REPORT NO. UMTA-IL-06-0034-78-1

UMTA/TSC Project Evaluation Series

User-Side Subsidies For Fixed Route Transit in Danville, Illinois: Phase II

Evaluation Plan
August 1978

Service and Methods Demonstration Program

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

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
UMTA-IL-06-0034-78-1		

4. Title and Subtitle	5. Report Date
USER-SIDE SUBSIDIES FOR FIXED ROUTE TRANSIT IN DANVILLE, ILLINOIS: PHASE II	August 1978
	6. Performing Organization Code
7. Author's	8. Performing Organization Report No.
David Koffman	DOT-TSC-UMTA-78-19
9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Crain & Associates* 1145 Merrill Street Menlo Park CA 94025	UM827/R8712
	11. Contract or Grant No.
	DOT-TSC-1081
12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
U.S. Department of Transportation Urban Mass Transportation Administration Off. of Trans. Planning Management and Demonstrations Washington DC 20590	Evaluation Plan Sep. 1977 - Mar. 1978
	14. Sponsoring Agency Code

15. Supplementary Notes

*Under contract to: U.S. Department of Transportation
Research and Special Programs Administration
Transportation Systems Center
Cambridge MA 02142

16. Abstract

This report presents the technical portion of an Evaluation Plan for the Danville, Illinois User-Side Subsidy for Fixed-Route Transit demonstration project. Under the project, the City of Danville will initiate competitive bidding processes for short-term (4 month) contracts to provide new fixed-route transit services for all persons in the population. The goal will establish subsidy ratios that will reward the provider on the basis of patronage levels. More than one provider may provide services at the same time. It is hoped that actual competition or the threat of competition will produce cost-effective and user-oriented transit services. For some period of time, the handicapped and elderly sub-market of the population will be offered subsidies (at different levels) on both taxis and fixed-route services.

The demonstration project is funded by the Urban Mass Transportation Administration as part of the Service and Methods Demonstration Program. Crain & Associates, under contract to the Transportation Systems Center of the Department of Transportation will perform the evaluation of the project. This evaluation plan describes the demonstration setting, the project operation, project issues, measures for evaluation and sources of data for assessing the measures.

17. Key Words	18. Distribution Statement
User-Side Subsidy, Shared-Ride Taxi, Transit Dependent, Demonstration Project, Fixed Route Transit Services, Competitive Bidding Process, Evaluation Plan	DOCUMENT IS AVAILABLE TO THE U.S. PUBLIC THROUGH THE NATIONAL TECHNICAL INFORMATION SERVICE, SPRINGFIELD, VIRGINIA 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	156	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

PREFACE

This is the technical portion of an Evaluation Plan for the Danville, Illinois User-Side Subsidy for Fixed-Route Transit demonstration project. Budget information is contained in a separate volume. It has been prepared from a draft version, submitted earlier, following comments from TSC and others. The Evaluation Plan is prepared as closely as possible in the anticipated format of the Final Evaluation Report. Under headings corresponding to headings in the final report, this plan discusses the expected content of each section and the activities required to produce each section. Where data are already available, as in the case of the demonstration setting, an initial version of the final chapter has been written.

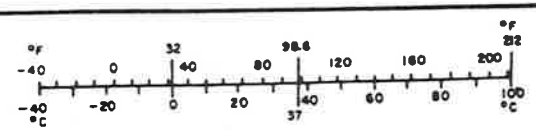
METRIC CONVERSION FACTORS

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
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

Approximate Conversions from Metric Measures

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



CONTENTS

CONTENTS (cont.)

CONTENTS (cont.)

LIST OF ILLUSTRATIONS

LIST OF TABLES

1. EXECUTIVE SUMMARY

The Urban Mass Transportation Administration (UMTA) has awarded a Service and Methods Demonstration Grant to the City of Danville, Illinois, initially to test use of user-side subsidies on shared-ride taxi services (Phase I) and later on new regularly scheduled fixed-route transit services (Phase II). In both cases, the services are provided by privately operated transportation operators. During Phase I, handicapped and elderly persons were initially offered a 75% discount on regular shared-ride taxi fares; the discount was later reduced to 50%. The Phase II user-side subsidy on fixed-route services will apply to all persons in the city.

The distinguishing feature of a user-side subsidy is that the provider of a service receives the subsidy only in amounts proportional to the number of people who use the service. The Danville Phase II demonstration is the first case of a user-side subsidy applied to fixed-route transit for the general population. There will be some overlap between the two phases, during which time handicapped and elderly persons will have the opportunity to use subsidies on both taxis and fixed-route services. This will provide some further information on the transportation behavior of handicapped and elderly persons.

The evaluation will assess the changes in the transportation supply and demand interactions caused by the introduction of a user-side subsidy and will assess the impacts of the changes on users, suppliers, and other groups of interest. The general workability of the competitive bidding process, subsidy mechanisms and contractual relations between providers and the City will be evaluated.

Another issue of interest is the transferability of the demonstration concept to other settings. A description of the demonstration setting, an assessment of the roles for providers and the City, and characteristics of the riders are important for this issue.

The following evaluation plan discusses these issues in more detail, presents measures for their evaluation, and discusses the sources of data for assessing the measures.

2. INTRODUCTION

2.1 PROJECT OVERVIEW

Danville, Illinois is a small city of 42,600 in east central Illinois. Danville has been without regular fixed-route public transportation since 1970*, when voters rejected a three-cent sales tax to subsidize service which had become unprofitable for the private operator the year before. Under an amendment to a Service and Methods Demonstration (SMD) Grant (No. IL-06-0034) from the Urban Mass Transportation Administration, Danville is experimenting with new fixed-route transit using a user-side subsidy mechanism with private providers bidding to operate services on short-term contracts. This demonstration is to last about two years and is Phase II of a project, of which Phase I (also a two-year project) was a test of the user-side subisdy concept applied to taxi services for the elderly and handicapped[1]. This taxi subsidy is continuing into Phase II but could be terminated at any time. The original grant, awarded in August 1975 in the amount of $314,530, was increased in July 1977 by $662,787 to a total of $977,317. With $100,000 of unobligated funds from Phase I, $772,787 of federal funds are available for the current project. In addition, the City of Danville contributed $34,024 in in-kind service in Phase I, and will contribute "necessary" in-kind services in Phase II.

The distinguishing feature of a user-side subsidy is that the provider of a service receives the subsidy only in amounts proportional to the number of people who use the service. In

---

*A privately-run 5-bus minibus system operated for three months in 1971 before going out of business.

[1]Peter G. FitzGerald, "User-Side Subsidies for Shared Ride Taxi Service in Danville, Illinois: Phase I," U.S. D.O.T. Urban Mass Transportation Administration and TSC(Crain & Associates), Menlo Park, CA, June 1977(UMTA-IL-06-0034-77-1).

its purest form, potential patrons ("users") would receive the subsidy to be spent on transportation of any type, as in the case of food stamps or rent-supplements. The mechanisms usually employed are 1) tickets sold at a reduced price and then redeemed by the provider for the subsidy after they are used, and 2) vouchers signed by patrons and redeemed by the provider. Simple passenger or revenue counts can also be used as a basis for subsidy payments, but may be subject to fraud. In Danville, vouchers are used for the taxi subsidy and reduced-price tickets sold by the City for the fixed-route subsidy. Under this ticket system, users are not directly aware of the subsidy.

User-side subsidies are attracting national interest as an alternative to more traditional forms of transit subsidy, termed provider-side subsidies. Under the user-side arrangement, assuming some form of market-like competition or threat of competition, providers should have an incentive to offer service which is as efficient as possible, and tailored to travel demands as well as possible in order to maximize profits. The user-side subsidy may offer a locality flexibility, minimizing the need to commit itself to any particular vehicles or service type. Most applications to date have been for taxi service for elderly and handicapped; that the user-side mechanism appears acceptable as a means to subsidize taxi service is another of its attractive features.

The Danville Phase II demonstration is the first case of a user-side subsidy applied to fixed-route transit for the general population. Providers will be selected on the basis of a competitive bidding process to be repeated every four months. The Request for Proposals for the first four-month period is reproduced in Appendix A. In principle, multiple providers could have contracts at the same time, operating different routes or at different times. The City establishes certain minimum standards (e.g. air conditioned vehicles); however, within those standards

bidders are free to propose any level or type of service and whatever fare structure they desire. The City announces a subsidy-to-fare ratio for each bidding period, which is the basis for payment that the selected providers can receive. The City markets the tickets to be used as fare payment, selling them for the announced fare. As the tickets are used for transit trips, the provider redeems them weekly for the announced fare plus the subsidy amount. Providers can accept cash fares but receive no subsidy for them. The City will market tickets at a discount to the elderly, handicapped and youth, but will pay providers the full amount for trips made with those tickets. This demonstrates an additional flexibility of the user-side mechanism. To minimize risk and avoid discouraging potential bidders, for the first two four-month periods, the provider is guaranteed a minimum payment per vehicle-mile. Further operational details are contained in Chapter 4.

2.2 PROJECT OBJECTIVES

The major objective of this demonstration project is to test the effectiveness of the user-side subsidy as a means of developing an entirely new fixed-route transit service in a small city. This is a unique application of the user-side subsidy concept. Prior applications -- in Danville, and in Montgomery, Alabama, and in Kinston, North Carolina -- have been, or are being aimed at reducing fares for special user groups on existing paratransit and transit systems.

The project also addresses the SMD program objectives of increasing the mobility of the transit dependent, increasing transit coverage and increasing transit vehicle productivity. It is expected that the fixed-route transit service will be accessible to all or most of the residents of Danville, and that the fares charged will generally be affordable. For persons

with limited mobility, i.e., those who have to rely on other persons for some or all of their trip-making, the fixed-route service should become a viable means of getting to desired locations within Danville. As a result, the project is expected to lead to increased rates of trip-making and may increase travel alternatives both temporally and spatially by making feasible some trips that were previously available only by the somewhat more expensive taxi mode. Persons who have ready access to an automobile and persons who can afford to use taxi for all their local trip-making may find the fixed-route service a viable travel alternative and switch to transit for some of their trip-making. The project addresses the transit coverage and vehicle productivity objectives because the user-side subsidy mechanism and the competitive bidding process should, in theory, stimulate providers to offer the best possible levels of fixed-route service which can draw high ridership, to be responsive to demand changes, and to do so as efficiently as possible in order to maximize profits and remain competitive.

From the City of Danville's perspective, the primary objective of the demonstration project is to determine whether and to what extent Danville can support fixed-route transit. Recognizing the uncertainty in predicting ridership and operating costs associated with fixed-route service as well as the operating and capital costs required, the City of Danville wishes to find out what routes and service levels can be supported by its citizens without establishing a permanent City system. Thus the user-side subsidy and competitive bidding approach for fixed-route service can be tested in Danville and the City can determine what transit system meets its needs without the commitment of large capital expenditures.

2.3 PROJECT INNOVATIONS

As already noted, this project will be the first test of

the user-side concept applied to fixed-route transit service for the general population. For part of the project at least, elderly and handicapped persons in Danville will also be able to ride taxis at discounted rates under the Phase I user-side subsidy project (RTR). In a sense, this group will have available a subsidy that it can spend on either of two forms of transportation. This resembles the situation in the Montgomery, Alabama SMD project. Since users of the RTR project are known along with their socio-economic characteristics, and since their individual ridership on the taxi project can be traced through existing procedures, we will be in a position to judge the relative effectiveness, attractiveness to the users, and cost to the public of two methods of meeting their transportation needs.

