the assumption is that the supplier is interested in the increased business and is willing to absorb the billing cost. It should be noted that previous to this demonstration there were several commercial concerns and one social service agency that had taxi charging privileges where charge slips were written up and monthly billings

sent out. Thus, the concept of charge slips and billing of customers had already been incorporated into taxi operations.

8.6 NON-TARGET GROUP USERS OF TAXIS

As already indicated in the last section on impacts on taxi operations, project trips and non-project trips essentially do not differ in their profitability to operators and drivers. Thus, "project business" is just as good as non-project business. In theory, then,increased business on the part of project users should not adversely affect taxi operations as long as the taxi operators respond with adequate service.

In order to check perceptions on the part of non-RTR taxi riders, the fall 1976 on-board survey interviewed such riders about the quality of taxi service and their own taxi use vis-a-vis the RTR program. The table below gives the breakdown of responses to the question, "Do you feel the Reduced Taxi Rate program has made a difference in the quality of service provided to you by the taxi company?"

TABLE 8-7.

NON-RTR TAXI RIDERS'
PERCEPTION OF PROJECT IMPACT ON TAXI SERVICE

(n = 413)

Yes: RTR affects taxi service	19%
No: RTR does not affect taxi service	43%
Don't Know	23%
Didn't know there was a program	15%
	100%

Almost a fifth of such riders seemingly attribute service changes to the RTR project. Based on verbal comments recorded, the majority of those who responded "yes" feel that they have

to wait longer for service now that the RTR project is in operation. Another proportion (almost one-third of the 19%) stated that they thought the taxi service was better since the RTR program began. It is possible that many of the "yes" responses to this question indicated perceived changes in service that were not necessarily being attributed to the RTR program but rather to other causes such as the discontinuation of service by Courtesy Cab Company. In any case, over 80% stated that they did not connect any changes in service with the RTR program.

A further question asked, "Has the number of times you use taxi service changed because of the Reduced Taxi Rate program? The answers are:

TABLE 8-8.

NON-RTR TAXI RIDERS'
PERCEPTION OF PROJECT IMPACT ON THEIR USE OF TAXIS

(n = 410)

Yes: Less trips taken due to RTR	3%
No: The number of times has not changed	71%
Don't Know	11%
Didn't know there was a program	15%
	100%

Again, about 97% of all non-RTR riders perceive that the RTR project has not adversely affected their use of taxis. The other 3% attribute their decreased taxi riding to decreased service due to the RTR project.

It is likely that some proportion of non-RTR riders have shared rides (i.e., not group rides) with RTR riders in situations when filling out the charge slip has added time to the exit of the RTR riders. This can cause delay in specific cases and

may be one of the sources of a perceived change in service due to the RTR project. Overall, however, both operationally speaking and in terms of riders' perceptions, the RTR project has not significantly affected levels of service or taxi riding on the part of non-RTR riders.

8.7 GENERAL PUBLIC REACTION

In August, Danville households were telephoned for a random sample of 201 adult representatives to survey public opinion relative to the RTR project.* Almost two-thirds of all adults were aware of the project, with no difference in awareness by sex. Younger adults, understandably, were less aware of the project (45% of those between 16 and 20; 60% of those 21-54); three-quarters of all persons 65 years of age and older were aware of the project. This leaves one-quarter of those 65 and over and one-third of all adults who report being unaware of the project at that time--nine months into the project.

Reaction to the project by those who knew about the project (n=126) is very positive. Three persons were against the project in general and three others thought that a bus system should have priority over the RTR program; two persons thought that the program should be more restricted in terms of eligibility. The remaining 118, or 94%, expressed satisfaction with the project. Nine of these persons thought that the eligible age limits should be expanded, and two persons thought the discount should be larger. No persons mentioned that the discount should be less.

When asked if the City of Danville should continue the program after the demonstration, using local and state tax revenues, 77% of those who knew about the project said yes; 9% said no, and 14% had no opinion. Renters were slightly more favorable than homeowners; there was no difference by sex or age.

*Including some RTR members.

The project has understandably received a great deal of attention in the news media, both local and national. The general thrust of editorial comment praises the efforts to serve handicapped and elderly persons, and occasionally cites the need for income controls on who is eligible. At the time when youth were being considered as a possible eligible group, considerable public sentiment was expressed against the idea. The assumptions were that non-handicapped youth do not need door-to-door service and that other lower cost transit options should be developed. The national media, in particular, focused on what it saw as a possible "waste of taxpayers' money." Less attention has been paid to the possible increased productivities involved in use of private suppliers. The user-side subsidy concept has also mistakenly been equated with subsidy for the private suppliers. User-side subsidy programs may continue for some time to encounter this type of public confusion.

8.8 GOVERNMENTAL AGENCIES

From the standpoint of the Danville City Council and the Danville Planning Department, the RTR project has been very successful. Both groups see the project as workable, cost-effective and successful in supplying needed transportation options for handicapped and elderly persons. The City government has been able to operate the program efficiently with public acceptance and support for the project. The most serious issues faced by the City have been 1) possible inclusion of youth in the taxi-discount project and 2) actions to be taken relative to "over-users." With regard to the former, there was no confrontation with public opposition to including youth since they decided to support other less expensive modes in an expanded transit program. In regard

to "over-users," the after-the-fact monitoring of individual use (due to the charge slip system) has presented the project staff with the inevitable problem of how to respond to such overuse. No totally satisfactory solution has been found. Letters* and phone calls have been used and the total amount of overuse is "small" by most standards. However, some individuals do consistently overuse the system by a significant amount (up to $60 worth of regular fares discounted in any one month). This, naturally, presents problems for such a program in terms of fairness to all program participants. Local officials, up to this point, have not wanted to intervene with police powers. In the future, some such action, or change in the subsidy mechanism, may take place.

Relations between the City and the taxi operators have been good. Necessarily, there has been a great deal more contact than ever before, but both sides have been able to negotiate amicably. There appears to have been little effect on the more traditional relationships concerning vehicle and driver registration with the police department, City inspection of vehicles and City Council decision-making on fares.

The success of the project has prompted City officials to seek possible local and state funding to continue the project beyond the federal demonstration period of time. At this point, the State of Illinois is very interested in the project but has not formulated a policy relative to use of user-side subsidies on privately operated transit systems. There continues to be a dialogue between the two levels of government on this matter.

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*See Appendix B for an example of one such letter.

9. SUMMARY AND CONCLUSIONS

9.1 INTRODUCTION

Chapters 4 through 8 describe the evolution of Phase I of the Danville demonstration and provide the basic analysis of the data that resulted from our evaluation efforts. This chapter is intended to summarize, as best as possible, all of the findings and conclusions that follow from those analyses. These findings are presented in the order of the three general evaluation issues cited in Chapter 2:

1. What is the workability of the user-side subsidy in the real world?
2. What is the cost-effectiveness of the concept in tandem with using privately operated transit services?
3. What are the impacts on all groups involved?

The second section of this chapter discusses the transferability issue. That is, what are those characteristics of the demonstration setting and the actual evolution of the demonstration that the reader should take into consideration in applying the results found in Danville to planning efforts in other areas?

9.2 SUMMARY OF FINDINGS

9.2.1 Workability

The Danville demonstration, to date, has set out to test a limited application of a user-side subsidy which provides additional transportation options for handicapped and elderly persons with one project mode--traditional door-to-door taxi service. The user-side subsidy mechanism has proven to be a

very workable one for that purpose. The project suggests that a user-side subsidy is as administratively workable as other forms of public support for special transportation services, through provider-side subsidies or publicly operated systems. In particular, the following findings can be stated relative to each of the sub-issues under "workability" cited in Chapter 2.

9.2.1.1 Who and What Is to Be Subsidized - The certification and registration of eligible target group persons in Danville was very successful. It was possible to establish a set of criteria for handicapped and elderly persons and to apply those criteria in determining eligibility for subsidy on taxi services.

At the same time, it should be noted that approximately three quarters of all targeted persons (both those who registered and those who did not) report that they have no problems using buses. While this question was asked in the absence of any present fixed route bus system from which respondents could judge, this is an important survey finding in regard to the targeted group's perception of what their transit needs are. Thus, while some 18% of Danville's population were eligible for the project subsidy on taxis, possibly only 5% of the population require door-to-door service at all times to have access to publicly supported transit. This is significantly different from 18% in terms of the total cost to such a project.

Looking at the problem further, we find that approximately one-tenth of all targeted persons indicate that they have problems using standard taxi service. Three percent report that it is impossible to use taxis; 8% report some problems using taxis. In Danville, this translates to almost 2% of the population who may require lifts or ramps and/or special assistance from an escort, in addition to door-to-door service.

It can be reasonably hypothesized, then, that some 1% to 2% of the general population requires additional service features beyond the taxi mode tested; that 3% to 4% of the general population require a door-to-door mode over the use of buses; and that the remaining eligible handicapped and elderly persons might be adequately served by conventional buses--at least in those cases where they are not situationally handicapped by packages, bad weather, long waits, or safety concerns at night.

These data suggest the desirability of tailoring the user-side subsidy so that it can be used in a multi-modal system, providing a range of services at different total costs per passenger trip. The advantage of such a step would be to maximize service to transit dependent persons, who require varying classes of service (perhaps at different times), as cost-effectively as possible. Indeed, the user-side subsidy, in contrast to provider-side subsidies, may become a viable tool in affecting price-disciplined consumption of transit resources by the various transit dependent subgroups. The primary problem with such a solution may be the difficulty in applying discounts equitably across all modes and all subgroups. This is an issue that will be tested in the Montgomery, Alabama and Lawrence, Massachusetts, demonstrations. In addition, the City of Danville may face this issue if the Danville demonstration is expanded to cover the whole population on fixed-route services. The issue, in essence, is whom to subsidize, to what extent, and by what modes? And, once these decisions are made, what consumer and supplier decisions follow, and how does the resulting system perform in terms of meeting transit needs and cost-effectiveness?

In the Danville case, the monthly limit on individual use (amounting to approximately 15 trips per month on the average) affected only a small proportion of users. Less than 10% of all users averaged more than ten project trips a month. The monthly limit, then, was not the primary constraint on

project use by most persons; other factors limited project use to a greater extent. At the same time, as evidenced by over-users and social service agency clients who attend agency activities regularly, the monthly limit was a constraint for a particular subgroup. This may suggest the possibility that there should be no limit, or at least a higher limit, depending on program objectives and resources. Another type of solution would be graduated limits by which persons receive less discount the more they use the service. The latter option may present many administrative problems. In the case of agency clients, there appears to be, at a minimum, the need for coordination and group (or subscription) riding to avoid or lessen the effects of the limit.

In terms of potential income restrictions, the Danville demonstration appears to be maximally helping those with lower income. Registration is significantly greater for those who are in poorer households; very few persons who live in households with over $10,000 annual income registered with the project; and higher income persons use the project slightly less, on the average, than lower income persons. These data suggest that income restrictions may not be necessary or desirable for the sake of controlling program costs.

In regard to service needs by time of day and by day of the week, the Danville project indicates very strongly that a 24 hour a day, seven day a week service is very desirable. Forty-five percent of all project trips are taken outside of the hours of 9 AM to 5 PM, Monday through Friday. This can be counted as one of the major benefits of a user-side subsidy on existing taxi services, in contrast to paratransit services operated by a social service agency or a public transit operator. The latter type of paratransit is usually very restricted in service hours.

There were no restrictions on the purpose for project trips. Some projects of this sort limit trips to medical or work trips. In the Danville case, these types of trips amounted

to 15% and 7% of all project trips, respectively. Such restrictions obviously would significantly decrease program participation and cost. From a public transportation planning standpoint, however, there seems to be no rationale for such restrictions.

9.2.1.2 Subsidy Mechanism - In general, the charge slip system has worked in the Danville demonstration. Less than 2% of project users report any problems in registering for the project, using their ID card or signing the charge slips. Taxi operators and project staff, alike, have been satisfied with the reimbursement and accounting system.

The advantage of the charge slip system to users is considerable in terms of avoiding periodic purchase of tickets in advance of taking a trip. The advantage to the project is the elimination of a ticket distribution or sales effort and the attendant concerns for theft or fraudulent creation of tickets. The advantages to taxi operators and drivers is the avoidance of potentially complicated change-making arrangements involving tickets.

At the same time, there are disadvantages to the charge slip system. From the standpoint of the project, only an after-the-fact monitoring of individual use is possible; in contrast, a ticket system would allow control of individual use in advance. This becomes an important issue only if there is a limit on individual use. In addition, drivers and riders are occasionally delayed by processing the slips.

An alternative method is to use regular money for user payments. The use of tickets or a charge slip system is necessitated by the application of the subsidy for only a subgroup of the general public and/or the lack of fare counting machines. Thus, regular money can be used for user payments if the subsidy applies to all riders and if there is adequate fraud-control

provided by fare counting machines. Surveys on a spot-check basis can also be used to verify company claims concerning user revenue with or without the use of machines.