Another unique aspect of the Phase II demonstration is the competitive bidding process, which is to be repeated every four months. It is not known how many potential providers there are with the capacity and willingness to initiate service on short notice and under a short-term contract in a small city. Are there enough potential bidders with an existing local base, or outside bidders willing to establish a local base under these conditions, to create the competitive situation which is desired? Additional issues relating to these short-term contracts are possible problems in labor relations, continuity of service in the event of changing providers, costs of paying repeatedly for start-up, and the public acceptability of possible frequent changes in service or fare structure.

A third innovative feature is the use of prepaid tickets as the primary fare payment device. Although patrons can pay cash, such fares will not be subsidized and hence will be much higher than the ticket fare ($1.00 compared to $.40 in the first four-month period). Based on initial ridership figures, tickets will be used to pay for 90 percent or more of passenger trips. The tickets are sold by local businesses in books of 5 and 20 full-fare or 10 half-fare tickets. The system was chosen to

discourage fraud in the subsidy arrangement. Questions concerning the ticket system include: how convenient or inconvenient is it perceived by the public; does it discourage ridership; how difficult is it to administer the system; how willing are businesses to participate; does it control fraud or create its own fraud problems; do tickets get lost or wasted; does the interval between purchase and use give the City a significant cash float; and does it help the City.

2.4 ORGANIZATIONAL ROLES

The organizations involved in the Danville user-side subsidy demonstration and their roles are:

Urban Mass Transportation Administration (UMTA) - Approached Danville about demonstration concept, awarded grant, will monitor and approve project expenditures and contracts.

City of Danville - Grant recipient, will contribute to the cost of the project in the form of staff time of the Department of Planning. The Assistant Director of the department is estimated as spending 20 percent of his time as Project Director. Full time personnel will include a Project Manager, an Administrative Assistant (first year only), and a Secretary. The grantee administers all phases of project operations, and is responsible for providing the evaluation contractor with the data required to evaluate the project. The grantee submits regular reports to UMTA on project operations and status.

Private Transportation Companies - Provide transportation services under contract to the City of Danville. Contracts for fixed-route service are awarded for short periods after competitive bidding; contracts for shared-ride taxi service for elderly and handicapped are made with any licensed local taxicab company.

Urban Institute - Consultant to UMTA, assisted in the initial conceptualization, site selection and grant application

(Phases I and II), and continues to provide advice during the project.

DeLeuw, Cather & Co. - Prepared Danville TDP; under current grant provides technical assistance to City on transit problems.

Unimark, International - Under contract to Danville performs marketing services, including creation of system image, design of informational materials (schedules, maps, etc.), and design of promotional campaigns.

Transportation Systems Center (TSC) - As part of D.O.T. is responsible to UMTA for project evaluation by the evaluation contractor; specifies the desired form, scope and budget of the evaluation; provides technical supervision to the evaluation contractor; and reviews evaluation products.

Crain & Associates - Evaluation contractor to TSC, prepares and updates an Evaluation Plan, coordinates with other parties on demonstration design, specifies data to be collected for the evaluation, develops a schedule of evaluation tasks and data collection efforts within a budget established by TSC, provides technical assistance to grantee on data collection, reviews and monitors data collection, designs and performs data analysis, prepares evaluation reports (monthly, annual, interim, final).

Abt Associates - Under contract to TSC, Abt is investigating the uses of attitudinal data in transportation planning. TSC is committed to supply the required survey data for this project from Danville. These data collections, and their relationship to other data collections in Danville, are discussed further in Section 10.1.

2.5 EVALUATION ISSUES

Based on guidance from TSC, we have identified eight key issues to be addressed. These will be grouped under headings corresponding to chapters in the final report. Chapter 4, on Project Development and Operations, will address the "viability" issues. These are:

1. Implementational, operational, and administrative viability of the user-side subsidy as applied in Danville.
2. Implementational, operational, and administrative viability of the competitive bidding process.

Chapter 5, on Level of Service, will address the issue:

3. Impact of the demonstration project on the supply of transportation services.

Chapter 6, on Travel Demand, will address the issues:

4. Impact of the demonstration project on travel demand.
5. Impact of the demonstration project on the mobility of persons in Danville.

In Chapter 7, on Productivity and Economics, the following issues will be addressed:

6. The effectiveness of the user-side subsidy and competitive bidding mechanism as means of providing efficient fixed-route transit in Danville.
7. The ability of Danville to support fixed-route transit.

The eighth issue is the "transferability" issue, or the extent to which the successes and failures observed in Danville can be applied to other settings. This will be discussed in Chapter 9, the Summary chapter, of the Final Report. Each of these issues is discussed more fully in the chapter that describes the relevant evaluation procedures.

3. DEMONSTRATION SETTING

3.1 GENERAL INFORMATION

Danville, Illinois is located in east central Illinois, on the Big Vermilion River at the confluence of the Salt Fork and North Fork Rivers, the second of which has been impounded to form Lake Vermilion. Danville is 124 miles due south of Chicago and 90 miles west of Indianapolis (see Fig. 3-1). The city has an area of 12.9 square miles on mostly level terrain. The 1970 population was 42,600 compared to 41,900 in 1960; projections show little population growth since then. Danville is a self-contained small urban community, the county seat of Vermilion County, and the site of numerous and diverse industries, mostly in decentralized locations (see land use map, Fig. 3-2). Five railroads run through Danville, often holding up traffic. Winters are fairly cold and summers fairly hot, with mean temperatures ranging from 28 - 30 in January to 76 - 78 in July.

3.2 LAND USE

Figure 3-2 shows the overall pattern of land use in Danville, which is generally low-density and decentralized. Three major shopping centers are located towards the outskirts, as are the major industrial employers, Danville Junior College, and the Veterans Administration Hospital. There is a well-defined and active downtown, however, with City and County offices, the two-block Vermilion Park Mall, a sizeable library and two major hotels. The City boundaries include some of the surrounding farm land; 67% of the city's 12.9 square miles are developed.

The pattern of development is clearly influenced by the rivers that flow through Danville, spreading mostly north and east from the rivers and hence from downtown.

Although residential development in Danville is mostly single-family detached housing, one-third of living units were rented rather

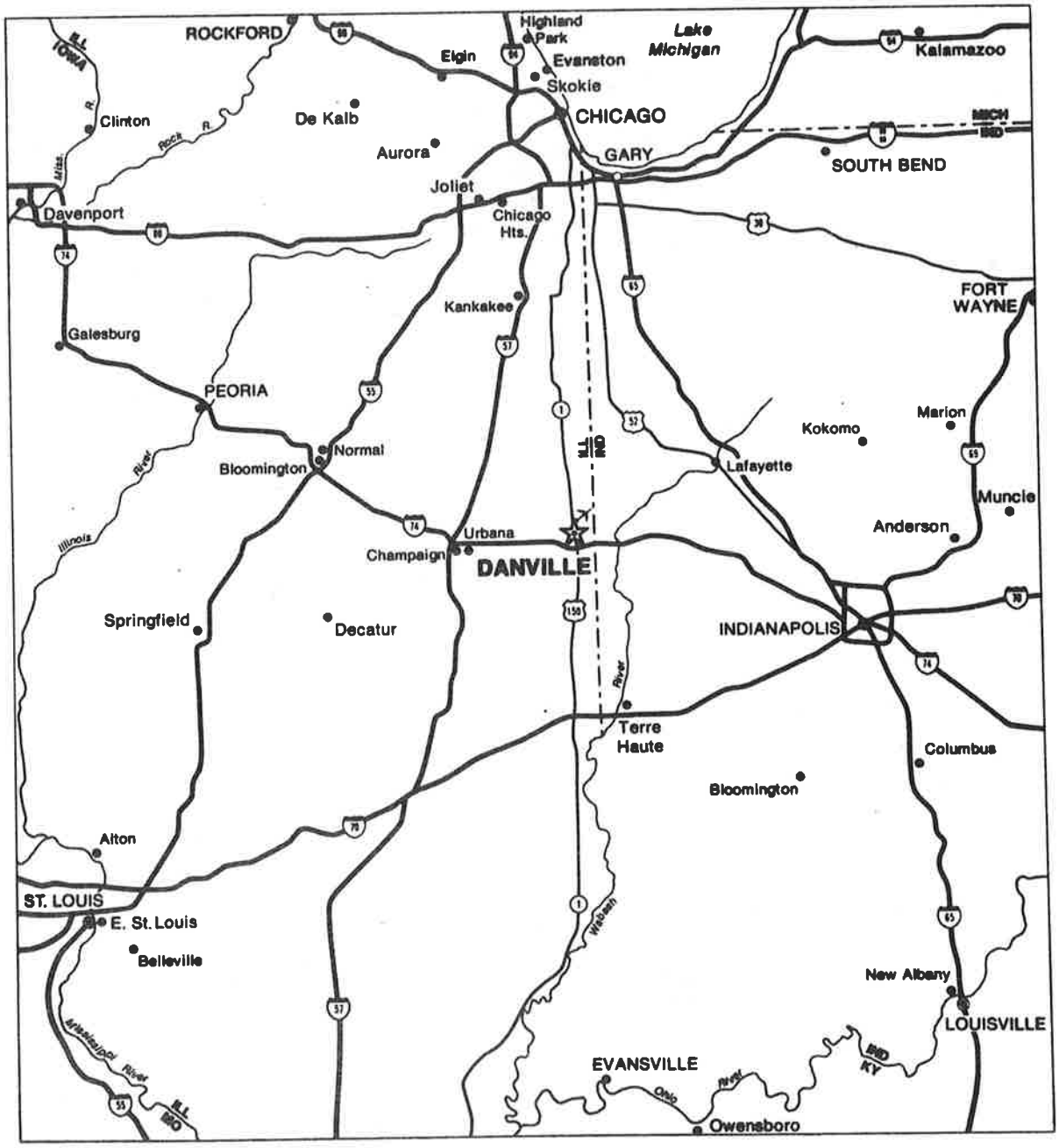


FIGURE 3-1.
LOCATION OF DANVILLE, ILLINOIS

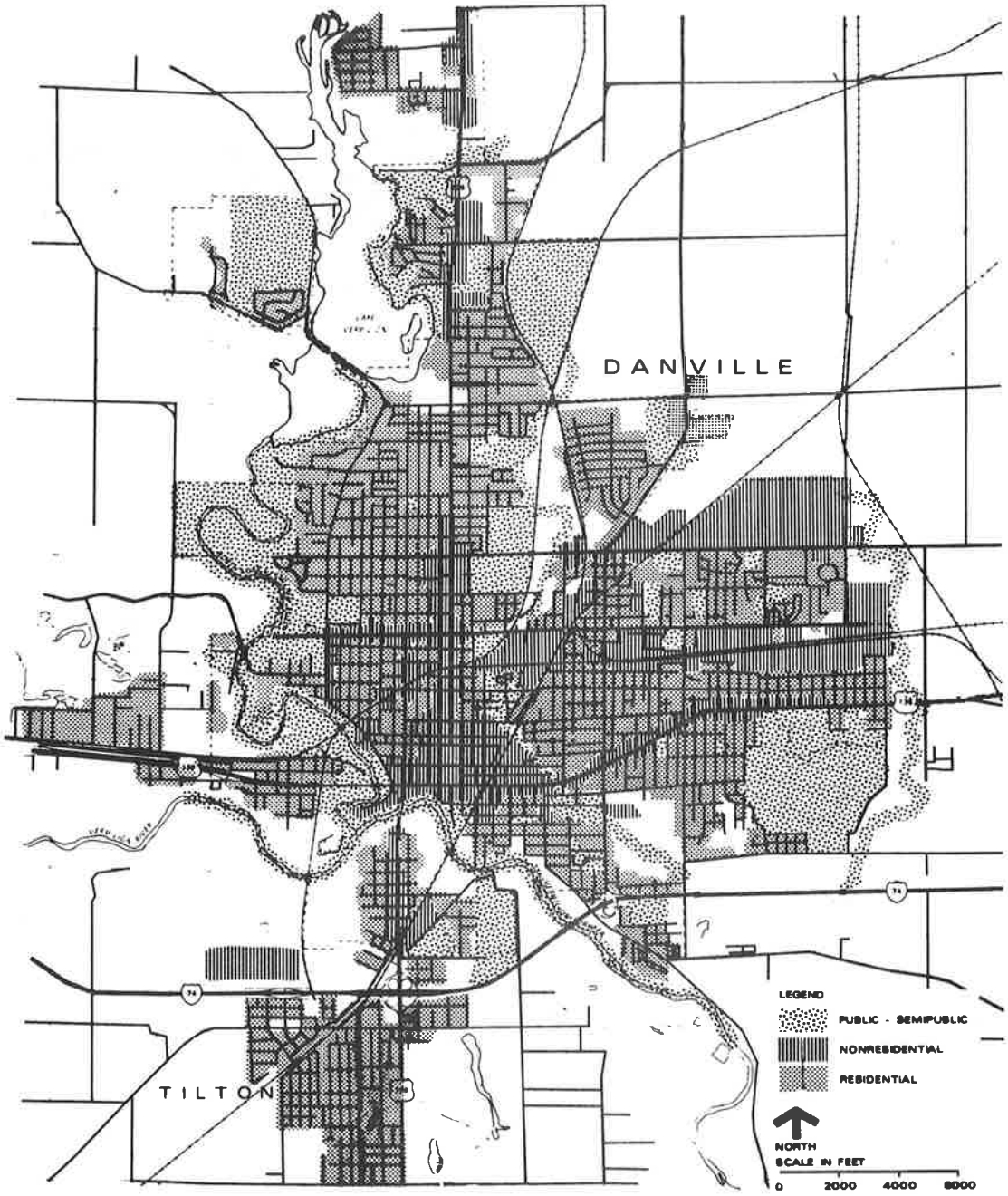


FIGURE 3-2.
LAND USE MAP, DANVILLE, ILLINOIS

than owned according to 1970 Census. There are increasing numbers of apartment buildings and several low and moderate income housing projects, as well as 10 mobile home parks. More precise information on housing patterns and trends is available from the Danville Planning Department and will be included in subsequent reports.

3.3 DEMOGRAPHICS

Table 3-1 shows the distribution of population by age from the 1970 Census and an estimate of the handicapped population under age 65.

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 fraction of the total population that is 65 years of age or older, at 13%, is higher than the national average of 10%. Since 1960 Danville has lost population in the under 10 and 30 - 44 age groups.

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. Additional data about economic conditions, such as unemployment rates compared to nearby areas, will be obtained through City and state agencies.

Danville has a significant Black population (12.5% compared to 6.1% in Vermilion County in 1970), with a very pronounced pattern

of residential segregation. Black households were concentrated just to the north of downtown, in the southeastern portion of town, and in a housing project at the eastern edge of the city. There is also a substantial Mexican-American population of uncertain size.

Additional, more up-to-date data on income and age distribution, labor force status, etc. will be available from the October 1977 pre-implementation telephone survey conducted in Danville.

3.4 GOVERNMENT

Danville is a Home Rule Unit under the 1970 Illinois Constitution, granting its government great flexibility in its decision-making powers. Transit services within the city limits appear to be regulated only by city ordinance and not by state agencies, other than for vehicle licensing. The City of Danville is governed by a City Council consisting of an elected Mayor and four elected Commissioners. Elections are held every four years on a non-partisan basis; the next election will be held in November 1979. Danville is also part of Vermilion County, of which it is the county seat. Vermilion County is also divided into 19 townships, whose primary functions are administration of General Assistance, construction of roads and bridges outside of cities, and the assessment of real and personal property. About three-fourths of the city of Danville is in Danville Township, one-fourth in Blount Township and a small portion in Newell Township. This is a source of occasional confusion, since statistics are often compiled by Township.

3.5 TRANSPORTATION

3.5.1 Automobiles and Highways

In Danville as in most places, automobiles are the dominant form of transportation, especially since there has been no bus service in Danville since 1970. The 1970 Census estimated that about 80% of households in Danville had an automobile. Comparable Census

figures are 80.1% for the U.S. and 83.6% for the North Central states in 1971. Indications are that seven years without transit service, combined with general trends, have greatly increased car ownership rates. Preliminary tabulations from the October 1977 pre-implementation survey show 92% of households owning a motor vehicle, and 59% owning two or more motor vehicles. More detailed tabulations from this survey will show the relationships of car ownership, possession of a driver's license, and car availability with income, age, residence, and ability to use transit. It is possible that car ownership has been slightly overstated due to households without telephones being excluded from the sample.

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. With the exception of a few primary arteries, streets are quite narrow, as is common in Illinois cities, and occasionally in poor repair. This may pose more of a problem for transit operations than it does for automobile traffic. 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 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.

During the project we will monitor events for possible changes in the ease or expense of automobile travel. Examples would be changes in the price or availability of gasoline or major street closings or openings.

3.5.2 Bus Transit

Since November 1970, the City of Danville has been without regularly scheduled urban public transit service. Such service had previously been provided by the Bee Line Transit Company, a division

of American Transit Corp. of St. Louis, MO, 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 -- increasing costs coupled with declining patronage and revenues.

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 and Bee Line 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. A review of Bee Line records indicates that during December 1969 (one year before service was abandoned) over 60,000 fare-paying passengers rode the system. A later attempt by a private operator to run a self-supporting minibus service failed in a matter of months. Many older and handicapped persons found it inconvenient to get in and out of the vans that were used for this service.

Bee Line continues to operate Danville's school bus service, under contract to the school system. This operation uses a large fleet of buses based at Bee Line's extensive maintenance facility in Danville. School bus service for handicapped children is provided under contract by Red Top/Yellow Cab Co., using two specially equiped buses.

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 September 1976 and called for the City to apply to the State and Federal Goverment for capital and operating funds to support a fixed route bus system with 10 conventional buses. Public opinion on the part of the citizenry has been in favor of some generalized public transit service with subsidy.

While the TDP was being prepared, the City of Danville was approached by UMTA as a potential site for a user-side subsidy/taxi-

discount project. Danville prepared and submitted a grant application to obtain the funds for the project. UMTA approved the grant application and the project became operational in December 1975. Now, both the results of the RTR experience and the TDP are being combined into an expanded demonstration using the user-side subsidy concept to provide fixed-route transit service for all residents of Danville. The original grant to provide RTR service has been amended to allow for this expanded project to be implemented.

It is this service which is the subject of this Evaluation Plan. Bus operations began on November 25th, provided by American Transit Corp. of St. Louis, MO under a four-month contract. More details of this service and plans for monitoring it are contained in other sections.

3.5.3 Taxicab Services

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. Two taxi companies operate in Danville. Red Top/Yellow Cab Company, with 23 licensed vehicles, carries about 95% of the city's taxi trips. Brown Cab Company, operating with one vehicle, primarily serves the Black community. Much of its business is prescheduled, repeat patronage. A third company, Courtesy Cab, ceased providing service in Danville in April 1976 because of continued unprofitability of operation. Red Top/Yellow Cab has expanded its fleet by seven vehicles to serve trips carried by Courtesy Cab during its two years of operation.

The total of 24 licensed cabs for the two 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 1938 persons and 0.7 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,

[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.

it is estimated that 1.5% of all vehicle trips in Danville are taken by taxi. For people with limited or no access to an automobile, taxis play a more important role. For example, interviews with 2352 of the elderly and handicapped people who signed up for the RTR project, showed taxicabs being used for 12% of reported vehicle-trips.

The present fare system is based on four zones (see Figure 3-3), with a price assigned to each zone. The fare charged for a trip is that of the higher-priced zone, whether it is the zone of origin or of destination. Following a fare increase approved by the City Council effective January 1, 1977, the present fares are: Zone 1 = $.85, Zone 2 = $1.40, Zone 3 = $1.70, Zone 4 = $2.00. 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; under minimum wage laws Red Top must guarantee its drivers $2.30 per hour, and about half of them receive only that.

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.*

Data on 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

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

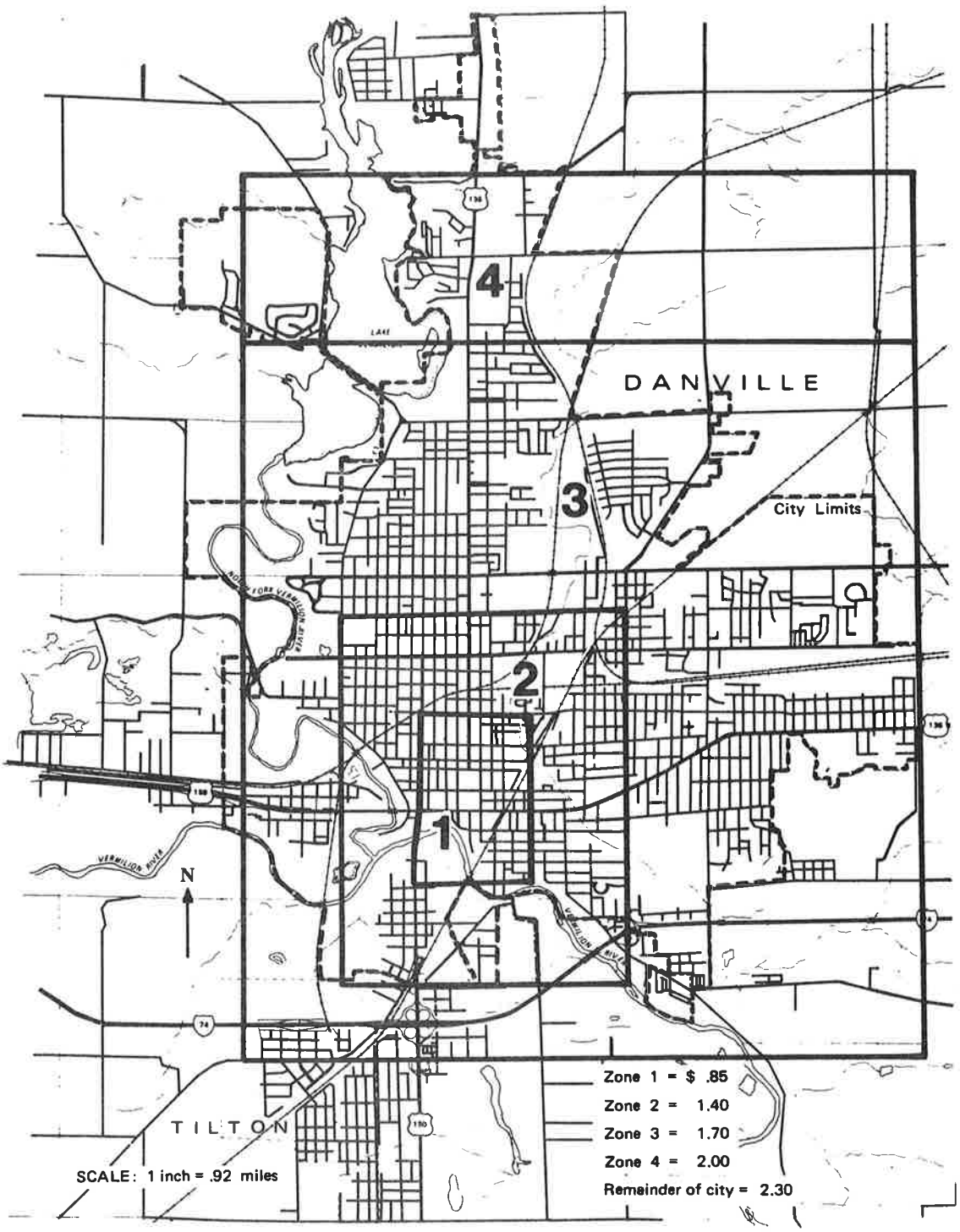


FIGURE 3-3.