In summary, the subsidy mechanism or user payment medium is not an insurmountable problem for user-side subsidies. The administration of a charge slip system has been successfully demonstrated in the Danville project.

9.2.1.3 Fraud Control - Fraud has been one of the potential problems that has been most commonly raised in connection with the user-side subsidy. Thus, will the consumers, the private operators or others in the community be able to use the subsidy program for their own illicit purposes?

To date, the Danville demonstration has not encountered such problems to any serious extent. Some project users have consistently charged more trips than the monthly limit would allow. However, there is a remedy available for such infraction of the rules. The local staff is satisfied that there is no incentive for drivers, on their own, to fraudulently create RTR trips or forge charge slips. The cab operators are the only ones who could significantly gain from such fraud. In environments where the funding agencies could not trust the operators or accurately survey actual provision of services, it might be necessary to use other mechanisms--such as tickets.

9.2.1.4 Response by All Parties Involved and Level of Service Provided by the RTR Project - All three available private providers signed contracts with the project and cooperated in all respects. Other than changing the payment method, the project staff attempted to intervene as little as possible in the normal day-to-day operations of the cab companies. "Business as normal" was the primary theme emphasized. There was no attempt to change regular fares or services from those already in existence.

Traditional taxicab service is rated very high by elderly and handicapped taxi riders; over 95% rate taxi service as "very satisfactory" in terms of waiting time, convenience, safety, driver courtesy, comfort and reliability. The project lowered the average fare from $1.16 to $.31 per passenger. Some 3% of the eligible target group report great difficulties in using taxis; another 8% report some difficulty. 20% of those who registered report that they have less difficulty using taxis than buses.

The second largest cab company, Courtesy Cab Company, discontinued operations (for non-project related reasons) during the fifth month of the project; this caused a significant decrease in levels of service for approximately three months while Red Top Cab Company increased their own services. At all other times, levels of services were comparable to pre-demonstration services.

Target group persons responded immediately and in large numbers to the opportunity to register for the project. In approximately one year, 40% of all eligible persons registered. The market penetration is particularly impressive when one looks at subgroups of those eligible, based upon the availability of transportation alternatives. Some 85% of all eligible persons who do not drive, and who report not receiving rides from friends and relatives have registered; almost half of all eligible persons who do not drive, but who report that they do receive rides from others, have registered; and approximately 15% of those who drive have signed up. Therefore, registration with the program is strongly correlated with the availability of other transportation modes. The primary reason given by those who did not register was the availability of other transportation. On the basis of alternative transportation available, it is estimated that project registration has penetrated four-fifths of the potential market during the first year. (See pages 68-70.)

The mean project use per user per month is moderate -- in the neighborhood of 6 to 7 trips for those who use it during any one month. The mean use for all users (those who have used the project at least once) is 4 trips per person per month for those months that a person has been in the project. This figure is considerably less than the 15 trips that the monthly limit would allow. In fact, none of some twenty-three subgroups studied exceeded an average of 7 project trips per person per month. Handicapped persons under 65 years of age use the project the most on a per person basis. Mean use per person is also highly correlated with availability of alternative transportation modes -- ranging from 1.3 trips per month for drivers to 5.9 trips per month for those who do not drive and do not receive rides from others.

Some 3% of all users (approximately 65 persons) have consistently used the project in excess of the monthly limit. The amount of fares discounted in excess of what the limit would have allowed have amounted to 5% of all fares discounted.

Project use did decline at the time when Courtesy Cab Company discontinued operations (April 1976). However, project demand returned to its previous growth curve in the following half year. It is hypothesized that project demand may have decreased somewhat during November and December of 1976 due to the severely cold weather.

In all, project demand remained below 10,000 passenger trips per month for Phase I. Analysis of the penetration rates and demand curve indicate that total project demand was stabilizing with only slow growth expected beyond Phase I.

Public opinion has been very favorable except that most adults opposed the original plan to include non-handicapped youth in the project. The City of Danville was urged to seek out other less costly transit modes for service to all transit dependent persons.

9.2.2 Cost-Effectiveness

In theory, user-side subsidies minimize expenditures in capital outlays and maximize the productivity of subsidy funds. The latter is accomplished via purchase of already existing transportation services by the user on a per trip basis. The Danville project is a successful demonstration of that theory.

In Danville, a competitive, private enterprise environment had already produced taxi services at a low total cost per passenger. The project utilized these already existing services on a per trip basis. Major capital outlays for equipment and personnel training were avoided. The total cost for implementation was approximately $14,000 and was accomplished in three months. Monthly monitoring costs were less than $.20 per passenger. Subsidy cost was less than $1.00 per passenger while the user paid approximately $.30 per trip.

Due to group-riding and the particular fare structure in Danville, the application of the user-side subsidy for handicapped and elderly persons also cross-subsidized others who were group-riding with them. Approximately 12% of all project subsidy was used in this way. In the case of Danville, it was decided that it would be too cumbersome to screen out such cross-subsidy.

Approximately one-quarter of all subsidy was consumed on trips taken by persons who report that they have difficulties using buses. The remaining subsidy was consumed by those who report that they may be able to use buses. Again, a user-side subsidy on multiple modes (e.g., taxis and fixed-route buses) could potentially provide a cost-effective solution to the different needs of transit dependent persons in different situations. Research into this area is required to analyze consumer decision-making and responses on the part of providers.

9.2.3 Impacts

The focus of project impacts has been on the three parties to the user-side subsidy contract: target group users; the taxi operators; and the City of Danville. By all accounts, project impact on the travel behavior of users has been small. In particular, total trip-making on the part of users has not significantly increased, nor has mode shift. It is estimated that the project may be credited with increasing trip-making on the part of users by less than 1.5%. Less than 3.5% of old trips have been shifted to the project mode. And there is a user savings on approximately 5% of old trips, i.e., those that used to be taken by taxi at full fare. The amount of money that is saved by users on all subsidized taxi trips is less than $4 per person per month. Most users, as indicated by median use, have benefited considerably less than even these figures indicate.

This small impact is a very significant research finding in the light of the high level of service that was provided by the project. It suggests that there may not be a large latent demand for improved transit services on the part of handicapped and elderly persons. It is possible that the claims that there are large unmet needs have been exaggerated. This does not preclude the possibility that demand, and therefore the impact of such improvements, might continue to grow over a longer period of time.

To date, however, data from varying demonstrations of improvements in services for elderly and handicapped persons have presented a consistent picture of low impact on users. In the Danville case, there are no known reasons to attribute this to any inadequacies on the part of the project service. Rather, the availability of other transportation options (even in the absence of any bus service) seems to play a dominant role, as with other segments of the population.

In addition, one possible hypothesis in connection with this issue is that trip-making on the part of handicapped and elderly persons may not be significantly low in comparison to others, if one takes into consideration the decreased need for work trips. The demand data from this and other demonstrations suggest the need for more in-depth sociological research into the travel status of different segments of the population.

These comments are not meant to suggest that there is no need to improve transit services for elderly and handicapped persons. On the contrary, most logical and ethical considerations point to the need and desirability of improving service for these persons -- who make up a large proportion of the public transit market. It just may be the case that such improvements will not make immediate, dramatic impacts on travel behavior; nor should such impacts be considered necessary to justify public expenditure in this area. At this point, one of the key advantages of a user-side subsidy becomes apparent: while the overall impact is small, so too is the overall cost. This is a direct product of the purchase of services from an existing transportation supplier on an individual trip basis. At the same time, the quality of service is comparable, if not better, than that which has been provided by publicly operated dial-a-ride systems.

The impact on the taxi operators, the private providers in this case, has been an approximate 15% increase in overall business due to project trips -- business that is as profitable as non-project trips. At the same time, demand-actuated, door-to-door transit service has been provided at a much lower cost per passenger than if a publicly operated dial-a-ride system had been created.

The benefits cited for all three parties have led the federal government and the City of Danville to design a test of the user-side subsidy in creating a market for fixed-route bus service to be supplied by private operators. The subsidy would be available to all residents. In this case, the City is choosing an alternative to the more traditional application for federal and state funding of capital and operating costs to establish a publicly operated transit system.

9.3 IMPLICATIONS FOR TRANSFERABILITY

The transferability of the user-side subsidy concept, as such, appears to be very great. The existence of local private suppliers and a governmental or private agency interested in subsidizing travel on the part of all persons or subgroups is all that is necessary. Again, transferability of the Danville findings to other settings can be discussed in terms of the three issues of workability, cost-effectiveness and impacts.

The administrative workability of the user-side subsidy can potentially be affected by the size of the community in question. In large cities, the relationships between government, private providers and the public is not nearly as close as in Danville. Consequently, the cooperation among all parties may not be as great; the negotiations for the contract may be influenced by greater distrust, borne out of a lack of information or contact. This can range from the government's felt need to control the provision of service on the part of the operator to the operator's felt need to charge an extra amount for administrative costs in connection with the project.

Overall, more controls for fraud may be required in larger settings. Tickets may be required to assure that cab companies don't create false charge slips. On the other hand, a large

distribution system for tickets creates the possibility for large scale theft or forgery. Tight security is usually required. It is difficult to predict what economies or diseconomies of scale a larger city may encounter. The size factor, of course, applies to other forms of publicly funded transit, as well. There is no data that suggests that a user-side subsidy mechanism is any more vulnerable to mismanagement than any provider-side subsidy program.

The cost-effectiveness of the user-side subsidy depends on the existence of competing private providers. Of course, the specific cost figures cited in this report are a product of the economics prevalent in Danville. However, again, the cost-effectiveness of the user-side subsidy should be transferable, given the basic costs prevalent in another setting. The specific characteristic of shared riding is important in the productivities realized in Danville and is a requirement for federal subsidy.

The total project demand and impact on target group users is a product of demographics, travel needs, service levels, availability of alternative transportation and social attitudes. In comparison to most other cities, Danville has an equal proportion of elderly and handicapped who travel as much as the national average for such persons. The RTR service levels were very good, and there was no competing bus system; the availability of alternative transportation for the target group in Danville is average. On the basis of these variables, it is expected that the Danville project would generate a project use per person that would be equal to or greater than that in another setting. The significant unknown, however, is social attitudes held by those who are eligible. It is possible that settings may differ considerably in terms of the willingness on the part of the target group persons to use such a service. For

individuals, this involves attitudes towards the use of "special" subsidy and the shift from dependence on relatives and friends for rides.

The transferability of impact on the private providers depends on three factors: 1) the way in which the program is managed, 2) total project demand, and 3) the profitability of targeted trips. The first two factors have already been discussed. The positive impact on the taxi operators in Danville is considerably due to the fact that business provided by the target group is as profitable as business provided by other persons. This may or may not be the case elsewhere. Such information can be obtained, inexpensively, from on-board time-and-motion studies of actual trips. Negotiations of fares can possibly be based on that information. The increased business due to a user-side subsidy must be "paying" business for the operator to benefit. The latter is required to prevent non-project riders from being adversely affected.

Appendix A

GLOSSARY OF TERMS USED

Calls for Service	All requests for taxi service by phone, at cab stands, or by hailing cabs on the street.
Certification	Certification is that process by which a project applicant is determined as eligible for the project. This involves the filling out of a few forms which can be verified by the project staff from other sources.
Exclusive Taxi Ride	Exclusive taxi rides are those rides in which a rider does not share the vehicle with any other rider; in a shared ride taxi service, this occurs when the dispatcher has not made overlapping ride assignments to the same driver.
Fare Trip	A single origin-destination vehicle trip whereby one fare is charged for all persons going from the same origin to the same destination.
Non-Project Fare Trip	A fare trip in which none of the fare is charged to the project.
Premium Ride Taxi Service	Premium service trips are those in which a passenger requests and is willing to pay for exclusive use of the cab (i.e. no other passengers are carried). This type of service is theoretically not available in Danville.
Project Fare Trip	A fare trip, some portion of which has been charged to the RTR project.
Project Person Trip	A passenger trip taken by an RTR member on a Project Fare Trip.

Project User	An RTR member who has used his or her discount privileges at least once.
Reduced Taxi Rates (RTR)	Official local name of the Danville User-Side Subsidy, Taxi-Discount Demonstration Project.
Registrant	Someone registered with the RTR project and thus a recipient of a project ID card.
Registration	Registration takes place once a person is certified as eligible for the project. It consists of entering the person's name on a master ID list and issuing him or her a Project ID card.
Shared Ride Taxi Service	Shared ride service is that by which unaffiliated but concurrently riding passengers with different origins or destinations are accommodated simultaneously by the same vehicle using route deviations. Shared riding usually involves more than one fare calculation (i.e. one fare calculation for each set of origin-destinations).
Transit Development Plan (TDP)	A five year transit planning effort on the part of Danville's City Department of Planning.