TAXI ZONES IN DANVILLE, ILLINOIS

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 average wait time from telephone call for immediate service** to the vehicle arrival time at the origin was nine minutes; this ranged from one minute to 30 minutes; the median wait time was seven 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.

The user-side subsidy/taxi discount demonstration referred to above has been in operation since December 1975. Under this RTR (Reduced Taxi Rates) program, persons age 65 and over, and the handicapped, can register and ride taxis for half the usual fare (a fourth the usual fare until January 1, 1977). Participants sign a voucher for the remaining fare, which the taxi company later redeems for cash. Funding under the original grant ran out in August 1977. The City elected not to provide funding to continue the project; however, UMTA has decided to allow funds from the Phase II grant to be used for this purpose. About 7500 people are estimated to be eligible for RTR and over 3000 have registered, making about 8000 trips/month under the original discount and 6000 trips/month since January 1977.

---

*The analysis assumed that average actual origin to destination distance for shared rides is approximately equal to that for non-shared rides.

**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.

3.5.4 Special Transportation Systems

Eleven social service agencies provide some amount of paratransit services to their clients. This amounts to some 3000 one-way passenger trips per week during school months (i.e., including children in Special Education Programs). This drops to 1500 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, two 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.

3.6 INSTITUTIONAL BACKGROUND

The major institutional background information of interest is the history of transit in Danville given in Section 3.5.2 above. Of some note is that both the RTR project and the current fixed-route demonstration are being carried out by the Danville Department of Planning and Development, which historically has played a more active role in implementation and operational matters than is common in planning departments.

3.7 EXOGENOUS FACTORS

Factors largely beyond the influence of experimental design, which can affect measurements and obscure the interpretation of

project results unless properly taken into account, include the weather, economic conditions, major changes in the supply of alternative modes of transportation, major scheduled and unscheduled events (e.g., holidays, elections and labor disputes), and natural or human-caused disasters. For the most part, these can only be documented and used to help interpret major changes (or lack of expected change) in project statistics. We will keep aware of unemployment statistics, plant openings and closings, and important legal changes affecting the provision of transportation or the economic condition of transit dependents (e.g., changes in welfare or social service programs). We will monitor the supply of paratransit services, as measured by the number of available vehicles, and also the price of paratransit services.

The factor most susceptible to quantification is the 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 with iced-over streets a common phenomenon. There are seasonal patterns in usage of all forms of transportation in urban areas, volumes generally being highest in winter and lowest in summer. In the Phase I analysis a seasonal adjustment factor was computed using two years of historical data. It may not be possible to do this for transit patronage, since Danville has been without transit service for so long; however, a general understanding of possible mechanisms by which weather can affect patronage will be useful. For example, in evaluating RTR ridership patterns, the unusually severe winter of 1976-77 may account for a drop in taxi usage by the elderly and handicapped in November and December. We will keep track of levels of precipitation and temperature during the project and compare these to historical averages.

4. DEVELOPMENT AND OPERATIONS

4.1 GRANT APPLICATION PROCESS

As already noted, Danville was approached by UMTA as a possible site for a user-side subsidy demonstration. The possibility of extending the demonstration to fixed-route service was also first suggested by UMTA and its contractors. This process and the events related to it will be documented more fully by means of interviews with the actors involved and review of pertinent documents.

4.2 PROJECT DESIGN AND EVOLUTION

This section will describe the features of the project, how they change over time, the roles of the public and private actors in Danville, and the schedule of events. This information comes from continuous contact with project staff and involved government representatives, review of documents and correspondence produced during the project, additional interviews with the participants, and local news coverage.

4.2.1 Administration

The Danville Department of Planning and Development is responsible for administering the project. The Assistant Director of the department is Project Director; he is expected to spend 20 percent of his time on the project, according to the grant application. In addition there is a full-time Project Manager, a full-time Administrative Assistant, and a part-time Secretary. We will estimate actual amount of time spent by this staff, and any additional staff, on various aspects of the project by means of examining project accounts and interviewing the staff members.

Details of the City's responsibilities as they relate to various features of the project are described below in the sections about those features. To carry out all its responsibilities the City hires occasional temporary help and outside contractors, for example to perform surveys and data processing. The cost of those activities will also be documented to the extent that they represent administrative overhead necessary to run the user-side subsidy and carry out the City's responsibilities towards the transit service (as opposed to evaluation requirements imposed as conditions of the grant).

It is often supposed that a disadvantage of the user-side subsidy compared to provider-side subsidies, is that it may be difficult and time-consuming to administer. Therefore, the time and cost estimates made, and accounts of major difficulties and bottlenecks encountered, will be compared to the experience of other small cities with more conventional subsidy arrangements.

4.2.2 Schedule of Events

The project may run up to two years, if funds last that long. The actual rate of spending will depend primarily on the subsidy levels and ridership that develop. In addition, grant funds are being spent to continue the RTR program, which was not included in original estimates. It was anticipated in the grant application that the project would consist of a 5-month planning, design and development stage, followed by a 19-month operational stage. In the operational phase, provider contracts would be reviewed and new bids accepted periodically; this period has since been established as four months. A chronology of events to date is as follows:

Application for grant amendment	Apr. 19, 1977
Grant amendment awarded	Jul. 25
Advertising for bids (10 firms request RFP's)	Aug. 1-15
RFP's sent to interested firms	Aug. 25
Deadline for proposals (2 received)	Sept. 15
Six-month marketing contract with Unimark, Int'l.	Sept.____
Prospective ticket vendors first approached	Oct. 14
Four-month contract signed with American Transit Corp.	Oct. 18
Runaround name, colors, logo chosen	Oct. 25
Agreement between ATC and Teachers Union	Nov. 1
Official unveiling of first bus	Nov. 8
Tickets delivered to vendors and go on sale	Nov. 21
Service begins	Nov. 25
Advertise for 2nd contract period bids	Jan., 1978
RFP's sent to all firms from 1st bidding	Jan. 16
Postmark deadline - 2 bids received	Feb. 3
Meeting in Danville with Transman - revised bids requested	Feb. 21
New 4-month contract signed with ATC	Mar. 6
Service to begin under new contract	Mar. 27

This chronology will be updated as the project continues. The major cycle of events will be connected with the anticipated repetition of competitive bidding every four months.

4.2.3 User-Side Subsidy Mechanism

In each contract period, there will be an established fare structure, including transfer policy, and service plan. Providers will accept as payment prepurchased tickets, marketed by the City through local businesses. The tickets are sold for the announced fare, which may be a discounted fare for special groups established by the city. Upon turning the tickets in to the City, providers will receive one full fare for each ticket,

whether it was a full or discount fare ticket, plus a subsidy equal to some multiple of the full fare. Providers may accept cash fares but will receive no subsidy for those fares. A guaranteed payment per vehicle-mile operated may be negotiated during the initial period when ridership is developing, designed to prevent financial loss but not to allow any profit.

These arrangements are best illustrated by the details which were set up for the first four-month contract period. There is one provider, American Transit Corp. (ATC) of St. Louis, MO, which has established a flat fare of $.40 with free transfers. The cash fare, set by ATC, is $1.00. The City has established a half-fare policy for elderly (65 and over), handicapped, and youth (18 and under). The City has arranged with roughly 30 businesses to sell the tickets. The project office in City Hall also sells tickets, in person and by mail-order. Full-fare tickets are sold in books of 5 and 20; half-fare tickets in books of 10. A mileage guarantee was established of $1.38 per vehicle-mile of service, including deadheading between garage and start-up point twice daily for each run. The nominal subsidy-to-fare ratio is 2:1. Each week, ATC turns in tickets collected and an accounting of vehicle-miles and receives $1.20 per ticket ($.40 fare, whether the ticket was a full-fare, half-fare, or free promotional ticket, plus $.80 "subsidy"), or $1.38 per vehicle-mile operated, whichever total is higher. In the case of half-fare riders, the actual subsidy-to-fare ratio is 5:1.

Many of these details may have to change in future contract periods. If a new provider, or the existing one, desires another fare structure, the ticket system will have to accommodate that; if transfers are no longer free, there must be a ticket denomination that includes or pays specifically for them. For example, before ATC was selected, it was planned to market tickets in denominations of 5 and 10 cents, and to charge 10 cents for transfers, since some transfers might be between providers. Any mileage guarantee in future contract periods will have to be

negotiated. Once some ridership data have accumulated, the relationship between the subsidy-to-fare ratio and the level of service which is profitable to operate at that ratio will be clearer. It is quite likely that the 2:1 ratio will need adjusting to produce the exact level of service and expenditure desired.

Many of the issues surrounding these mechanisms have been mentioned in previous sections. Item 1 of Table 4-1 attempts a close-to-complete listing of the major questions and the methods available to answer them. For the most part, little sophisticated analysis is called for. More important is close and continuous contact with the project and the people involved in it. Ridership, ticket sales, and ticket use data will be analyzed by graphical methods. Computer files will be useful in summarizing the data for this purpose. On-board and general population survey questions relating to the subsidy mechanism (including the ticket system) will be cross-tabulated by relevant personal characteristics and indicators of travel behavior (e.g., frequency of bus use, fare payment method, route on which surveyed). Since the analysis method for most of the issues in Item 1 are similar, the table is really a reminder of what things to be looking for as we monitor the project. No doubt many more issues will arise as the project develops than we can anticipate here.

Probably the most mystifying matter is how the subsidy ratio will be or ought to be set, and how this relates to reasonable profit levels, desired service levels, and desired or feasible spending levels. In addition to the theoretical question, we are interested in Danville officials' understanding of it, which will be revealed by their actions and statements during the project.

Figure 4-1 illustrates a preliminary attempt to provide a framework in which to consider this question. In Part (a) we show that in order to provide increasing levels of service, approximately linearly increasing total costs (including a reasonable profit) are incurred (TC), above basic fixed cost. In order to consider revenues, we assume that fare levels will not vary substantially (and, in fact, may end up being set by the City). The curve as drawn shows quickly diminishing increases as service

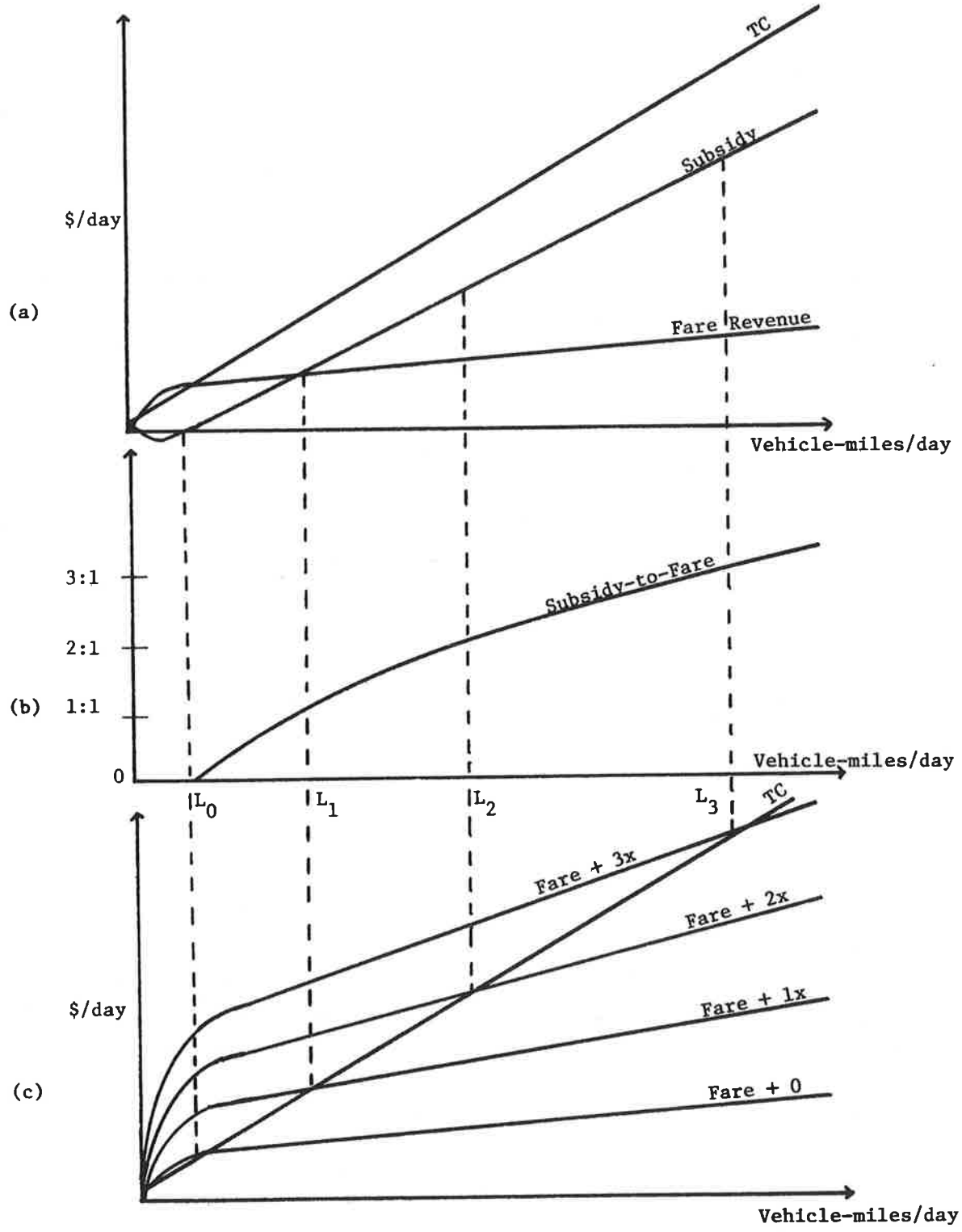


FIGURE 4-1.

RELATIONSHIP BETWEEN SUBSIDY AND LEVEL OF SERVICE

is increased. Presumably a low level of service would be concentrated where demand is greatest; as service is expanded, increasingly marginal markets will be tapped. Of course the positions of the curves as drawn are quite arbitrary; it is quite possible, for example, that the Fare Revenue curve never rises above the Total Cost curve in Danville. Subtracting the two curves gives us the subsidy required to support a given level of service.

Alternatively, for any stated subsidy, we can determine the level of service that ought to be provided given that subsidy. In Part (b), the subsidy curve is simply redrawn in terms of the ratio of subsidy to revenue (or subsidy to fare). With increasing ratios, increasing levels of service ought to be affordable. Part (c) shows how the provider's revenue curve is transformed by various subsidy ratios. It shows that once a stated ratio is adopted, the service level indicated in Parts (a) and (b) is that level at which the provider's fare plus subsidy revenues (labeled, for example, "Fare + 2X" for a 2:1 subsidy level) exactly cover cost, leaving only the "reasonable" profit included in the cost curve.

These points, designated L_0 to L_3, are <u>not</u> the provider's "marginal revenue = marginal cost" maximum profit positions. Without effective competition, a provider should prefer to offer a service at the level where the Fare + subsidy and TC curves are parallel, and hence profits maximized; these points are all far to the left. With competition, providers should move to the desired total cost = total revenue positions, since otherwise they could be underbid, lose to a firm offering more service, or see the subsidy ratio lowered. In the last case, a downward spiral of service cuts and subsidy cuts would result, unless the provider is willing to accept competitive profits or the City is willing to subsidize monopoly profits. These relationships also bear on the issues to be discussed in Chapter 7 on Service Productivity and Economics.

4.2.4 The Competitive Bidding Process

In order to create the competitive environment which is considered necessary to make the user-side subsidy work, a formal system of regular competitive bidding has been established. Current plans call for the bidding to be repeated every four months during the project. The chronology in Section 4.2 shows the dates of the first bidding process. A short notice announcing the availability of a Request for Proposals was placed in the local newspaper, several regional newspapers, and the transit industry weekly trade journal, Passenger Transport. A special effort was made to solicit bids from two local firms, American Transit Corp. (the parent of Bee Line) and Red Top/Yellow Cab. Ten firms located throughout the country requested RFP's, but only two submitted proposals.

The name "competitive bidding" is slightly misleading, since bidders are actually asked to propose a complete service plan (or several alternative plans), including routes, schedules, hours of operations and fares. The first RFP specified the subsidy-to-fare ratio (2:1), a maximum possible fare of $.50 per trip, the use of the ticket system, the availability of the mileage guarantee, four-month contracts, and city-performance of marketing including a uniform system image. The actual RFP is reproduced in Appendix A. The City can choose multiple providers, dividing up services between them, and negotiate any agreement with proposing firms. There is no requirement to pick the lowest bidder or to implement the exact service plan contained in any of the proposals.

Several of the firms sent RFP's sent letters explaining their reasons for not bidding, which included objections to the project concept and the difficulty of setting up operations on short notice. Red Top/Yellow Cab did not bid because of financial difficulties. A bid was received from Transman, Inc. of Frankenmuth, Mich., which took exception to many details of the RFP. This bid was judged to be unresponsive; therefore, the bid from American Transit Corp. was accepted, although the unit and total costs

proposed were greater than Transman's. The actual service implemented incorporates minor changes to ATC's proposed plan of service.

In the second bidding process, all ten firms who requested RFPs before were sent them automatically. The same two firms responded with bids as before. UMTA and the Urban Institute attempted to work out a way for the two firms to split the available work. However, it was finally decided to continue with ATC alone. This process will be described in more detail in the evaluation report.

In effect, the repeated bidding process gives the City the opportunity to redesign service every four months, subject to the availability of interested providers. Specific redesigns mentioned in the City's grant application include reduction or elimination of service on poorly patronized routes, use of small buses or vans on lightly used routes, and changes in the subsidy ratio. It is conceivable that many features of the competitive bidding process could change during the project, as few of them are specifically required under the terms of the grant.

As with the subsidy mechanism, the major analysis tool here will be careful documentation of events and close contact with the process. We will independently evaluate all bids received and interview (in person, by telephone or mail) unsuccessful and non-bidding firms when indicated. Many of the issues surrounding the competitive bidding process have been mentioned already. They are listed, along with the appropriate analyses and data sources, in Item 2 of Table 4-1.

4.2.5 Marketing

The City has assumed responsibility for marketing the transit system. Providers are not prevented from pursuing independent promotional campaigns, but the costs of such campaigns, which the City must review and approve, are considered an extra which will not be considered in setting rates or in any mileage guarantee. One purpose of the City's assuming this function is to give the system a uniform image, even if there are multiple or changing providers. Also, in order to have control over the subsidy mechanism, the City must market the tickets, which are also a

likely medium for promoting the system. On the other hand, there could be an inconsistency in expecting providers to operate from patronage-dependent revenues while taking marketing out of their hands. These issues and related analysis are the subject of Item 3 in Table 4-1.

The City's control over marketing includes:

a) establishing a system name, colors, and logo;
b) painting (and possibly "unpainting") transit vehicles;
c) arranging and conducting the sale of tickets, including design and printing of tickets;
d) designing, printing and distributing maps and schedules;
e) designing, placing and maintaining route markers (or bus stop signs), benches and shelters;
f) advertising and promotional events.

To help it carry out it's marketing responsibilities, Danville contracted with a nationally-known marketing firm, Unimark International of Chicago, Ill. The six-month $32,415 contract covers creation of the system name, logo, and color schemes; developing bid specifications for bus painting, ticket printing, and drivers' uniforms; design of schedules, route maps, and other graphics; and design, but not execution, of advertising and promotional campaigns. Samples of the graphics and designs produced by Unimark will be seen in photographs and exhibits throughout the report.

4.2.6 Labor Relations

The user-side subsidy mechanism, particularly in its implication of changing or multiple providers, could pose special problems in labor relations. Providers might find it hard to negotiate contracts, or even maintain a high-quality, non-union workforce, under short-term contracts and possible frequent changes in the amount of service to be offered. If there are multiple providers, lack of uniformity in working conditions, wages or other factors, among providers or between one provider's Runaround operations and other business, could

cause problems. So far no labor problems have occurred. The project required a 13(c) approval from the Department of Labor, which was given as a routine matter. ATC had an agreement with the local teacher's union which covered the personnel of its school bus operation in Danville. They were able to obtain a favorable amendment to this agreement, covering a new category of driver for the Runaround. Copies of this agreement and all subsequent labor agreements will be obtained and used as data for this analysis and the analysis of productivity and economics. Specific questions regarding labor relations and the methods to be used in addressing them are listed in Item 4 of Table 4-1.