APPENDIX B

RTR MEMBER FORMS, LETTERS AND HANDICAPPED ELIGIBILITY CRITERIA

This appendix contains:

1. Cover letter for Application

2a. Application Card for All Persons

b. Permission Slip for Social Security Administration Confirmation of Age for Those Over 64 Years of Age

c. Parental Permission Slip for RTR Membership on the Part of Minors

3. Application Procedures for the Handicapped (2 pages)

4. Notice to Physicians & Agency Personnel

5. Eligibility Criteria for Handicapped Persons (9 pages)

6. Certification Form for Handicapped Persons

7. Letter Concerning Renewal of Temporary Cards

8. Letter Concerning Project Over-Use

DEPARTMENT OF PLANNING AND DEVELOPMENT

309 VERMILION • DANVILLE, ILLINOIS 61832 • 217/446-0807

DAVID S. PALMER
Mayor

JOHN WEAVER
Director

Dear Applicant:

Thank you for your interest and cooperation in our program. Enclosed please find an Application Card that was filled out by our staff from the information given by you over the phone. All that is needed to complete it is for you to read our rules and sign it in the space provided.

Secondly, find the Release of Information Form directed to the Social Security Administration. It allows our office to check with the Social Security Administration to verify your age and age only. Please read the form and check the information filled in by us and sign your name.

Finally, enclose both signed forms in the return envelope provided and return it to us. If we have not yet contacted you for a brief interview over the phone, we will do so shortly.

Again, thank you very much for your interest and cooperation. Your I.D. Card will be sent to you immediately.

Sincerely,

Dan Bolton
Mass Transit Planner

Dan Bolton

DB/cd
Enclosure

___ ___APPLICATION CARD
/___/In person /___/Mail

OFFICIAL USE
I.D.#:_____
GROUP:_____
_____
INITIAL:_____

NAME:_____
NO & STREET:_____
TELEPHONE:_____
BIRTHDATE:_____AGE:_____

I agree not to exceed the Twenty Dollar ($20) per month limit on use of my I.D. Card. I understand that this card is to be used only for trips taken by me. I also realize that my taxi charges will be monitored by the City and failure to comply with the above mentioned regulations can result in the loss of my privileges.

DATE:_____SIGNATURE:_____

TO: Social Security Administration
102 North Robinson Street
Danville, Illinois 61832

RE: Release of Age Information

I hereby authorize the Social Security Administration to release information regarding my age, and only that information, to the Danville Taxi Discount Program Administrator.

MY MEDICARE NUMBER IS:_____

DATE:_____SIGNATURE:_____

ADDRESS:_____

PERMISSION SLIP

I give my permission for_____
(name of child)
to receive an RTR (Reduced Taxi Rate) I.D. card, in order to ride the cabs in the City of Danville. I will not hold any governmental body or department thereof, responsible for any accidents or injuries that might occur when using a cab.

Signature :_____

Title:(parent, guardian, other):_____

Date:_____

DISCOUNT FARE PROCEDURE FOR HANDICAPPED PERSONS
WHO ARE RESIDENTS OF DANVILLE, ILLINOIS

Procedure for the Permanently Handicapped

1. Obtain Certificate Form and Eligibility Criteria from Danville Taxi Discount Project Office. Forms will be mailed upon telephone request (446-0803) or can be picked up at the Project Office at 309 North Vermilion, Danville, Illinois, 61832.

2. The Certificate Form must be completed by a licensed physician or designated representative of a Local, State or Federal Agency. The signed form constitutes eligibility for the issuance of a Discount Identification Card.

3. Bring or mail the completed Certificate Form to the Project Office. A Discount Identification Card will be issued with an individual identification number for each person certified.

4. The receipt of a Discount Identification Card by persons certified as handicapped will serve as immediate proof of eligibility for purchase of discount rides on taxis and no additional proof of eligibility is required.

5. Discount rides on taxis can be purchased with use of your ID card. You pay for 25% of the fare in cash. The remaining 75% is charged to the project on a specially designed CHARGE SLIP that will be available in the taxi. A maximum of $20 worth of discounted rides can be purchased per month. Charge slips will be monitored so that individuals who go over that limit will be notified.

Procedure for Discount Fare Eligibility for the Temporarily Handicapped

A temporary handicap is caused by injury or illness as described in the Eligibility Criteria which is considered by a licensed physician, Local, State or Federal Agency designated representative to be non-permanent.

A person suffering a temporary handicap shall be eligible for a discount fare during the period of disability. The period

of time such a person shall be eligible for the discount shall depend upon the extent of the injury or illness.

The completed Certificate Form shall clearly indicate the length of time a person shall be considered disabled.

A temporary Discount Identification Card clearly indicating the expiration date of discount fare eligibility shall be issued to the temporarily handicapped person.

The temporary Discount Identification Card will be identified by a color stripe and discount rides can be purchased only through the month in which the expiration date takes place.

If upon the expiration date of discount fare eligibility, the disabling condition continues to exist, an extension of eligibility with physician's re-certification shall be granted and a new Discount Identification Card indicating a new expiration date shall be issued.

Should a temporary handicap continue to exist to the extent that a person is considered permanently handicapped, a permanent Discount Identification Card shall be issued and the cardholder shall be eligible for a discount for the life of the fare structure policy granting a discount.

Loss or Damaged Discount Identification Cards

Discount Identification Cards which are lost or damaged will be replaced at a cost of $.50 to the card holder.

NOTICE TO PHYSICIANS

LOCAL, STATE AND FEDERAL AGENCY PERSONNEL

Discount fares for taxi service are now available to handicapped persons who are residents of Danville, Illinois and who are certified by a physician or Local, State or Federal Agency as meeting definitions described on the attached Eligibility Criteria list. If you are requested to certify a person as handicapped for discount fare eligibility, please follow the procedure described below:

1. Determine if the person meets the permanent or temporary criteria described in the Eligibility Criteria based on appropriate medical records. Note the Section Number.
2. Fill out the attached Certificate Form indicating the Section Number and person's address, birth date, and telephone number.
3. If temporary disability, indicate period disabled in appropriate space.
4. Sign the Certificate Form and fill out address and telephone number and license number, if applicable.

NOTE: Local, State and Federal Agency Personnel

Certification Forms may only be signed by those persons whose name(s) and title(s) are on file with the Danville Taxi Discount Project Office as designated personnel. Agencies need notify the Project Office of any change in designated personnel.

The Certificate Forms will remain on file with the Project Office as medical records, not subject to public review.

Please return the form to the person requesting certification for transmittal to the Project Office or send it directly to the Project Office yourself.

Thank you for your cooperation.

DANVILLE TAXI DISCOUNT PROJECT
309 North Vermilion
Danville, Illinois 61382
(217) 446-0803 ext. 34

ELIGIBILITY CRITERIA FOR THE HANDICAPPED
DANVILLE TAXI DISCOUNT PROJECT

GENERAL PROVISIONS

The attached Eligibility Criteria were developed in conjunction with service agency personnel and members of the handicapped community. The Eligibility Criteria is the sole basis for the determination of a transportation handicap.

The Eligibility Criteria is subject to review on a periodic basis. Changes to the Eligibility Criteria shall be made at the discretion of the Project Office with recommendations by service agency representatives and the handicapped community.

Discount Cards for permanently handicapped persons are valid for the life of the fare structure policy granting the discount.

Fiscal obligations may require modification of this program at anytime. However, any change in the percentage of discount or hours of operation granted to handicapped patrons in no way invalidates discount fare privileges extended to persons who qualify under the Eligibility Criteria.

The Project Office will receive suggestions and complaints on program operation. At the end of the demonstration program, Project Office Staff, service agencies and members of the handicapped community will evaluate the program and make appropriate recommendations.

The Eligibility Criteria (definition of handicap) were developed based on a person's ability or inability to use mass transportation services and presume a level of personal mobility and independence to the degree that use of a taxi would be a reasonable expectation.

A functional definition of a handicapped person follows: A mass transportation handicap is any incapacity or disability which results in the inability of a person to perform one or more of the following functions necessary for the effective use of mass transportation facilities without significant difficulty:

1. Negotiating a flight of stairs, escalator or ramp
2. Boarding or alighting from a public transit vehicle
3. Standing in a moving public transit vehicle
4. Reading informational signs (sight disabilities as defined in Section 9 only)
5. Hearing announcements by train conductors, bus drivers or station agents
6. Walking more than 200 feet

The Project Staff reserves the right to verify Certificate Forms by contacting persons completing the forms.

Any fees charged for the completion of Certificate Forms are not the responsibility of the Project and it is hoped that Forms will be filled out without any fee.

Certificate Forms will be confidential records and kept on file with the Project Office.

Temporary Handicap

Any person whose sole incapacity is any physical, mental or phychological disability or incapacity covered in the eligibility criteria of less than six (6) months duration will be issued a temporary discount card with a termination date determined at time of certification.

Exclusions

Persons whose sole incapacity is

1) Pregnancy
2) Obesity
3) Acute or chronic alcoholism or drug addiction
4) Contagious diseases

are specifically excluded from eligibility.

GUIDE TO ELIGIBILITY CRITERIA

ELIGIBILITY CRITERIA

PHYSICAL DISABILITIES

Section 1. Non-Ambulatory Disabilities. Impairments that, regardless of cause, confine individuals permanently to wheelchairs.

Section 2. Semi-Ambulatory Disabilities. Impairments that cause individuals to walk with difficulty or insecurity including individuals using a long leg brace, a walker or crutches to achieve mobility.

Section 3. Semi-Ambulatory Disabilities. Persons who due to any cause, suffer arthritis which causes a functional motor deficit in any two major limbs (arms and/or legs).

American Rheumatism Association criteria may be used as a guideline for the determination of arthritic handicap. Therapeutic Grade III or worse and Functional Class III or worse and Anatomical State III or worse are evidence of arthritic handicap.

Section 4. Semi-Ambulatory Disabilities. Persons who suffer amputation of; or anatomical deformity of (i.e. loss of major function due to degenerative, changes associated with vascular or neurological deficits, traumatic loss of muscle mass or tendons and X-ray evidence of bony or fibrous ankylosis at an unfavorable angle, joint subluxation or instability).

a. Both hands; or
b. One hand and one foot;
c. Amputation of lower extremity at or above the tarsal region (one or both legs).

Section 5. Semi-Ambulatory Disabilities. Cerebrovascular accident (stroke) with one of the following four months post-CVA:

a. Pseudobulbar palsy; or
b. Functional motor deficit in any of two extremities; or
c. Ataxia affecting two extremities substantiated by appropriate cerebellar signs or proprioceptive loss.

Section 6. Semi-Ambulatory Disabilities - Pulmonary Ills. Persons suffering respiratory impairment (dyspnea) as defined by The Journal of the American Medical Association, Guides to the Evaluation of Permanent Impairment, The Respiratory System, 11/22/65.

Classes of Respiratory Impairment

Class 3 Dyspnea does not occur at rest but does occur during the usual activities of daily living. However, the patient can walk a mile at his own pace without dyspnea although he cannot keep pace on the level with others of the same age and body build. Percent disability 40-50.

Class 4 Dyspnea occurs during such activities as climbing one flight of stairs or walking 100 yards on the level, or less exertion or even at rest.

Class 6 Dyspnea present on slightest exertion, such as dressing, talking, at rest.

Section 7. Semi-Ambulatory Disabilities - Cardiac Ills. Persons suffering functional classifications of cardiac disease, Classes III and IV and therapeutic classification, Classes C, D, E as defined by Diseases of the Heart and Blood Vessels - Nomenclature and Criteria for Diagnosis, 6th edition, Boston, Little, Brown and Company by the New York Heart Association.

Functional Classification

Class III. Patients with cardiac disease resulting in marked limitation of physical activity. They are comfortable at rest. Less than ordinary physical activity causes fatigue, palpitation, dyspnea, or anginal pain. For instance, inability to walk one or more level blocks or climbing flight of ordinary stairs.

Class IV Patients with cardiac disease resulting in inability to carry on any physical activity without discomfort. Symptoms of cardiac insufficiency or of the anginal syndrom may be present even at rest. If any physical activity is undertaken, discomfort is increased.

Therapeutic Classification

Class C Patients with cardiac disease whose ordinary physical activity should be moderately restricted, and whose more strenous efforts should be discontinued.

Class D Patients with cardiac disease whose ordinary physical activity should be markedly restricted.

Class E Patients with cardiac disease who should be at complete rest, confined to bed or chair.

Section 8. Semi-Ambulatory Disabilities - Dialysis. Persons who in order to live must use a kidney dialysis machine.

Section 9. Sight Disabilities. This section includes only the legally blind.

A. Those persons whose vision in the better eye after best correction is 20/200 or less; and

B. Those persons whose visual field is contracted (commonly known as tunnel vision)

i to 10 degrees or less from a point of fixation, or

ii so the widest diameter subtends an angle no greater than 20 degrees.