4.3 ACCOUNTING AND RECORD KEEPING

Accounts and records will be produced in great profusion by all participants in the project, both as a natural consequence of the project design and in order to satisfy requirements of the grant, notably reporting to UMTA and supporting the evaluation. These records may be classified as provider records and project records. Project records include:

1. Ticket receipts - Each ticket book has a two-part form on the front; at time of purchase it must be filled in with the purchaser's name, address and telephone number. We have requested that the next batch of ticket books printed have a space for recording the date of purchase. The top part is torn off and held by the vendor to be turned in to the City along with the money collected. The second part, also the book cover, stays with the purchaser; in theory it is a receipt which the purchaser can use to get a replacement book if one is lost. Both parts of the receipt form, and every ticket in the book, are imprinted with a sequence number. (All the tickets in one book have the same number.) The number is six digits, with a letter prefix that identifies the book type. Fig. 4-2 shows the entire contents of a ticket book.
2. Vendor Ledger - Each ticket vendor is required to keep a

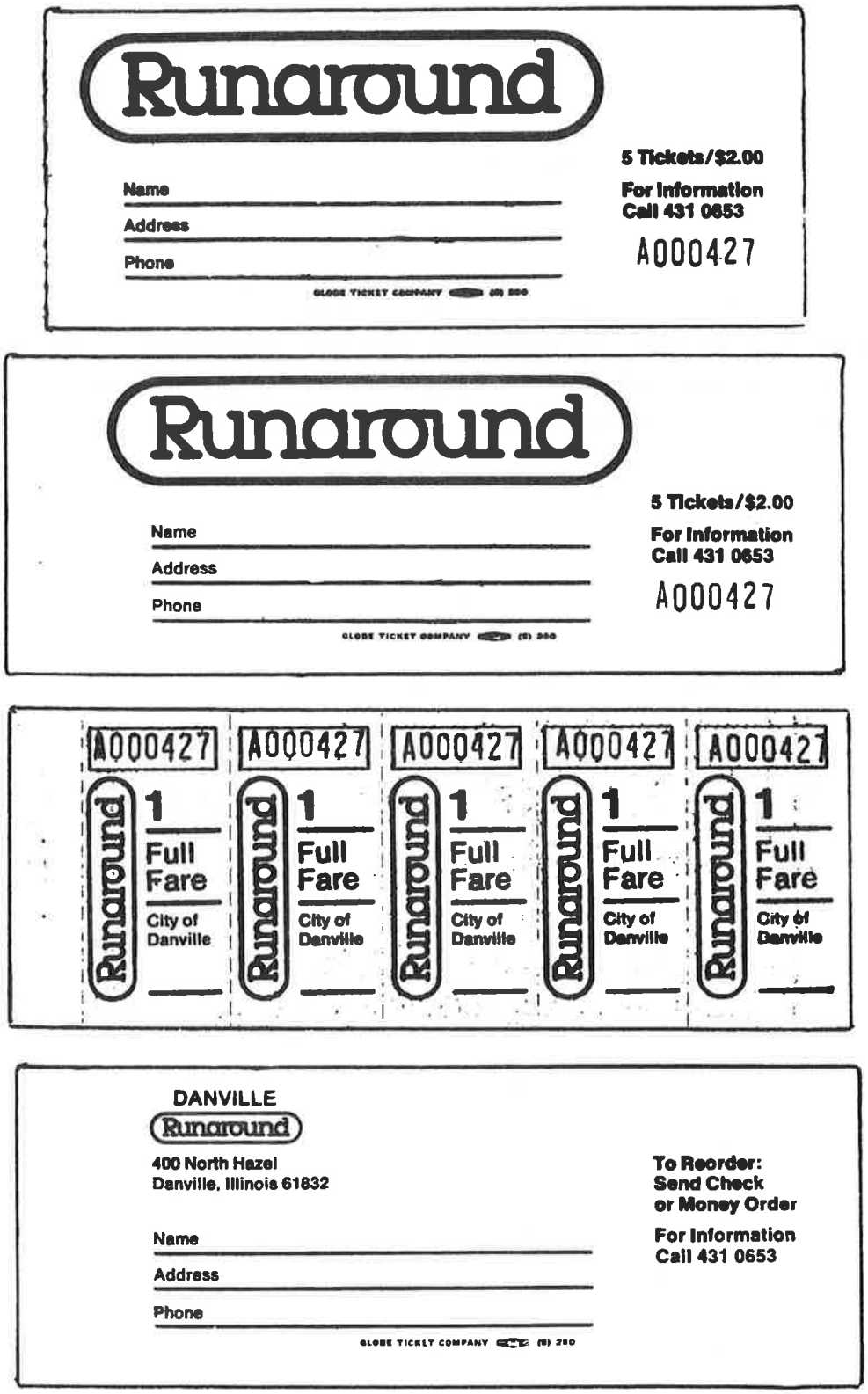


FIGURE 4-2.

RUNAROUND TICKET BOOK

record of all sales and all tickets voided. The form shown in Fig. 4-3 is used for this purpose. About weekly (depending on a vendor's sales volume), a project staff member brings each vendor a new supply of ticket books, a new ledger, and picks up a filled-in ledger, receipts for sold books, voided books, and payment for books sold (actually some vendors pay later by check).

3. Project Ticket Sales Ledger - The project office maintains a hardbound ledger book, in which ticket deliveries, sales, and inventories by book type are recorded for each vendor over the life of the project. Each vendor has several pages on which a running record of transactions with that vendor are kept.

4. Ticket Sales Summary - We hope to have a weekly or monthly summary, on one or two pages, showing deliveries, sales and inventories by ticket type for each vendor, and totals for all vendors, for a specific time period. Time series data of this type will be necessary for the evaluation. If the project staff does not keep such a record, the data will be extracted periodically from the project ledger book by the evaluation contractor.

5. Monthly Financial Reports - These are submitted to UMTA monthly and show project expenses for the preceeding month and projected expenses for the following month, by budget line item. These reports, and back-up material submitted with them will be useful in estimating the cost of various project features.

The provider (ATC) also maintains numerous records. The most important of these was created by the project and will be required of all providers during the project:

6. Weekly Operations Statement - This report, a sample of which is reproduced as Fig. 4-4, is the provider's report of mileage operated, passengers served, and tickets collected, by day and route; it is also the provider's bill to the City for the services provided. This report is derived from

RUNAROUND TICKET SALES

______________ Beginning Date ______________ Ending Date

Vendors Name: ______________________________ ID Number ____________

Vendors Address: ______________________________ Phone ____________

	$2 Reg. A	$2 Reg. B	$2 Spec. C	Sellers Initials	Total amount of Sale
Beginning Inventory (Quantity)					
Date of Sale					
Sub Total					

FIGURE 4-3.

VENDOR TICKET SALES RECORD

Sub Total Cont'd					

Total Sold			
Remaining Balance			
Am't Books Replenished			
New Beginning Inventory			
Computation of Dollar values			
Amount due Runaround			
Books Returned			
Books Unaccounted			

Amount Due $____________________

Amount Paid $____________________ Date_______________ ( ) Check ( ) Cash

____________________________ ____________________________
Vendor's Signature City Representative

FIGURE 4-3.
(cont.)

VENDOR TICKET SALES RECORD

TO: DATE: 4-1-78 FROM:

ROUTE	DAY OF WEEK						TOTALS
	3 M 27	3 T 28	3 W 29	3 T 30	3 F 31	4 S 1	
1 - GRANT Full Half	40 58	53 47	33 23	30 33	41 66	12 35	209 260
Tickets	3	7	2	3	4	1	25
Cash Fares	13	17	15	15	9	7	76
Transfers Collected	120	120	120	120	120	63	663
Actual Mileage	120	120	120	120	120	63	663
Charged Mileage							
2 - GILBERT	77 127	76 55	65 65	63 86	82 77	67 82	430 492
Tickets	9	5	6	6	5	12	42
Cash Fares	20	10	6	7	6	4	53
Transfers Collected	195	195	195	187	195	195	1162
Actual Mileage *	195	195	195	187	195	195	1162
Charged Mileage							
3 - VERMILION	73 100	88 93	47 90	45 101	66 78	21 39	340 509
Tickets	8	10	7	8	8	3	44
Cash Fares	22	16	12	10	10	16	86
Transfers Collected	202	202	202	202	202	101	1111
Actual Mileage	202	202	202	202	202	101	1111
Charged Mileage							
4 - BOWMAN	15 31	30 31	27 23	23 21	20 12	9 27	125 147
Tickets	2	1	1	1	1	3	9
Cash Fares	13	9	14	10	12	12	60
Transfers Collected	92	92	92	92	92	92	552
Actual Mileage	92	92	92	92	92	92	552
Charged Mileage							
5 - FAIRCHILD	75 65	54 100	52 84	30 77	57 74	36 75	304 475
Tickets	5	7	6	5	5	2	30
Cash Fares	20	21	16	16	14	7	94
Transfers Collected	169	169	169	169	169	84	929
Actual Mileage	169	169	169	169	169	84	929
Charged Mileage							
6 - MAIN	34 72	61 70	77 69	66 46	61 62	39 40	338 359
Tickets	7	5	4	5	4	5	30
Cash Fares	8	23	14	15	21	16	97
Transfers Collected	178	178	178	178	178	90	980
Actual Mileage	178	178	178	178	178	90	980
Charged Mileage							
7 - WILLIAMS	22 24	21 20	18 33	22 30	14 14	19 42	116 163
Tickets	4	2	3	2	2	6	21
Cash Fares	13	11	8	11	11	6	50
Transfers Collected	94	94	94	94	94	94	564
Actual Mileage	94	94	94	94	94	94	564
Charged Mileage							

FIGURE 4-4.

WEEKLY OPERATIONS STATEMENT

[illegible] 81							
Tickets	23	20	17	15	14	12	101
Cash Fares	0	0	0	0	0	0	0
Transfers Collected	4	6	5	2	3	2	23
Actual Mileage	31	31	31	31	31	31	186
Charged Mileage	31	31	31	31	31	31	186
- THE HEIGHTS 82							
Tickets	20	7	8	8	11	11	65
Cash Fares	14	9	11	15	13	9	71
Transfers Collected	0	0	0	0	0	0	0
Actual Mileage	5	3	3	2	2	1	22
Charged Mileage	41	41	41	41	41	41	246
	41	41	41	41	41	41	246
- PERRYSVILLE 91							
Tickets	2	6	5	4	10	3	30
Cash Fares	9	7	1	1	6	8	42
Transfers Collected	0	0	0	0	1	0	1
Actual mileage	5	3	2	2	4	4	25
Charged Mileage	54	54	54	54	54	54	324
	54	54	54	54	54	54	324
- SOUTH DANVILLE 92							
Tickets	7	8	4	3	7	5	28
Cash Fares	7	10	6	12	6	9	50
Transfers Collected	0	0	0	0	0	0	0
Actual Mileage	3	3	2	2	2	2	16
Charged Mileage	33	33	33	33	33	33	198
	33	33	33	33	33	33	198
TALS Full							
Tickets Half	373	412	348	310	381	230	2054
Cash Fares	542	454	418	435	422	376	2647
Transfers Collected	43	35	30	30	31	38	207
Actual Mileage	106	121	89	92	84	96	588
Charged Mileage	1209	1209	1209	1201	1209	878	6915
	1209	1209	1209	1201	1209	878	6915

GUARANTEED SUBSIDY PER MILE: Chargeable Mileage 6915

X 1.38 Per Mile

Amount Due 9542.70

SUBSIDY PER FARE TRIP: Total Tickets Collected 4701

X $1.20 Per Ticket

Amount Due 6487.38

lectronic Scale Count on Tickets _____ Pay This Amount _____

COMMENTS: * Eight (8) Miles Lost on Route # 2 3-30-78 Due To Bus Trouble.

FIGURE 4-4. (cont.)
WEEKLY OPERATIONS STATEMENT

various internal records. Although the reports described here refer to ATC only, any provider would have to keep similar records.

7. Driver Sign-Out Sheet - This form shows the schedule according to which drivers work on the runs that make up the assignments of buses to routes. The miles operated is filled in by management based on knowledge of the routes' lengths and whatever exceptional circumstances have occurred.
8. Driver's Trip Sheet - On this form the driver records his or her times on and off, bus number, and any accident information.
9. Drivers Passenger Check - Using this form, drivers record a cumulative count of the number of passengers served by a bus since it left the garage. The driver has four hand-operated mechanical counters, with which to record the number of passengers boarding with full-fare tickets, half-fare tickets, transfers, or cash. Every time the bus turns around at the end of a route, or passes through downtown and starts on a different route, the driver records the current totals of the four counters on a line showing the route number and time the bus was scheduled to be at the point of the reading. This form is the only source of passenger count data by route or by time of day.
10. Daily Record of Vault Contents - As each bus is brought back to the garage at the end of a day, its vault contents are transfered to a safe in a marked envelope. The contents of the envelopes are counted by management the next morning. The number of full-fare and half-fare tickets, the number of transfers, and the amount of money taken from each vault is recorded. The money is converted to an approximate count of passengers paying cash (the cash fare is $1.00, but fractional vault totals are common). The totals by bus are then used as a check

against the driver's passenger check. The drivers counts are used to allocate the vault counts to routes (each bus covers two to four routes) for the Weekly Operating Schedule.