Section 10. Hearing Disabilities. Deafness or hearing incapacity that may make an individual insecure in public areas because the individual is unable to communicate or hear warning signals, including only those persons whose hearing loss is 90dba or greater in the 500, 1000, 2000 Hz. ranges.

Section 11. Disabilities of Incoordination. This section includes those persons suffering faulty coordination or palsy from brain, spinal or peripheral nerve injury and any person with a functional motor deficit in any two limbs or who suffers manifestations which significantly reduces mobility, coordination and perceptiveness not accounted for in previous categories.

DEVELOPMENTAL DISABILITIES

Those persons, not psychotic, who are so developmentally disadvantaged from infancy or before reaching maturity that they are incapable of managing themselves and their affairs independently, with ordinary prudence, or of being taught to do so, and who require supervision, control, and care, for their own welfare, or for the welfare of others, or for the welfare of the community;

and any person who is unable, or likely to be unable, to physically or mentally respond to an oral instruction relating to danger and unassisted take appropriate action relating to such danger.

This section includes only those persons with the following disorders who are participating in a State or Federally funded or State recognized program.

Section 12. Mental Retardation. Refers to subaverage general intellectual functioning which originates during the developmental period and is associated with impairment in adaptive behavior (a general guideline is an IQ which is more than two standard deviations below the norm). This section also applies to adults who by reason of illness or accident suffer mental retardation.

Section 13. Cerebral Palsy. A disorder dating from birth or early infancy, non-progressive, although if not treated, there is marked regression in functioning characterized by examples of aberations of motor functions (paralysis, weakness, uncoordination) and often other manifestations of organic brain damage such as sensory disorders, seizures, mental retardation, learning difficulty and behavioral disorders.

Section 14. Epilepsy (Convulsive Disorder). Clinical disorder involving impairment of consciousness, characterized by major motor seizures (grand mal or psychomotor) substantiated by EEG, occurring more frequently than once a month in spite of prescribed treatment. With:

a. Diurnal episodes (loss of consciousness and convulsive seizure); or
b. Nocturnal episodes which show residuals interfering with activity during the day.

Section 15. Autism. (1) a syndrome described as consisting of withdrawl, very inadequate social relationships, exceptional object relationships, language disturbances, and monotonously repetitive motor behavior; many children with autism will also be seriously impaired in general intellectual functioning; (2) this syndrome usually appears before the age of 6 and is characterized by severe withdrawal and inappropriate response to external stimuli.

Section 16. Neurological Handicap. A syndrome characterized by learning, perceptual and/or behavioral disorders of an individual whose IQ is not less than two standard deviations below the norm. These characteristics exist as a result of brain dysfunction (any disorder in learning or using the senses), neurological disorder, or any damage to the central nervous system, whether due to genetic, hereditary, accident, or illness factors. This section includes persons with severe gait problems who are restricted in mobility.

MENTALLY DISORDERED DISABILITIES

This section carries no age restriction

Section 17. Emotionally Disturbed. To the extent of total disability and

a. living in a board and care home and receiving State or Federal financial assistance and participating in a State or federally funded work activity center or workshop or

b. living at home under supervision and may or may not receive State or Federal financial assistance and participating in a State or federally funded State or Federal prescribed treatment programs or rehabilitation services

NOTE: VETERANS ADMINISTRATION EXCEPTION

Any veteran who holds a disability rating for aid and attendance, housebound or permanent and total rated at the 100% level is immediately eligible and criteria section number requirement is waived on the Certificate Form.

All other veterans are subject to the above Eligibility Criteria

Any veteran wishing to apply for certification to the Veterans Administration should include his or her Social Security number and VA file number on the Certificate Form or attachment sheet when mailing to the Veterans Administration.

CERTIFICATE FORM

HANDICAPPED DISCOUNT

I certify that _____
(Please print person's name)

meets the Danville Discount Project Eligibility Criteria as handicapped, Section # _____
(Section No.)

and is _____ eligible for
(Permanently/Temporarily)

a discount fare. Length of Temporary Disability _____
(No. Months)

Person's Address _____

Telephone: _____ Birthdate _____

Resident of City of Danville? _____

I, _____ agree to the release of
(Signature of Applicant)

this information to the Danville Taxi Discount Project for the purpose of discount fare eligibility certification.

PLEASE TYPE OR PRINT:

_____ _____
Name of Person Certifying Agency

_____ _____
Address Telephone

Physician's License Number (if applicable) _____

_____
Signature of Certifying Person

DEPARTMENT OF PLANNING AND DEVELOPMENT

309 VERMILION • DANVILLE, ILLINOIS 61832 • 217/446-0807

DAVID S. PALMER
Mayor

JOHN WEAVER
Director

Our records indicate the I. D. Card of your client,

_____, registered with the City's R T R Taxi Program is about to expire. It was registered as a temporarily handicapped I D number. If this client is still considered handicapped under our eligibility criteria, please complete the enclosed Certificate and return it to our office. We will then send them another I D Card with a new expiration date.

Thank you for your time and consideration.

Sincerely,

Dan Bolton

Dan Bolton
Mass Transit Planner

DB/mb

Enclosure

DEPARTMENT OF PLANNING AND DEVELOPMENT

400 NORTH HAZEL • DANVILLE, ILLINOIS 61832 • 217/446-0807

DAVID S. PALMER
Mayor

JOHN WEAVER
Director

March 7, 1977

Dear

It has been brought to our attention by our computer sheets that you have exceeded your $20.00 per month total fare limit in regard to the Danville Taxi Program. The sheets indicate to us that you have taken $_____ total for the month of January, 1977

If you do not abide by the rules you agreed to comply with on the application card, we have no alternative but to cancel your registration with the Program.

If you have any questions with regard to this matter, please do not hesitate to call us at 446-0803 extension 60.

Sincerely,

Dan Bolton

Dan Bolton
Mass Transit Planner

DB/jm

___/___/In person ___/___/Mail APPLICATION CARD

OFFICIAL USE
I.D.#:_____
GROUP:_____
_____
INITIAL:_____

NAME:_____
NO & STREET:_____
TELEPHONE:_____
BIRTHDATE:_____ AGE:_____

I agree not to exceed the Twenty Dollar ($20) per month limit on use of my I.D. Card. I understand that this card is to be used only for trips taken by me. I also realize that my taxi charges will be monitored by the City and failure to comply with the above mentioned regulations can result in the loss of my privileges.

DATE:_____ SIGNATURE:_____

Appendix C

RTR PROJECT AND
TAXICAB COMPANY CONTRACT

THIS AGREEMENT made and entered into this _____day of _____, 1975, by and between the City of Danville, hereinafter referred to as the "City", and _____ Cab Company, hereinafter referred to as "Company",

WITNESSETH:

WHEREAS, the City has many people in need of reasonably priced transportation, and;

WHEREAS, there currently exists in the City, Companies which are experts in the field of providing taxi transportation and are licensed to operate under the ordinances of the City of Danville, and;

WHEREAS, the City received a grant of $314,530.00 on August 9, 1975, from the Federal Urban Mass Transportation Administration in order to help fund a user side taxi transit subsidy program for a period of 24 months, and;

WHEREAS, Company is licensed and qualified to perform the services which are the subject of this agreement, and;

WHEREAS, the City and the Company are desirous of cooperating on the implementation of the taxi transit program.

NOW THEREFORE THE CITY AND THE COMPANY AGREE TO THE FOLLOWING:

1. TERM. The term of this agreement shall be for a period of 21 months after the initiation of the program in Danville.

2. DESCRIPTION OF SYSTEM. The Danville Taxi Transit System, hereinafter referred to as "system", shall be subject to the following:

A. The system will only transport individuals who live in the City.

B. System service shall be on a shared ride basis.

C. All patrons shall show a proper identification card before receiving a ride under this program.

D. All patrons shall deliver to driver, cash in the proper amount based upon the charges of Company as provided in ordinances of the City.

E. The driver shall complete a "charge slip" for the balance of the trip fare. One copy goes to the rider, one to the City, and one is retained by the Company.

3. Company shall at all times comply with provisions in paragraph 2 above and shall be subject to the following:

A. The Company will avoid any undue delay of any patron, either at point of pick-up or en route and will strive to pick-up System patrons within 30 minutes of time of call.

B. The Company will govern vehicle staging and routing.

C. System vehicles will not wait for patron more than two (2) minutes at any point.

D. System drivers will assist in loading and unloading of elderly passengers, parcels and personal effects.

4. VEHICLES AND SPECIFICATIONS. Vehicles used in the System will be conventional 4-door sedans equipped according to applicable City Codes on taxi cabs and shall at all times be kept in good and safe operating condition and shall at all times be kept in clean and comfortable condition. All drivers shall be licensed and meet the requirements of the City Codes.

5. COMMUNICATIONS AND DATA COLLECTION. Each vehicle shall have two-way radios. Company shall account for all patrons

transported together with the appropriate charge, shall maintain accurate trip sheets and other data which may provide information to allow for evaluation of the System by City and the Federal Government.

6. HOURS OF OPERATION. The Company shall operate vehicles for this System 24 hours per day seven days a week and based on experience shall at all times have sufficient vehicles and personnel to meet the demand for service.

7. REIMBURSEMENT FOR RIDES. All charges by Company shall be made on the basis of the applicable rates as provided in the ordinances of the City. The Company shall meet with the City's representative each week on an agreeable date, to submit a voucher for payment. The Voucher shall be detailed enough to substantiate the billing. City shall pay the voucher as soon as possible unless there is some question about its validity. In such event, Company shall be contacted immediately and prompt steps taken to resolve such question.

8. INTERRUPTION OF SERVICE. Company shall be excused for failure to perform services under this agreement if said service is prevented by reason of Acts of God, strikes, labor disputes or other occurrences over which Company has no control.

9. In the event Company or City shall fail to comply with this agreement, and shall continue to do so for 5 days after receiving notice in writing of any breach of this agreement, then this contract may be terminated by the aggrived party.

10. MODIFICATION OF AGREEMENT. This agreement may be modified periodically by the parties in order to meet the changing transit needs of Danville and to better evaluate the System.

11. This agreement shall terminate if the funds to be provided by the Federal Urban Mass Transportation Administration shall not be received by City or if the license of Company to operate a taxi service in the City is suspended or revoked.

12. This agreement shall at all times be subject to the rules and regulations of the Federal Mass Transportation Administration and the Act under which it operates.

IN WITNESS WHEREOF, the parties hereto have executed this agreement the day and year first above mentioned.

CITY OF DANVILLE,
A Municipal Corporation

BY: _____
MAYOR

_____
CAB COMPANY

Appendix D

USER CERTIFICATION INTERVIEW

The "certification" interview is designed to capture the following sets of data on users:

1) Socio-economic characteristics
2) Alternative modes of transportation available
3) "Before" mobility matrix
4) Transit handicaps

The first two involve fairly standard sets of questions. In the third area, the survey instrument relies on the interviewee to accurately report the purposes and modes for all trips taken during the previous three days. The day of the week is written in for each day. Interviewing will take place on the weekends as well as on weekdays for a mix of days of the week. Later surveys of users will be organized comparably.

The fourth set of data relies on asking interviewers directly about alternative transit services they can or cannot use on the basis of physical or mental handicaps.

Most interviews will take place over the phone and be conducted by project staff. In some cases, social service agency personnel will facilitate the completion of interviews for their clients, especially for the emotionally and developmentally handicapped. All applicants will be interviewed before they are assigned an ID number and before they receive an ID card. This will insure that "before" travel behavior is surveyed.

The survey instrument is attached as part of this appendix.

DANVILLE
CERTIFICATION INTERVIEW

I.D. #_____

DATE:_____

INTERVIEWER:_____ Col.1:_____ ___
Date:__/__/__ ___
Subgroup:_____ ___
APPLICANT NAME:_____ I.D.:_____ ___

ADDRESS:_____

PHONE NUMBER:_____

1. AGE: (1)____5-15 (4)____55-59
(2)____16-20 (5)____60-64
(3)____21-54 (6)____65 & Over ___

2. SEX & RACE: (1)____Male Caucasian (3)____Female Caucasian
(2)____Male Non-Caucasian (4)____Female non-caucasian ___

3. Do you have a driver's license? (1)____Yes (2)____No ___

4. How often do you drive?
(1)____Regularly (3 or more times per week)
(2)____Occasionally (at least 1-2 times per month)
(3)____Seldom or never ___

5. Do you have an automobile available for your use as a driver?
(1)____Yes, all the time (4)____No automobile available
(2)____Yes, most of the time (5)____Not a driver
(3)____Yes, some of the time ___

6. How many vehicles are available for use by all persons in your household?
____How many vehicles? ____How many drivers are there? ___
___

7. Do you attempt to avoid driving?
(1)____Yes (3)____No
(2)____Sometimes (4)____Not a driver ___

8. If so, what is the main reason?

(1)____Vision Problem

(2)____When weather is bad

(3)____When arthritis is bothering me

(4)____Other_____

(5) ____Does not attempt to avoid driving

(6)____Not a driver ____

9. Are you sometimes driven by someone else in a private car?

____Yes ____No ____

10. If so, during what times can you get a ride?

(1)____Evenings & weekends only

(2)____Weekdays too(all times)

(3) ____Depends-- No clearly defined times

(4)____Does not receive rides ____

11. Do you have a phone where you live?

____Yes ____No ____

12. Do you have a physical handicap?

____Yes ____No ____

13. Can you describe the handicap?_____

_____

_____

14. Do you use any aids for movement?

(1)____Handicapped, but no aids

(2)____Wheelchair

(3)____Walker

(4)____Crutches

(5)____Cane (for walking)

(6)____Cane (for blind person)

(7)____Seeing eye dog

(8)____Artificial limbs

(9)____No handicap ____

15. Are you physically able to use a taxi?

(1)____Yes, no problem

(2)____Yes, with some difficulty

(3)____Yes, but with great difficulty

(4)____No

16. Can you describe the problems you would have in using a taxi?

_____

_____

17. Are you physically able to use a bus?

(1)____Yes, no problem

(2)____Yes, with some difficulty

(3)____Yes, but with great difficulty

(4)____No

18. Can you describe exactly what the main problem would be in using a bus?

_____

_____

(1)____Boarding or alighting from a bus

(2)____Standing in a moving bus

(3)____Reading informational signs

(4)____Hearing announcements by bus driver

(5)____Walking more than two (2) blocks

(6)____Standing and waiting for a bus

(7)____Wheelchaired person

(8)____Cannot use bus due to mental problem

(9)____No problem in using a bus

19. We would like to chart the different trips that you took during the last three days and how you took them. These include walking trips ~~longer~~ than 4-5 blocks.
(Day of the week is to be coded as follows: 1-Monday; 2-Tuesday; 3-Wednesday; 4-Thursday; 5-Friday; 6-Saturday; 7-Sunday.)

DAY OF WEEK	YESTERDAY* ( )	2 DAYS AGO ( )	3 DAYS AGO ( )	SUBTOTALS	
					1.____
					2.____
					3.____
WORK					W.____
SCHOOL					S.____
MEDICAL					M.____
CHURCH					C.____
PERSONAL BUS.					PB.____
SHOPPING					S.____
SOCIAL/REC					SR.____
OTHER					O.____
RETURN HOME					RH.____
TOTAL					T.____ ____

Interviewers are to record a check mark (✓) for each local one-way trip, by purpose. At the same time, record a check mark (✓) for the mode used, below.
*Today's trips are recorded only if the interview is at night and all trips for the day are known--in which case the labels are to be changed above.

SUBMODE		SUBTOTALS	
			1.____
			2.____
			3.____
AUTO DRIVER			AD.____ ____
AUTO PASSENGER w/FRIEND			PF.____
AUTO PASSENGER w/RELATIVE			PR.____
SCHOOL BUS (incl. Red Top)			SB.____
TAXI			T.____
TELE-CARE			TC.____
DANVILLE TOWNSHIP TRANS.			DT.____
VERMILLION REHAB. CENTER			VR.____
WALK (over 4-5 blocks)			W.____
OTHER			O.____
TOTAL			T.____ ____

20. What is the combined annual income of all persons in your household?

(1)____less than $5,000

(2)____$5,000 - $9,999

(3)____$10,000 - $14,999

(4)____$15,000 - $24,999

(5)____$25,000 and over ____

21. How many persons are there in your household?_____ ____

PROJECT STAFF:

____
/___/ If registered as handicapped (under or over 65), what section of this Eligibility Criteria applies?_____
Code two digit section number (01 to 17). . . . . ____ ____ ____

____
/___/ Register Applicant on Master ID List.

____
/___/ Record ID Number and Subgroup Code on first page of this Interview.

APPENDIX E

PRE-DEMONSTRATION ON-BOARD TAXI SURVEY

The pre-demonstration on-board taxi survey was designed to capture profiles of taxi riders and taxi service characteristics before the demonstration began. The survey was conducted between the hours of 7 AM and 7 PM for fourteen consecutive days beginning October 26th and ending November 8th (1975). This period is essentially the last week in one month and the first week in another. Hours of the day and days of the week were surveyed proportionately to taxi ridership volumes during those times, resulting in the following three survey shifts, Monday through Saturday: 7 AM to 11:30 AM, 10:30 AM to 3:30 PM and 2:30 PM to 7 PM. The overlap of the shifts provided double coverage during peak periods; an additional hour was surveyed on Friday from 3:30 PM to 4:30 PM to reflect the extra demand on that day. Sunday ridership was sampled from 8 AM to 11:30 AM and 12:30 PM to 4 PM.

For each interviewer shift, the interviewer was to split the shift, spending approximately half the time in each of two different cabs. The result was 78 "clusters" of cab rides surveyed that could be analyzed. Interviewers were also required to exit from the cab if more than three passengers wanted to ride at the same time--with as much information as possible gathered up to that point in time. The latter occurred only twice, adding another two clusters surveyed.

The two largest cab companies with over 95% of the taxi business were surveyed: Red Top Cab Company with approximately 70% of the sample and Courtesy Cab Company with the remaining 30% of the sample. The total sample amounted to 162.5 hours of survey time with observations recorded on 2,000 vehicle

miles of operations and 526 calls for service; questionnaires were administered to the 610 riders.

A letter to the cab operators, explaining the survey, and a copy of the survey instruments follow.

14 October 1975

Dear

As discussed in our meeting on August 20th, part of the evaluation effort connected with the Taxi-Discount Project will be surveys of riders who are presently using the taxis before the demonstration begins. We have tried to work out a detailed plan and would appreciate your comments on it.

After consideration of all options discussed at that meeting, the evaluation contractor, Bigelow-Crain Associates, has recommended that on-board surveys with interviewers in the cab would be the best approach. A great deal of very accurate information on origin/destination, trip lengths, etc. will be observed by the interviewer while also soliciting information from the rider(s). A short interview, printed on heavy card stock and with a clipboard, will be given to the rider(s) for some information from them. The questionnaire should take four to five minutes to complete. An advanced copy of the items observed by the interviewer and the on-baord questionnaire are enclosed. The interviewer will be available to help the rider answer questions. This will all be done so as not to interfere with the necessary communications between the driver and the rider as to destination, fare, etc.

On-board surveys in cabs have been done elsewhere and prove to be a viable method--especially where shared riding is an element of the system. In the latter case, riders are not so surprised to find another person already in the cab. The interviewer will introduce himself or herself as an employee of the City of Danville, and explain that the City is interested in understanding how the taxi transit service operates in Danville. It will be further explained that this fits in with the taxi-discount project and the on-going transit development program study in which the City is involved. The rider, of

course, will have the option of not answering any or all questions.

At present, it is anticipated that a total of 200 cab hours will be surveyed over a two week period of time (October 26th through November 8th). This will be broken down proportionately for each cab company. The anticipated hours of surveys are 7 AM to 7 PM. (The last part of that range is subject to change depending on the amount of daylight available for the rider to fill out his questionnaire.) The 200 cab hours of survey time is approximately 6% of all cab hours during that time period.

The selection of the cab hours will be a random process taking into consideration that certain days and hours have more demand. Our hope is to assign an interviewer to a cab for a one or two hour period of time and then have that person switch cabs or maybe even cab companies. He will do this by getting out of the cab and telephoning for another one to pick him up and take him somewhere, paying the normal fare for that ride. Some such procedures are desirable so that the interviewer will not get "locked into" one pattern of rides or with one driver. In addition, it is hoped that the interviewer can work with the cab drivers such that the dispatcher is unaware of what cab, if any, has an interviewer in it. This is to insure that the normal process of assignments to that cab takes place. We don't want the dispatcher, consciously or unconsciously, to direct certain types of rides to the cab with an interviewer--again to insure a random process of data collection.

It may occasionally happen that a cab with an interviewer will be assigned to pick-up a group of people. There is the question of how to deal with different size groups. We are assuming that it would be all right for an interviewer (in the front seat) to ride along with as many as three passengers--all of whom would sit in the back seat. If there are four or five passengers, our interviewer will get out of the cab.

Our interviewer will then go to a telephone booth and call for a cab from the next company marked on his list.

This should work out with minimal effort on the part of drivers, dispatchers, and owners. In fact, the survey is designed so that no one from the cab companies needs to get involved in assignments, location, or coordination of the interviewers.

The interviewers will simply call for a cab when they are to begin their survey, take a token ride, and then the driver will report back to the dispatcher that he is free for another assignment. The interviewers will pay for each such token ride, and the cab driver's fare envelope will be square with the dispatcher's list.

To acquaint the drivers and dispatchers with these procedures, we would like to arrange meetings with day and night personnel working for your company. It is anticipated that such meetings would take approximately one hour. Presumably the drivers would charge you for such time and the project will reimburse you for that expense. It is important to have good attendance since any one of the cab drivers could be driving a cab involved in the survey. Dan Bolton, our transit planner, will be making these arrangements with you by phone. These meetings will have the added advantage of allowing the drivers and project staff to discuss the upcoming Taxi Discount Project and how that will work.

Please let us know of any problems that you would have with the above outline for the survey plan. We would like to say again that all information gathered will be held in confidence by the evaluation contractor, Bigelow-Crain Associates. The purpose of the survey is not to compare one company with another or to compare one driver with another. Rather, it is to compare general taxi ride characteristics for all Danville taxi rides before and after the Discount Demonstration Project.

Sincerely yours,

Mike Federman
Assistant Director
Planning Department

Attachments (2)

/sk

DANVILLE TAXI SURVEY

Cluster Control Sheet

CARD: _____B1__

CLUSTER: _____

1. Interviewer: _____ Code Number: _____

2. Date: _____ Code 26 to 08: _____

3. Company: (1) _____ Red Top (2) _____ Courtesy (3) _____ Brown's ____

4. Cab Number: _____ Code Number: _____

5. Cab Driver: _____

6. Time Begin: _____ Code all four digits _____

7. Time End: _____ Code all four digits _____

8. Number of rides surveyed in this cab: _____

10-20-75

DANVILLE TAXI SURVEY
(Interviewer Observations)

CARD: B2
CLUSTER: _____
RIDE NO.: _____

1. Is this ride shared with the previous ride: (1)_____Yes (2)_____No. . . . . _____

2. Time of Trip Assignment_____. Code last two digits. . . . . _____

3. How Assigned: (1)_____Person at Cab Stand (3)_____Call--immediately
(2)_____Person Hailed Cab (4)_____Call--appt. . . . . _____

4. Appointment Time:_____. Code last two digits or 99. . . . . _____

5. Mileage at Assignment_____. Code last two digits. . . . . _____

ORIGIN:_____

6. Time arrives origin_____. Code last two digits . . . . . _____

7. Mileage at origin:_____. Code last two digits . . . . . _____

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 . . . . . _____

9. Number of riders (over 4 years old) picked up (0 to 5). . . . . _____

10. Race of riders: (1)_____White (2)_____Black (3)_____Mixed Group . . . . . _____

11. Handicaps:

(0) No handicap noticeable		. . . . .#1	_____
(1) Wheelchair	(5) Deaf	. . . . .#2	_____
(2) Walking Aid	(6) Mental - Attended	. . . . .#3	_____
(3) Walking Problem	(7) Mental - Not Attended	. . . . .#4	_____
(4) Blind		. . . . .#5	_____

(9) For extra columns over number of riders

12. Time cab leaves origin:_____. Code last two digits. . . . . _____

13. Is the next ride shared with this one? (1)_____Yes (2)_____No . . . . . _____

DESTINATION:_____

14. Time cab arrives at destination:_____. Code last two digits . . . . . _____

15. Mileage at destination:_____. Code last two digits. . . . . _____

16. Does Driver get out of cab? (1)_____Yes, to physically help rider
(2)_____Yes, to help with bags or open door only
(3)_____No . . . . . _____

17. Amount of fare: $_____. Code 3 digits: 0.75; 1.65; etc. . . . . _____

18. Amount of tip: $_____. Code 2 digits (00 to 98) or 99 unknown. . . . . _____

19. Time cab ready to leave again:_____. Code last two digits . . . . . _____

CARD: B3
CLUSTER: _____
RIDE NO.: _____
RIDER NO.: _____

CITY OF DANVILLE TAXI SURVEY

PLEASE ANSWER THE QUESTIONS ON BOTH SIDES OF THIS QUESTIONNAIRE.