11. Radio Log - Evenutally, all buses will be equipped with two-way radios (paid for by the project). A log will be kept at ATC's offices in Danville, including the time and subject of each call. Since breakdowns or delays long enough to require dispatching another vehicle will involve radio communication, the log will provide a record of such events.

TABLE 4-1. ANALYSIS OF DEVELOPMENT AND OPERATIONS

EVALUATION ISSUE	ANALYSIS	DATA SOURCES
1. Viability of Subsidy Mechanism		
a) How is subsidy administered: How are payments made?	Document staff activities; review all project records.	Interviews; grantee financial statements; copies of project records; continuous contact.
b) How difficult and expensive is the subsidy to administer?	Estimate project staff time and other costs, document difficulties.	Same
c) How does City set the subsidy level?	Observe setting process each 4 months and compare to history of project operations and economics. Examine relation to desired service level, operator profits, subsidy costs, politics.	Interviews; personal observation; providers' ridership reports and financial accounts.
d) How does City monitor provider finances and profits? How effective is City's monitoring?	Document staff activities; review all project records.	Interviews; copies of project records; providers' financial accounts.
e) What are conditions under which businesses will sell tickets; what problems does it present to them?	Record of businesses joining and leaving program; document vendor attitudes and comments.	Interviews with vendors; project records.
f) What are problems keeping vendors supplied, handling payments, and keeping accounts?	Document frequency of vendors running out of tickets, unaccounted tickets, staff time spent on distribution and accounting; payment backlogs.	Project vendor summaries; interviews with staff; user surveys.

TABLE 4-1. ANALYSIS OF DEVELOPMENT AND OPERATIONS (cont.)

EVALUATION ISSUE	ANALYSIS	DATA SOURCES
g) Does City benefit financially from prepayment?	Determine size and variation of float and payment backlog.	Project accounts
h) Is ticket system susceptible to fraud?	Look for use of unaccounted tickets; percent of tickets sold in large blocks; check tickets turned in against driver passenger counts.	Project vendor summaries; computer file of ticket receipts; samples of turned in tickets; Drivers' Passenger Checks; provider ticket counts.
i) What steps are taken to control for fraud?	Document staff activities.	Interviews, continuous contact.
j) Do tickets work as medium of payment?		
· Handling	Observe process of ticket handling on buses and provider accounting staff.	Personal observation; interviews; driver survey.
· Forgery	Look for forged tickets by looking for duplicate or unsold ticket numbers.	Sequential file of ticket receipts; sample of turned-in tickets.
· Weighing as City's counting method.	Compare recorded weights with hand counts for accuracy.	Project records, personal observation.
k) What are advantages and disadvantages of ticket system for the public?		
· Convenience of prepurchase compared to exact change.	Determine attitudes of users and non-users by frequency of use, age, income, book type last bought.	On-board and general population surveys.
· Filling out receipts	Same	Same

TABLE 4-1. ANALYSIS OF DEVELOPMENT AND OPERATIONS (cont.)

EVALUATION ISSUE	ANALYSIS	DATA SOURCES
• Lost and unused tickets.	Graph total unused tickets in circulation over time.	Ticket sales summary.
• Location and convenience of vendors.	Users' opinions; average distance to vendor for users; ticket sales by vendor.	On-board survey; ticket receipts; vendor ledgers.
l) How far in advance do people buy tickets?	Determine age distribution of used tickets. Repeat if substantial changes in ticket system.	One-week samples of tickets and sequential file of receipts.
m) What is involved in changing ticket system to accommodate new providers or changes in fare structure?	Document events.	Continuous contact; interviews; news coverage.
n) How do providers set cash fares; what problems arise?	Document events.	Published service descriptions; provider revenue counts; on-board surveys and ovservations; driver survey.
o) How much freedom do providers have to maximize revenues?	Document events (especially changes in service design and fare structure); City reaction to proposed changes; participant perceptions.	Interviews with City and provider staff; continuous contact; project records; conduct of bid evaluation; published service descriptions.
p) Do providers take initiative in introducing service changes?	Document events.	Same

TABLE 4-1. ANALYSIS OF DEVELOPMENT AND OPERATIONS (cont.)

EVALUATION ISSUE	ANALYSIS	DATA SOURCES
q) What do City officials regard as positive and negative aspects of user-side subsidy concept?	Document attitudes; how City uses various features.	Interviews; continuous contact.
2. Viability of Competitive Bidding Process		
a) What are the mechanics of competitive bidding process and problems in administration?	Document process and changes to it.	Project records; continuous contact.
b) Are there enough bidders to provide competition?	Document conduct of bidding and selection.	Project records; continuous contact.
c) Does an established provider have an unfair advantage in competition?	Same	Project records; continuous contact; independent evaluation of bids.
d) What criteria does the City use to choose among bidders?	Document conduct of bidding and selection.	Bid documents; project records; interviews; personal observation.
e) What factors inhibit competition?	Location and number of bidders and of firms expressing interest but not bidding; comments of non-bidders.	Project records; mail survey of non-bidders.

TABLE 4-1. ANALYSIS OF DEVELOPMENT AND OPERATIONS (cont.)

EVALUATION ISSUE	ANALYSIS	DATA SOURCES
f) What is administrative overhead of bidding process?	Estimate project staff time and expenses.	Project accounts; interviews.
g) What are legal and administrative problems of frequent changes in service configuration?	Documents events.	Continuous contact; interviews; news coverage.
3. Marketing		
a) How well does City promote the system?	Document publicity and promotional campaigns; total spent on promotion.	Personal observation; project accounts; news coverage.
b) Is City marketing in providers' best interest?	Document cases where City's marketing or lack of marketing conflicts with provider objectives.	Continuous contact; interviews; news coverage.
c) Do providers undertake additional marketing efforts? If not, why not?	Document any provider-initiated marketing. Providers reasons for marketing or lack of it.	Same
d) Does City marketing create continuity and uniformity of image in the event of changing or multiple providers?	Public attitudes and understanding of system.	General population survey; driver survey; news coverage.

TABLE 4-1. ANALYSIS OF DEVELOPMENT AND OPERATIONS (cont.)

EVALUATION ISSUE	ANALYSIS	DATA SOURCES
4. Labor Relations		
a) What is role of organized labor?	Document contracts; unions involved; labor disputes.	Provider records; interviews; news coverage; driver survey.
b) Do short term contracts have effect on labor's position?	Same	Same
c) Do multiple providers have effect on labor's position; is there any uniformity among providers?	Same	Same
d) Does organized labor inhibit entry of new providers or provider flexibility in designing service?	Same	Same

5. LEVEL OF SERVICE

The concern of this chapter will be to document the level of service provided by the project; how it changes over the course of the project; and, most importantly, the extent to which the services provided, their manner of provision, and their changes conform to the competitive, free-market model on which the user-side subsidy is based. If this model works, we expect to see providers taking strong initiatives to maintain level of service and correct problems, and to concentrate service where there is demand for it. The primary areas where providers may be able to take such initiatives are coverage and reliability. Therefore the analysis will concentrate on those areas.

The relative abilities of subsidized taxi service and discounted (as well as subsidized) public fixed-route transit to meet the needs of transit dependents is an important evaluation issue. Therefore the level of service experienced by transit dependent groups on the two modes should be measured and compared. For at least part of the project, taxis and transit will be competing for the patronage of the elderly and handicapped, who receive a user-side subsidy to use either mode. While the taxi subsidy program continues, transit providers may still be operating under a mileage guarantee and thus not be under competitive pressures; but taxi providers definitely will be. It is possible that taxi operators will try to prevent losing too much of the market by improvements in level of service. Alternatively, as some shrinkage inevitably occurs, fleets may have to be reduced, causing possible degradation in taxi service. We will be concerned with measuring such impacts on taxi level of service.

Most of the analyses listed in Table 5-1 will need to be repeated, or at least reviewed for possible updating, once every bidding period (probably every four months). Measurements will be taken in the middle of each period, or possibly toward the end, in

order to avoid measuring possible transition effects, except where those are the subject of analysis. Measurements most likely repeated every four months are on-board and street-side time checks. Some form of on-board survey may be repeated as often as every four months depending on the extent of service changes that occur. A survey of RTR users will be needed before the likely discontinuance or cutback of the RTR program, and once toward the end of the project. To determine attitudes of non-users, a small-sample telephone survey will be useful at least once during the project. Data collection plans are discussed in more detail in Chapter 10.

Several travel time measures are shown. Scheduled bus travel time and speed can be computed from schedules and street maps. This will let us assess how realistic the schedules are. From the user's point of view actual travel times and speeds are more interesting. These can be computed on a round-trip basis from the observed interval between each bus' departure from downtown and its return to the same place. The difference between scheduled and actual speeds affects reliability, since the major effect of scheduled speeds being unattainable (or unmaintainable) is lack of schedule adherence. Buses' arrival and departure times downtown are easily measured, since all buses converge on one two-block segment of North Street. This measurement, repeated at least once per contract period, can be analyzed for speed and for schedule adherence, and hence also for wait time calculations. Since the downtown schedule checks will become quite routine, and can be administered by two people without supervision by the evaluation contractor, they could be conducted more often than once per contract period when there is a belief that reliability may have changed substantially.

The methods to be used for computing theoretical wait times from headway data are in doubt at this point. Assuming random arrivals, which produce average wait times of a little over half of average headway, would place an upper limit on theoretical wait time. Some work has been done on arrival behavior which is

based on knowledge of schedules.[3] If feasible, we will use the distributions developed there to refine our analysis. If reported wait times are much less than wait times computed assuming random arrivals, this may be held to indicate that schedules are reliable enough and understanding of them broad enough for passengers to schedule their arrivals to meet a bus.

Items 4b-f address matters of changes in reliability; specifically, possible unreliability with any provider starting out and improvements in reliability after a provider has had time to debug operations. In addition to actual schedule checks, a record of actions taken to improve reliability will be a major indication of this learning process.

[3]J.K. Jolliffe and T.P. Hutchinson, "A Behavioural Explanation of the Association Between Bus and Passenger Arrivals at a Bus Stop," Transportation Science, Vol. 94, November 1975.

TABLE 5-1. ANALYSIS OF LEVEL OF SERVICE

ISSUE	ANALYSIS	DATA SOURCES
1. Coverage		
a) What is transit coverage, by area and market segment, and how does it change during the project? (Market stratifiers: Age = under 18, 18-64, 65+; Cars owned = 0, 1, 2+; Income = under $10,000, $10,000-$19,999, $20,000+; RTR registrants).	At least every bidding period determine: Route structure, Service area, Hours of operation, Frequency of service) by Operator	Published maps and schedules.
	% of population living within 1/4 and 1/8 mile of bus route.	Pre-implementation telephone survey forms (plot on map).
	% of destinations within 1/4 and 1/8 mile of bus route.	Pre-implementation telephone survey coded destinations.
b) Do changes in coverage correspond to profitability (demand vs. cost)?	Compare additions and deletions of service to ridership and estimated cost of service.	Published service descriptions; weekly operations reports; provider accounts; interviews.
c) Does competition cause taxi coverage to drop?	Monitor # of vehicles in operation and vehicle hours by operator.	Operator records.
2. Travel Time		
a) What is mean bus travel time and speed by route and time of day?	Compute at least every bidding period.	Streetside downtown time checks.
b) What is scheduled bus travel time and speed by route?	Compare scheduled arrival and departure times to measured route lengths; adjust for layover time.	Published service information; operator and driver interviews.
c) What is perceived average wait time component of travel time by route and time of day?	Average riders' responses to open-ended question. Repeat at least every bidding period.	On-board surveys.