1. PLEASE CHECK THE PLACE TO WHICH YOU ARE GOING ON THIS TRIP:

(0)____HOME
(1)____WORK
(2)____SCHOOL
(3)____CHURCH
(4)____SHOPPING
(5)____MEDICAL OR DENTAL
(6)____PERSONAL BUS.
(7)____VISITING
(8)____SOCIAL OR RECREATIONAL
(9)____OTHER

2. PLEASE CHECK THE PLACE FROM WHICH YOU JUST CAME:

(0)____HOME
(1)____WORK
(2)____SCHOOL
(3)____CHURCH
(4)____SHOPPING
(5)____MEDICAL OR DENTAL
(6)____PERSONAL BUS.
(7)____VISITING
(8)____SOCIAL OR RECREATIONAL
(9)____OTHER

3. HOW OFTEN DO YOU USUALLY USE TAXIS?

(1)____REGULARLY: AT LEAST ONCE A WEEK
(2)____OCCASIONALLY: AT LEAST ONCE A MONTH
(3)____SELDOM: LESS THAN ONCE A MONTH
(4)____THIS IS MY FIRST TAXI TRIP.

4. ARE YOU A RESIDENT OF THE CITY OF DANVILLE? ____YES ____NO

5. TO WHAT SEX AND AGE GROUPS DO YOU BELONG? ____MALE ____FEMALE

(1)____5-15
(2)____16-20
(3)____21-54
(4)____55-59
(5)____60-64
(6)____65 OR OVER

6. WHAT IS THE COMBINED ANNUAL INCOME OF ALL MEMBERS OF YOUR HOUSEHOLD?

(1)____LESS THAN $5,000
(2)____$5,000 - $9,999
(3)____$10,000 - $14,999
(4)____$15,000 - $24,999
(5)____$25,000 AND OVER

7. How many members are there in your household? _____

8. Please tell us how satisfied you are with the following items of service during this trip. (Please check one answer for each item.)

	Very Satisfied	Somewhat Satisfied	Not Satisfied
A. Waiting Time	_____	_____	_____
B. Convenience	_____	_____	_____
C. Safety	_____	_____	_____
D. Driver Courtesy	_____	_____	_____
E. Comfort	_____	_____	_____
F. Reliability to get where you want to go on time	_____	_____	_____

9. At your destination, do you expect to be:

(1)____on time or a little bit early

(2)____late

(3)____I don't have any special time requirement for this trip.

THANK YOU VERY MUCH FOR YOUR HELP.

Appendix F

PRE-DEMONSTRATION AGENCY SURVEY

The focus of the Agency Survey over the two years of the demonstration will be to follow the impact of the project on agency provision of para-transit services and agency provision of services in general to the target groups served.

Three different types of social service agencies will be surveyed:

A. Those agencies that provide general services to their clients and may or may not incidentally be involved in providing transportation services

B. Homes for the Aged and Developmentally Disabled who usually have some responsibility for client transportation

C. Agencies whose primary purpose is to provide transportation services for the target group

Each type of agency will involve slightly different emphasis during the interview although one set of questions will be used as an outline in all cases. The primary information sought is:

- Number of para-transit programs
- Number of para-transit vehicles by type
- Number of passenger one-way trips served per some unit of time
- Comments of agency personnel on transportation needs of their clients; major problems delineated

General coordination concerning the up-coming taxi demonstration will be taking place at the same time as the interviews. Individual agencies will facilitate registration, certification and interviews with their clients (D-2.3).

A complete inventory of Danville agencies by type is as follows:

A

1. Vermillion Rehabilitation Center
2. Veterans Administration Hospital (Foster Homes for Veterans Program)
3. Promise House (Day Treatment Center)
4. Developmental Learning Center
5. Crisis House
6. Herb Crawford Center

B

7. Children's Home
8. Colonial Manor
9. Danville Care Incorporated
10. Danville Manor Incorporated
11. Homelike Care
12. Inez Memorial Home
13. Miller House
14. Webster Memorial Home
15. Americana Health Care Center
16. International Nursing Home of Danville
17. Vermillion Manor
18. Vermillion Shelter Care

C

19. Tele-Care
20. Danville Township Transportation Service
21. School District Special Education Office - contract with Red Top-Yellow Cab Co.
22. Department of Public Aid

In all, there are 22 groups to be surveyed. A responsible official of each will be contacted and interviewed. The interview questionnaire is attached as part of this appendix.

DANVILLE
AGENCY SURVEY

(Pre-demonstration)

1. (a) AGENCY NAME: _____

   (b) ADDRESS: _____

   (c) Contacted Person: _____

   (d) Interviewer: _____

2. What is the client population served by this Agency?

   (a) Characteristics or Definitions? _____

   _____

   _____

   (b) Number of persons served: _____

3. What services are provided:

   (a) _____

   (b) _____

   (c) _____

4. Frequency of client use of services:

   _____

   _____

   _____

5. Do you feel transportation is a problem in providing services for your clients?

   _____Major Problem

   _____Minor Problem

   _____No Problem

6. What are the biggest problems your clients face in getting transportation to your services?

_____

_____

_____

7. How does your agency provide transportation services for your clients?

____No transportation provided

____Client's reimbursed for travel costs

____Agency buys transportation service

____Agency uses vehicles owned by another agency

____Agency operates own vehicles using paid drivers

____Volunteer drivers use own vehicles

____Other_____

8. What mode of transportation is provided for?

____Charter bus

____Taxi

____Agency owned vehicles

____Private vehicle

9. How often did you provide this service in the last year?

____Charter bus:_____
How many person trips?:_____

____Taxi:_____

____Agency or volunteer vehicle: How many?_____

How many vehicle trips?_____

How many person trips?_____

10. How are these transportation services financed?

_____

_____

11. How much did your budget for transportation cost this year?

_____

12. Do you have any actual expenditure figures?

_____

_____

13. What are the major problems that you have had in providing this service?_____

_____

_____

APPENDIX G

AUGUST 1976 RE-INTERVIEW OF PROJECT REGISTERED PERSONS

In August, 1976, a telephone survey was conducted with a random sample of 246 persons who had signed up for the project as of July. Two hundred three of these were project users and 43 had not used the project as of that time.

The primary purposes of the survey were to ascertain users' perceptions of the project and benefits due to the project and a methodological check on surveying changes in travel behavior. A copy of the survey instrument follows.

DANVILLE SURVEY OF

CERTIFIED REDUCED TAXI RATE PROGRAM MEMBERS

(Summer, 1976)

Interviewer's Name:_____ Date Completed:_____ E 1

R.T.R. Member's Name:_____ 1. PPT-PTD through6/76 1.__ __ __

2. Telephone Number:_____ 2.__ __ __ __ __ __ __

3. I.D. Number:_____ 3.__ __ __ __

4. Subgroup Number: (circle One) 1 2 3 4.__

Good Evening. I would like to speak with _____

- o If respondent is home, begin the interview.
- o When the respondent is not home, make an appointment to call back at a convenient time.
- o If not possible to complete interview, indicate reason below.

5.

1st Call	2nd Call	3rd Call		5.__
_____	_____	_____	0. No call	
_____	_____	_____	1. Busy	__
_____	_____	_____	2. No Answer	__
_____	_____	_____	3. Disconnect, No Forwarding Phone	
_____	_____	_____	4. Refused [Explain on back]	
_____	_____	_____	5. Person not home, Appointment made	
_____	_____	_____	6. Completed questionnaire	

Appointment: Day:_____ Date:_____Time:_____-AM -PM

6. Interview by: (1)_____Telephone, (2)_____In person. 6.__

My name is _____ and I'm working for the City of Danville. We are doing a survey of persons who signed up for the R.T.R., Reduced Taxi Rates Program. I would like to take a few minutes to ask you some questions about the program.

7. Have you ever used your ID card (or ticket) on a taxi ride yet? (1)_____Yes (2)_____No 7.___

Non-User Only

8. Can you tell me why you haven't used your ID card yet? 8.___

OPEN ENDED
DO NOT READ CHOICES

_____ 1. Haven't needed to yet, but intend to use it. ___

_____ 2. Signed up for emergency use only. ___

_____ 3. Signed up but never expect to use it. ___

_____ 4. No reasons.

_____ 5. Can't really use taxi very easily.

_____ 6. Other_____

_____ 7. User

9. We would like to know how you feel about the taxi discount program as a whole. Would you describe it as excellent, good, fair, or poor? 9.___

(1)____Excellent (2)____Good (3)____Fair (4)____Poor

Comments: If Given _____

_____

_____

10. Now I would like to know if you are having any problems with the following items of the project.

Both

a. Did you have any problem with the procedures for signing up for the project?

(1)_____Yes (Specify)_____ 10.___

(2)_____No

Users Only

b. Do you have any problems using your ID card?

(1)_____Yes (Specify)_____ ___

(2)_____No

(3)_____Non-user

c. Any problems signing for the trip?

(1)_____Yes (Specify)_____ ___

(2)_____No

(3)_____Non-user

d. Any problems with the promptness of service?

(1)_____Yes (Specify)_____ ___

(2)_____No

(3)_____Non-user

e. Driver courtesy?

(1)_____Yes (Specify)_____ ___

(2)_____No

(3)_____Non-user

Both

f. The cost of the project trips?

(1)_____Yes (Specify)_____ ___

(2)_____No

g. The limit on monthly use?

(1)_____Yes (Specify)_____ ___

(2)_____No

Both

10. (Cont.)

h. Have you experienced any other problems with the project which I haven't mentioned?

(1)_____Yes (Specify)_____ 10.___

(2)_____No

11. We are interested in finding out which of our advertising efforts has worked best. We would like to know if you have heard about the project in any of the following ways?

a. Have you seen the project Ads in the newspaper? (1)____Yes 11a.___

(2)____No

b. Have you heard the project advertised on the radio?

(1)____Yes b.___

(2)____No

c. Have you seen any of the posters which tell about the Reduced Taxi Rate Program? (1)____Yes c.___

(2)____No

12. Has the project affected you in any of the following ways?

a. Do you take more trips now? (1)____Yes 12a.___

(2)____No

b. Are you less dependent on others for rides? (Friends, relatives, social service agencies) (1)____Yes b.___

(2)____No

c. Do you drive less often now? (1)____Yes c.___

(2)____No

d. Can you travel more during any particular time of day since the program started? (1)____Morning d.___

(2)____Afternoon

(3)____Night

(4)____No

13. a. Are there any trips which you can now take, as a result of the program, which you could not take before?

(1)____Yes (2)____No 13a.____

Only if necessary, give this example: "Like visiting friends or taking part in a special program."

b. If Yes, get examples _____

_____

14. How often did you use taxis before the Reduced Taxi Rate Program started? Read Choices

(1)_____ Regularly: At least once a week 14.____

(2)_____ Occasionally: At least once a month

(3)_____ Seldom: Less than once a month

(4)_____ I didn't ride taxis before R.T.R. – Go to #17

15. Do you feel the quality of taxi service is better, the same, or worse than before the project started?

(1)_____ Better 15.____

(2)_____ Same – Go to #17

(3)_____ Worse – If worse, ask why? and mark response in #16

16. (1)_____ Driver doesn't help me as much. 16.____

(2)_____ Driver complains about having to fill out charge slip. ____

(3)_____ Driver makes negative remarks about the program. ____

(4)_____ Service in general just isn't as good. ____

(5)_____ Other _____

17. a. Did you take any taxi trips last month (during July) without using your ID number?

(1)_____Yes 17a.___

(2)_____No - Go to #18

b. If yes, how many times?_____ b.___

c. What are the reasons?

(1)_____ Forgot ID card c.___

(2)_____ Others used ID card ___

(3)_____ Over monthly limit

(4)_____ Other

18. If you take a trip with another R.T.R. member, whose ID numbers get recorded on the charge slip?

(1)_____ Knows that both numbers should be recorded. 18.___

(2)_____ Answers that one or the other is recorded for some reason, not both.

(3)_____ Doesn't know.

19. Do you know that grouping rides with other R.T.R. members is a way to increase the amount of rides you can take in one month?

(1)____Yes (2)____No 19.___

If No, Explain briefly.

For example: When taking a group ride with another person, both R.T.R. members should show their ID numbers. This way, the two riders share the cost of the ride and only half of the total fare is charged for each against their $20.00 per month limit.

20. How could the Reduced Rate Program be made more useful to you? 20. ___ ___

_____ ___ ___

_____ ___ ___

_____ ___ ___

_____ ___ ___

21. What is your employment status now?

Read Choices

(1)_____ Working full time 21. ___

(2)_____ Working part-time

(3)_____ Student

(4)_____ Keeping house

(5)_____ Retired, not looking for work

(6)_____ Unemployed, looking for work

(7)_____ Other (Specify)_____

Now we would like to know about the number of trips you took during the last three days and how you took them. These include walking trips longer than 4-5 blocks.

Code Day of Week as follows:
1-Monday, 2-Tuesday, 3-Wednesday, 4-Thursday, 5-Friday, 6-Saturday, 7-Sunday

Did you take any trips yesterday? Where did you go?

Interviewers should place a check mark (✓) in the box which shows the destination of the trip and the mode of travel. Be sure to ask if the respondent returned home!

22. Yesterday (Code) ___

	0 Auto Driver	1 Auto Passenger w/ friend	2 Auto Passenger w/ relative	3 School bus (including Red Top)	4 Taxi	5 Tele-Care	6 Danville Township Trans.	7 Vermillion Rehab. Center	8 Walk (over 4-5 blks.)	9 Other
Work 0										
School 1										
Medical 2										
Church 3										
Personal Bus. 4										
Shopping 5										
Social/Rec. 6										
Other 7										
Return Home 8										
No Trips 9										

Code as 9_

22.
a. __ __
b. __ __
c. __ __ (72)
E 2
d. __ __
e. __ __
f. __ __
g. __ __
h. __ __

Total Yesterday T. __ __

23. Two Days Ago (Code) ___

	0 Auto Driver	1 Auto Passenger w/ friend	2 Auto Passenger w/ relative	3 School bus (including Red Top)	4 Taxi	5 Tele-Care	6 Danville Township Trans.	7 Vermillion Rehab. Center	8 Walk (over 4-5 blks.)	9 Other
0 Work										
1 School										
2 Medical										
3 Church										
4 Personal Bus.										
5 Shopping										
6 Social/Rec.										
7 Other										
8 Return Home										
9 No Trips										

Code as 9_

23.
a.__ __
b.__ __
c.__ __
d.__ __
e.__ __
f.__ __
g.__ __
h.__ __

Two Days Ago Total T.__ __

Three Days Ago (Code) ___

	0 Auto Driver	1 Auto Passenger w/ friend	2 Auto Passenger w/ relative	3 School bus (including Red Top)	4 Taxi	5 Tele-Care	6 Danville Township Trans.	7 Vermillion Rehab. Center	8 Walk (over 4-5 blks.)	9 Other
0 Work										
1 School										
2 Medical										
3 Church										
4 Personal Bus.										
5 Shopping										
6 Social/Rec.										
7 Other										
8 Return Home										
9 No Trips										

Code as 9_

24.
a.__ __
b.__ __
c.__ __
d.__ __
e.__ __
f.__ __
g.__ __
h.__ __

Three Days Ago Total T.__ __

Total for Three Days T.__ __ (54)

APPENDIX H

AUGUST 1976 ON-BOARD TAXI SURVEY

The summer 1976 On-Board survey was conducted on August 7th and August 9th through 13th. The same shifts were used as were used in the pre-demo survey. Forty clusters of cab rides were surveyed. The primary purpose of this survey was to compare project and non-project trips. The resultant sample sizes were 157 project fare trips and 265 non-project fare trips. A copy of the survey instrument follows.

Date: _____

Summer 1976

DANVILLE TAXI SURVEY

(Interviewer Observations)

1. Card . . . . . G__
2. Interviewer . . . . . ___
3. Day of Week (Mon = 1) ___
4. Driver: _____
5. CLUSTER: . . . . . ___ ___
6. RIDE NO. (this cluster) ___ ___

7. Time of Trip Assignment _____. Code all four digits . . . . . ___ ___ ___ ___

8. Assigned: (1)____Cab Stand/hailed, (2)____Call--immediately, (3)____Call-appt. ___

9. Mileage at Assignment: _____. Code last two digits . . . . . ___ ___

10. ORIGIN: _____

11. Time arrives origin: _____. Code last two digits . . . . . ___ ___

12. Mileage at origin: _____. Code last two digits . . . . . ___ ___

13. 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 . . . . . ___

14. Number of riders picked up (0 indicates no show/cancelled/delivery). . . . . ___

15. Time cab leaves origin: _____. Code last two digits . . . . . ___ ___

16. DESTINATION: _____

17. Time cab arrives at destination: _____. Code last two digits . . . . . ___ ___

18. Mileage at destination: _____. Code last two digits . . . . . ___ ___

19. Payment: (1)__ RTR Card handed to Driver (4)___Other Charge Acct.-Welfare
(2)__ RTR Card shown at distance (5)___Other Commercial Charge Acct.
(3)__ RTR Number only (6)___Cash
(7)__ Other _____ ___

20. Who fills out charge slip? (1)___Driver, (2)___RTR Member, (3)___Other
(4)___No Charge Slip . . . . . ___

21. Does Driver get out of cab? (1)____Yes, to physically help rider;
(2)____Yes, to help with bags or open door only;
(3)____No . . . . . ___

22. Amount of fare: $_____. Code 3 digits: 0.75; 1.65; etc. . . . . ___ ___ ___

23. Amount of tip: $_____. Code 2 digits . . . . . ___ ___

24. Time cab ready to leave again: _____. Code last two digits . . . . . ___ ___

25. Was this a shared ride? (1)_____Yes (2)_____No . . . . . ___

APPENDIX I

AUGUST 1976 HOUSEHOLD SURVEY

In August, 1976, a general random household telephone survey was conducted to obtain reactions to the project on the part of the general adult population and to screen households for project-eligible persons and interview those who had not signed up for the project. Table I-1 presents the total work accomplished in this survey. The resulting number of completed questionnaires were 201 from random household members and 213 from eligible persons who have not signed up for the project. Copies of the survey instruments follow.

Table I-1

August 1976 Household Survey

1452 Telephone numbers tried

- 265 Not Answered
- 1187 Answered
  - 344 Not Applicable to Survey
  - 843 Applicable telephone numbers
    - 788 Screenings Completed
    - 55 Refusals

788 Household Screenings Completed

- 344 Total Eligible Persons
  - 115 Eligible, Registered
  - 229 Eligible, Not Registered
    - 213 Completed Questionnaires
    - 16 Refusals/Not Completed

201 Randomly Selected Adult Household Representatives Interviewed

Opinion Survey & Screening

DANVILLE HOUSEHOLD SURVEY

Random Household Member Opinion Survey & Screening for Eligible Persons (Summer '76)

Interviewer's Name:_____ Date Completed:_____ F A

1. Telephone Number:_____ 1.__ __ __ __ __ __ __

Good Evening. My name is _____ and I'm working for the City of Danville. We are doing a survey about the Reduced Taxi Rate Program in Danville for the handicapped and elderly. I would like to take a few minutes to ask you some questions about the project.

If you are unsure if the respondent is an adult, say

First I need to talk to someone 16 years of age or older.

If no qualified respondent is available, determine a callback time.

2. 1st Call	2nd Call	3rd Call		2.___
_____	_____	_____	0. No Adult	
_____	_____	_____	1. Busy	___
_____	_____	_____	2. Not at home	___
_____	_____	_____	3. Refused — Explain on back	
_____	_____	_____	4. Phone Number Not Applicable	
_____	_____	_____	5. No qualified respondent Appointment made	
_____	_____	_____	6. Completed Screening	

3. Is your household within the city limits of Danville? 3.___

(1)_____ Yes

(2)_____ No — If No, interview is terminated.

4. I would like to get the age and sex breakdown of all household members. We need to do this for statistical purposes to make sure our survey sample includes all age groups and a representative number of males and females.

   Are there any household members under 16 years of age? Is that person (are they) male or female? Etc.

Males:	Under 16 Years	4.___
	(0) 16 - 20 Years	___
	(1) 21 - 54 Years	___
	(2) 55 - 64 Years	___
	(3) 65 and over	___
Females:	Under 16 Years	___
	(4) 16 - 20 Years	___
	(5) 21 - 54 Years	___
	(6) 55 - 64 Years	___
	(7) 65 and over	___

Determine Appropriate Respondent from Selection Key

Total Adults ___ ___

Respondent Code _____

May I speak to _____.

If this person is not available, set up an interview time for later and note the day, date, time and name of respondent.

Continue with Screening Question #9.

Appointment: Day:_____ Date:_____ Time:_____ -AM -PM

Name of Respondent:_____

Speaking to the randomly selected member of the household

INTRODUCTION?

5. Are you aware of the Reduced Taxi Rates (R.T.R.) Program? 5.___

(1)_____ Yes -If Yes, ask #6, 7 & 8

(2)_____ No -If No, explain program briefly & continue interview with screening for eligible persons.

6. What are your general reactions to the program?

Open Ended - Do Not Read Choices

6.___

(0)_____ No reaction

(1)_____ It's a good program, fine the way it is. ___

(2)_____ It's a good program for handicapped and elderly. ___

(3)_____ It should be expanded to include _____ (who) ___

(4)_____ The discount is too high.

(5)_____ The discount should be larger.

(6)_____ The money could be better spent on a bus system.

(7)_____ The program should be more restricted -

1._____ for handicapped persons only.

2._____ for poor people only.

3._____ for essential trips only.

(8)_____ Fine program, but we also need a bus system.

(9)_____ Other _____

_____

_____

7. At present, most of the expense for this program is being paid by the Federal government. If the City of Danville were to consider continuing the program in some form using some of its own tax money and State transit subsidies, would you vote for or against the program? 7.___

   (1)_____ For

   (2)_____ Against

   (3)_____ Don't know

8. Do you own or rent your home? 8.___

   (1)_____ Own

   (2)_____ Rent

   (3)_____ Other (Specify)_____

Continue screening for eligible persons, Question #9.

SCREENING FOR ELIGIBLE PERSONS

9. Is there anyone in your household who is eligible for the Reduced Taxi Rate Program?

   a. Number of people _____ 9a.___ ___

   b. Interviewer/respondent not sure of eligibility of certain persons mentioned above. _____ # of persons b.____

   If no household members are eligible, terminate screening

10. Can you tell me the age of those persons?

	10. AGE	11. HANDICAP		
a.	_____	a. (1)____Yes	(2)____No	10a.___ ___
b.	_____	b. (1)____Yes	(2)____No	age b.___ ___
c.	_____	c. (1)____Yes	(2)____No	c.___ ___

11. Do they have a physical or mental handicap?

   Record above

   handicap 11a.___ b.___ c.___

12. Are they signed up for the project?

	Number Registered	Number Not Registered	
Subgroup #1 - 65 & over, handicapped	_____	_____	12.___
Subgroup #2 - 65 & over, non-handicapped	_____	_____	___
Subgroup #3 - Under 65, handicapped	_____	_____	___ (48)

Interview all eligible persons who are not registered. Make appointments for call backs if necessary. Terminate if all are registered.

TO BE INTERVIEWED

Name	Subgroup	Appointment	Completed Yes/No
		Day_____ Date_____ Time____ AM PM	
		Day_____ Date_____ Time____ AM PM	
		Day_____ Date_____ Time____ AM PM	
		Day_____ Date_____ Time____ AM PM	

Screening for Eligibles Only

DANVILLE HOUSEHOLD SURVEY

SCREENING FOR ELIGIBLE PERSONS

(Summer '76)

Interviewer's Name:_____ Date Completed:_____ | F B

1. Telephone Number:_____ 1.__ __ __ __ __ __ __

Good Evening. My name is _____ and I'm working for the City of Danville. We are doing a survey about the Reduced Taxi Rate Program in Danville for the handicapped and elderly. I would like to ask you some questions about this project.

If you are unsure if the respondent is an adult, say:

First I need to talk to someone 16 years of age of older.

If no qualified respondent is available, determine a callback time.

2.

1st Call	2nd Call	3rd Call	
_____	_____	_____	0. No Adult
_____	_____	_____	1. Busy
_____	_____	_____	2. No Answer
_____	_____	_____	3. Refused — Explain on back
_____	_____	_____	4. Phone Number Not Applicable
_____	_____	_____	5. No qualified respondent Appointment made
_____	_____	_____	6. Completed Screening

2.____

____

____

Appointment: Day:_____ Date:_____ Time:_____ -AM -PM

3. Is your household within the city limits of Danville?

(1)_____ Yes

(2)_____ No — Terminate

3.____

4. Are you aware of the Reduced Taxi Rate Program?

(1)_____ Yes

(2)_____ No — Give brief explanation and continue with interview

4.____

"The Reduced Taxi Rate Program has been designed to provide reduced rate taxi transportation to persons in Danville who are 65 years of age and older and the handicapped of all ages. Handicapped is defined as anyone with a physical or mental health problem as certified by a doctor or social service agency."

5. Is there anyone in your household who is eligible for the Reduced Taxi Rate Program?

a. Number of People _____ 5a.___ ___

b. Interviewer/respondent not sure of eligibility of certain persons mentioned above. _____ # of persons b.____

If no household members are eligible, terminate screening.

6. Can you tell me the age of those persons?

	6. AGE	7. HANDICAP		
a.	_____	a. (1) ___Yes	(2) ___No	6a.___ ___
b.	_____	b. (1) ___Yes	(2) ___No	age b.___ ___
c.	_____	c. (1) ___Yes	(2) ___No	c.___ ___

7. Do they have a physical or mental handicap?

Record above

7a.___ ___

handicap b.___ ___

c.___ ___

8. Are they signed up for the project?

	Number Registered	Number Not Registered	
Subgroup #1 - 65 & over, handicapped	_____	_____	8.____
Subgroup #2 - 65 & over, non-handicapped	_____	_____	____
Subgroup #3 - Under 65, handicapped	_____	_____	____ (32)

Interview all eligible persons who are not registered. Make appointments for call backs if necessary. Terminate if all are registered.

TO BE INTERVIEWED

Name	Subgroup	Appointment	Completed Yes/No
		Day_____ Date____ Time___ AM PM	
		Day_____ Date____ Time___ AM PM	
		Day_____ Date____ Time___ AM PM	
		Day Date Time AM PM	

Questionnaire for
Eligible Persons Not Registered

QUESTIONNAIRE FOR ELIGIBLE PERSONS NOT REGISTERED

(Summer '76)

Interviewer's Name:_____ Date Completed:_____

1. Telephone Number:_____ 1.__ __ __ __ __ __ __

Reintroduction if speaking with a new person

Good Evening. My name is _____ and I'm working with the City of Danville. We are doing a survey about the Reduced Taxi Rate Program in Danville for the elderly and handicapped. I would like to ask you a few questions about the project.

Reconfirm this person is eligible and not signed up. Change coding on screening form if necessary.

2. Indicate subgroup of respondent. 2.____

Subgroup (1) - 65 & over, Handicapped

Subgroup (2) - 65 & over, Non-Handicapped

Subgroup (3) - Under 65, Handicapped

3. Indicate sex of respondent. 3.____

(1)_____ Male

(2)_____ Female

4. Can you tell me why you haven't registered for the Reduced Taxi Rate Program? 4.____

OPEN ENDED Do Not Read Choices

(1)_____ Don't need to, have alternative transportation.

(2)_____ Don't need to, I don't travel much.

(3)_____ I don't believe in subsidized programs (for anybody).

(4)_____ I intend to, just haven't gotten around to it.

(5)_____ Can't use taxis for physical or mental handicap reasons.

(6)_____ Didn't know I was eligible - I'll sign up now that I know.

(7)_____ Didn't know I was eligible - still won't sign up for some reason noted above.

(8)_____ I don't think it's meant for me because I can afford to pay full price.

(9)_____Other_____

_____

5. We are interested in finding out which of our advertising efforts has worked best. We would like to know if you have heard about the project in any of the following ways?

a. Have you seen the project Ads in the newspaper? (1)____Yes (2)____No 5a.____

b. Have you heard the project advertised on the radio? (1)____Yes (2)____No b.____

c. Have you seen any of the posters which tell about the Reduced Taxi Rate Program? (1)____Yes (2)____No c.____

6. Do you drive and have a car available to you some or most of the time? (1)____Yes (2)____No 6.____

7. Are you sometimes driven by someone else in a private car? 7.____

(1)_____Yes

(2)_____No

Enter Code ____

Code #6 & 7 as directed below.

(1). Not a driver (or no car available) and does not receive rides from others.

(2). Not a driver (or no car available) but does receive rides.

(3). Is a driver with car available some or most of the time (may or may not receive rides from others).

8. Are you physically able to use a taxi? 8.____

(1)_____Yes

(2)_____No [Go to #10]

9. [If Yes] Would you say you use taxis with: 9.____

(1)_____ No problem

(2)_____ Some difficulty

(3)_____ Great difficulty

10. Are you physically able to use a bus? 10.____

(1)_____Yes

(2)_____No [Go to #12]

11. [If Yes] Would you say you can use a bus with: 11.____

(1)_____ No problem

(2)_____ Some difficulty

(3)_____ Great difficulty

12. Do you use any aids for movement? Such as - 12.____

(1)_____ No aids ____

(2)_____ Wheelchair ____

(3)_____ Walker

(4)_____ Crutches or cane

(5)_____ Cane or seeing eye dog for the blind

(6)_____ Other_____

13. Have you used a taxi since last December (1975) when the R.T.R. program began? 13.____

(1)_____Yes

(2)_____No Go to #15

14. If Yes How many times? 14.____

(1)_____ Regularly, 11 or more times

(2)_____ Occasionally, 3-10 times

(3)_____ Seldom, 1-2 times

(4)_____ Never

15. Can you tell me how many times you took a taxi trip last month, during July? 15.____

# of times

16. What is your employment status now? Are you - 16.____

(1)_____ Working full time

(2)_____ Working part-time

(3)_____ Student

(4)_____ Keeping house

(5)_____ Retired or not looking for work

(6)_____ Unemployed, looking for work

(7)_____ Other (Specify)_____

17. For the purposes of this study, we need to know the approximate combined annual income of all persons in your household. Was it - 17.____

(1)_____ Less than $5,000

(2)_____ $5,000 to $9,999

(3)_____ $10,000 to $14,999

(4)_____ $15,000 to $24,999

(5)_____ $25,000 and over

18. How many persons are there living in your household? 18.___ ___

_____

19. What is your race? 19.____

OPEN ENDED - Do Not Read Choices

(1)_____ Black

(2)_____ White - Caucasian

(3)_____ Other _____

Thank you very much.

Is there another person to interview?

APPENDIX J

SEPTEMBER 1976 AGENCY SURVEY

In September 1976, Crain & Associates conducted a telephone survey with the five agencies that provide paratransit services to handicapped and elderly persons. The reader is referred to Appendix F for the pre-demonstration survey instrument which was used again. The focus of the survey was to ascertain any RTR project impact on pre-demonstration involvements in paratransit.

APPENDIX K

FALL 1976 ON-BOARD TAXI SURVEY

In this survey, interest focused on RTR riders and how the RTR project had affected their travel patterns. The proportion of all passengers that were target group riders (RTR and non-RTR) was measured. In addition, non-target group persons were asked about their perceptions of any project impact on the quality of taxi service.

The survey was conducted from October 26 through November 8 and was designed to match the pre-demonstration on-board survey one year earlier. The reader is referred to Appendix E for a discussion of the procedures. The major exception is that the survey took place only on Red Top Cabs since Courtesy Cab company was no longer in business. 83 clusters of cab rides were surveyed; data was recorded on 617 calls for service and questionnaires were administered to 660 riders (232 RTR riders and 428 non-RTR riders). Copies of the survey instruments follow.

DANVILLE TAXI SURVEY

Cluster Control Sheet

Interviewer _____

Date _____

Cab Driver _____

Time Begin _____

Time End _____

Cluster Number _____

Number of rides surveyed in this cab _____

INTERVIEWER - Lead-in and questions

Introduction: Hello. My name is _____ and I'm working for the City of Danville. The City would like to learn more about the people who are taking part in the taxi discount program and other riders as well. Would you please take a few minutes to fill out this questionnaire.

(While the rider is filling out the questionnaire, fill in Handicap question on your interviewer form. When the questionnaire is returned and you determine that the rider is a certified user, proceed with the questionning below.)

ASK THESE QUESTIONS ONLY OF CERTIFIED USERS

We are interested in learning how the Reduced Taxi Rate program has been of help to you. Particularly we are interested in knowing whether you can now make new trips, trips you were not taking before this program began, or whether you are able to use a taxi instead of some other form of transportation, for example, getting a ride with a friend.

Suppose this Reduced Taxi Ride were not available, how would you have made this trip?

(As a confirmation to the rider's answer, ask these probing questions depending on his/her answer.)

If Auto Driver - Then you have an auto which is available on a regular basis for the trips you wish to make?

If Auto Relative or Friend - Is this (relative, friend) generally able to take you where you want to go?

If Full Fare - Would you pay the full fare for all the trips you are now making at the reduced rate?

If Walk - Would you be walking to exactly the same place?

If No Trip - Do you mean you would not take this trip or would you perhaps take it at a different time, or switch to a different location?

If Don't Know - Well, are there other forms of transportation available to you? Could you switch this trip to a different time or location that is more convenient to you?

Card J		Cluster #	__ __
Int. #	___	Ride #	__ __
Day	___ ___	Rider #	__
Hour	___ ___	Perc. H.	__ (11)

CITY OF DANVILLE TAXI SURVEY

1. PLEASE CHECK THE PLACE TO WHICH YOU ARE GOING ON THIS TRIP:

(1)____HOME
(2)____WORK
(3)____SCHOOL
(4)____CHURCH
(5)____SHOPPING
(6) ____MEDICAL OR DENTAL
(7)____PERSONAL BUSINESS
(3) ____VISITING, SOCIAL OR RECREATIONAL
(9)____OTHER ___

2. PLEASE CHECK THE PLACE FROM WHICH YOU JUST CAME:

(1)____HOME
(2)____WORK
(3)____SCHOOL
(4)____CHURCH
(5)____SHOPPING
(6) ____MEDICAL OR DENTAL
(7)____PERSONAL BUSINESS
(8) ____VISITING, SOCIAL OR RECREATIONAL
(9)____OTHER ___

3. WHAT IS YOUR SEX?

(1)____MALE (2)____FEMALE ___

4. WHAT IS YOUR AGE GROUP?

(1)____ 5-15 (3)____21-54 (5)____60-64
(2)____16-20 (4)____55-59 (6)____65 OR OVER ___

5. YOU MAY BE AWARE THAT THE CITY OF DANVILLE HAS A REDUCED TAXI RATE PROGRAM FOR HANDICAPPED PERSONS AND PEOPLE 65 OR OVER. ARE YOU SIGNED UP FOR THIS PROGRAM?

(1)____YES → PLEASE GIVE US YOUR ID NUMBER_____ (16)
THANK YOU. PLEASE TURN THIS FORM IN TO THE INTERVIEWER.

(2)____NO → PLEASE CONTINUE WITH QUESTIONS ON THE BACK OF THIS SHEET.

IF YOU ARE NOT SIGNED UP FOR THE REDUCED TAXI RATE PROGRAM YOU MAY BE ELIGIBLE. TO QUALIFY FOR THIS PROGRAM YOU MUST

- LIVE WITHIN THE CITY OF DANVILLE
- BE 65 YEARS OR OVER...OR HANDICAPPED

BY HANDICAPPED IS MEANT

. TROUBLE WALKING, GETTING AROUND
. SEVERE ARTHRITIS
. BLINDNESS OR POOR EYESIGHT
. DEAFNESS OR HARD OF HEARING
. HEART TROUBLE
. STROKE
. MENTAL DISORDER

6. BASED ON THE ABOVE CONDITIONS, DO YOU QUALIFY FOR THIS PROGRAM? ___

(1)____YES
(2)____NO
(3)____DON'T KNOW

7. DO YOU FEEL THE REDUCED TAXI RATE PROGRAM HAS MADE A DIFFERENCE IN THE QUALITY OF SERVICE PROVIDED TO YOU BY THE TAXI COMPANY? ___

(1)____YES
(2)____NO
(3)____DON'T KNOW
(4)____DIDN'T EVEN KNOW THERE WAS A PROGRAM

8. HAS THE NUMBER OF TIMES YOU USE TAXI SERVICE CHANGED BECAUSE OF THE REDUCED TAXI RATE PROGRAM? ___ (20)

(1)____YES ↓
___MORE
___LESS
(2)____NO
(3)____DON'T KNOW
(4)____DIDN'T EVEN KNOW THERE WAS A PROGRAM

Cluster # ___ ___
Ride # ___ ___
Rider # ___ (25)

DANVILLE TAXI SURVEY

Interviewer Form

1. Suppose this Reduced Taxi Rate program were not available, how would you have made this trip?

(1)____Drive own auto	(1)___
(2)____Driven by relative	(2)___
(3)____Driven by friend	(3)___
(4)____Taxi at full price	(4)___
(5)____Walk	(5)___
(6)____Other_____ (e.g., Telecare)	(6)___(31)

- - - - - - - - - - - - - - - - - -

(1)____Would take trip (indicate modes above) ___
(2)____Maybe take trip (indicate modes above)
(3)____No trip
(4)____Don't know

2. Would you have taken this trip at exactly the same time? ___

(1)____Same time
(2)____Different time and that's O.K.
(3)____Different time and less convenient
(4)____Don't know

3. Would you have taken this trip to exactly the same place? ___

(1)____Same (2)____Different (3)____Don't know

4. Rider Narrative on new trip vs. mode shift question:_____

_____

_____

_____

5. Interviewer observation on above: ___

(1)____As stated (2)____Maybe (3)____Not

Comments:_____

_____

_____

6. Rider Category (based on rider answers and fare payment) ___

(1)____RTR member who receives discount fare

(2)____RTR member not receiving discount fare

7. Was the RTR's ID number recorded by the taxi driver? ___(37)

(1)____Yes (2)____No (3)____Didn't use ID

APPENDIX L

REPORT OF INVENTIONS

A thorough review of the work performed under this contract has revealed no significant innovations or discoveries at this time. In addition, all methodologies employed are available in the open literature. However, the findings in this document do represent an improvement as they will be useful throughout the United States in providing needed transportation services for the elderly and handicapped and in designing and evaluating transportation systems utilizing the user-side subsidy concept.

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