TABLE 5-1. ANALYSIS OF LEVEL OF SERVICE (cont.)

ISSUE	ANALYSIS	DATA SOURCES
d) Do perceived wait times correspond to measured headways?	Compute theoretical average wait time. Repeat in selected bidding periods.	Streetside measurements of headways downtown.
e) What percentage of transit trips require a transfer? Could re-routing lower this percentage?	% requiring transfer between bus by analysis of used transfers. % passing thru downtown on same bus from on/off counts. Improvement by assigning sampled trips to hypothetical new route combinations.	Used transfers; on/off counts.
f) What is (would be) overall travel time on transit for:		
Transit trips	Estimate total time by component for typical surveyed trips using data from 2a - 2e.	On-board survey; results of 2a - 2e.
All travel	Estimate total time by component for typical trips from pre-implementation survey using data from 2a - 2e.	Pre-implementation telephone survey; results of 2a - 2e.
RTR trips before bus system	Same as above for sample of trips from Aug. 1976 on-board taxi survey.	Aug. 1976 on-board taxi survey origins and destinations: results of 2a - 2e.
RTR trips after bus system	Same as above for sample of RTR trips from new survey of RTR trips.	RTR survey scheduled as late as possible before end of RTR (ideally March or April).
All taxi trips	Same as above for sample of trips from dispatch records.	Operator records plus results of 2a - 2e.

TABLE 5-1. ANALYSIS OF LEVEL OF SERVICE (cont.)

ISSUE	ANALYSIS	DATA SOURCES
g) What would travel time of transit trips be if taken by:		
Private auto	Estimate time using sample of trips from on-board survey and TSC data on auto travel times.	On-board survey; TSC modeling data.
Shared-ride taxi	For same trips, estimate time using dispatch records and travel time data from old and new taxi on-board surveys.	Operator dispatch records; pre-RTR on-board survey; new taxi on-board survey.
3. Price What are relative costs of trips by regular taxi, RTR, private car, and transit?	Estimate costs for all trips analysed in 2f.	See 2f; also published rate schedules.
4. Reliability a) Are buses on schedule?	Plot distribution of scheduled vs. actual arrival times at downtown, by time of day and route; repeat at least every bidding period or when changes made; compute % of buses leaving early, avg. lateness, deviation around avg. departure time.	Streetside downtown time checks.

TABLE 5-1. ANALYSIS OF LEVEL OF SERVICE (cont.)

ISSUE	ANALYSIS	DATA SOURCES
b) What are causes of schedule adherence problems?		
Length of routes (avg. travel time)	Compare scheduled travel time to results of 2a.	On-board time checks, by drivers if possible.
"Normal" variations in running time due to congestion, trains, patronage variation, etc.	Plot distributions of running time by route and time of day.	On-board time checks, by drivers if possible.
"Exceptional" circumstances (accidents, vehicle breakdown, severe weather, etc.)	Frequency of such events in radio log; edit distribution of running time for cases involving "exceptional" delays.	Same plus radio log; driver interviews.
c) What could be done to improve schedule adherence?	Examine possibilities: shorten routes, redraw schedules, traffic engineering measures, vehicle maintenance, etc.	Data from 2a - b, 4b plus interviews with drivers, management, city officials.
d) Do providers take initiative in improving reliability?	Document events.	Continuous contact, interviews.
e) Does reliability improve over the course of the project? How long do providers need to gain experience and debug operations?	Compare measurements taken in 4a-b at least once per bidding period.	See 4a-b.
f) Are there service interruptions or other reliability problems during transition between providers?	Document events; measure actual vs. scheduled arrivals downtown immediately after transition; compare to mid-period results.	Extra streetside time checks; personal observation; interviews; news coverage.
g) In case of switching providers, does service under "lame duck" provider degrade?	Same as above, in period after decision to switch and before start of new contract.	Same.

TABLE 5-1. ANALYSIS OF LEVEL OF SERVICE (cont.)

ISSUE	ANALYSIS	DATA SOURCES
5. Other		
a) Is system considered clean, comfortable; are personnel thought polite, helpful, etc.? (Differences by operator and changes over course of project).	Attitudinal survey questions on surveys 2 or 3 times during project, depending on number of providers.	Random-sample telephone survey (non-user); on-board survey (users).
b) Relative judgment of transit versus taxis by RTR registrants.	Attitudinal survey questions.	Random-sample telephone survey of RTR users before discontinuance of RTR.
c) If there are multiple providers, what special problems are there in making multi-provider trips?	Compare transfer times (actual and scheduled), transfer costs; study route coordination.	On-board surveys, published service information.

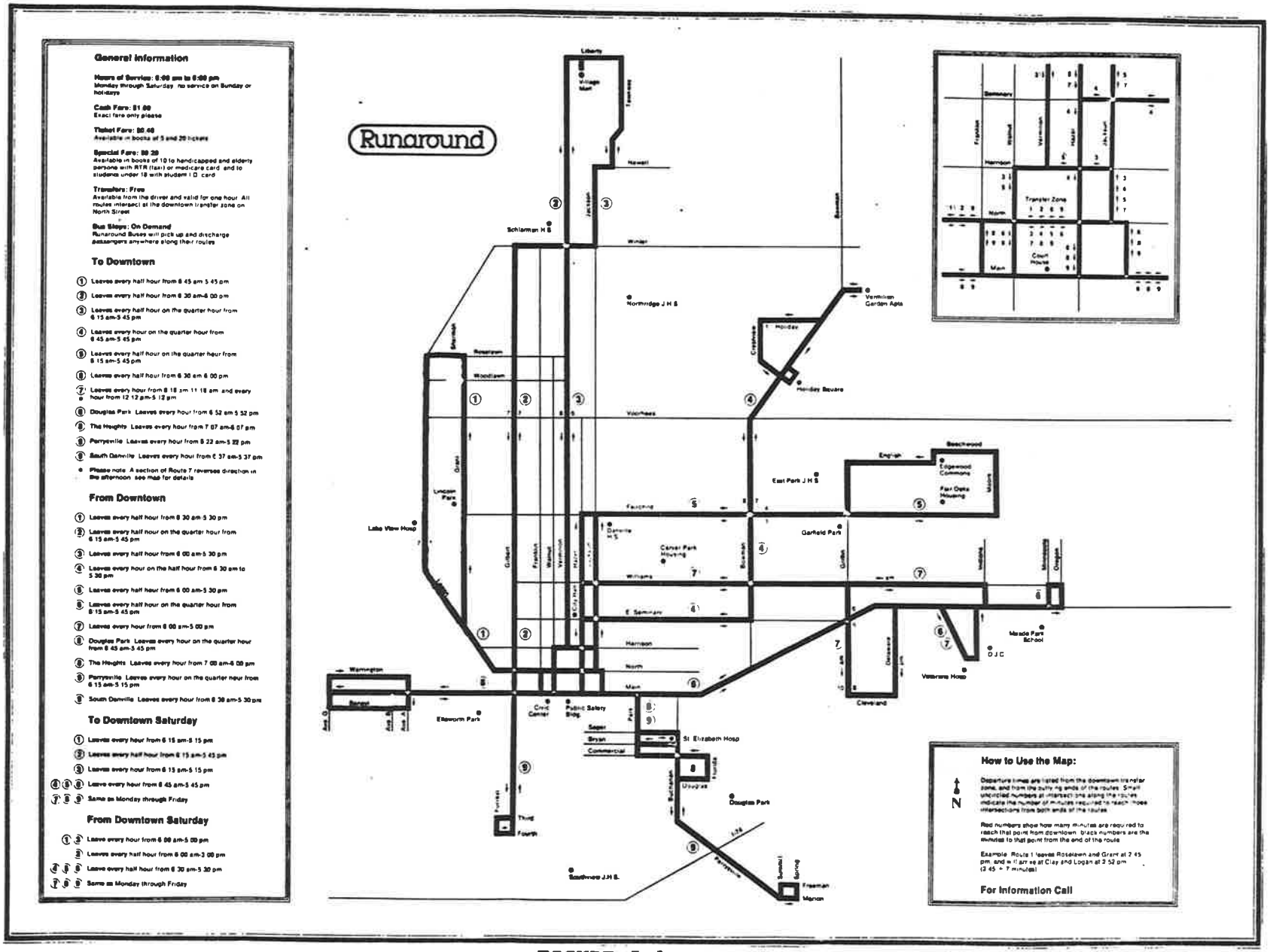


FIGURE 5-1.

RUNAROUND SERVICE-FIRST BIDDING PERIOD

6. DEMAND

This chapter will measure the demand for the project service, its composition, the factors underlying it, and its relationship to the project objectives of testing the user-side subsidy and improving the mobility of transit dependents. The demand analysis will also serve the analysis of productivity and economics discussed in the next chapter. There having been no regular transit service in Danville since 1970, the amount of demand for transit service which is now present is, of course, also interesting in its own right.

6.1 TRANSIT RIDERSHIP

Continuous monitoring of ridership patterns, user characteristics, and reasons for non-use will inform the transportation planning process in Danville; help in applying results from Danville to other locations; help assess the usefulness of transit service to transit-dependent and other ("choice") riders; and permit an assessment of the extent to which provider behavior conforms to the assumed free-market, competitive model. By creating the information needed by providers to tailor service to demand, we can judge the extent to which they take the initiative to use that information. The various aspects of this monitoring are listed with the related analyses in Item I of Table 6-1.

The primary data source for ridership information is the Weekly Operating Statement from each provider (see Figure 4-4), which gives ridership by route, day and payment method. To derive time-of-day distribution, we will go back to samples of the Drivers' Passenger Checks. Further data on the composition of ridership and user characteristics will come from periodic on-board surveys and analysis of ticket receipts. Comparison data about travel patterns and general population characteristics

will come from the October 1977 pre-implementation telephone survey recently conducted in Danville. Data about non-users relating specifically to transit service will come from one or more small-sample telephone surveys. Average daily ridership totals by week, from the beginning of the project to date, are plotted in Figure 6-1. This figure and similar figures for each route, will be maintained throughout the project. Visual inspection of such figures, along with notation of relevant objectives and events, often yields significant insights.

Most of the analyses suggested in Item 1 of Table 6-1 are quite simple and straight forward. One which is slightly more complicated is the market penetration analysis suggested in Item 1c. This requires a good sample of Danville trips. The obvious source would be the October 1977 pre-implementation survey. It now appears that coding of trip data from this survey will be much delayed. Nevertheless, the data should eventually be coded in a zone system which allows us to distinguish whether a trip end is within a quarter mile of a bus route. Assigning trips with both ends in such zones to transit will produce a high estimate of the market for transit, since many people will not walk even a quarter mile. This analysis will, however, establish an order of magnitude estimate of the system's success and potential improvements through better marketing.

In Item d, "hypothetical questions" refers to a question on an on-board survey asking, "How would you make this trip if transit were not available?" This is preferred to a time series analysis of mode shift due to the small changes involved compared to normal fluctuations in volumes on alternative modes. Asking transit users how they used to make current transit trips would work for regularly repeated trips, mainly work and school trips, but we expect this to account for only a fraction of Runaround usage.

6.2 MODE CHOICE

We would like to know why people choose the Runaround or

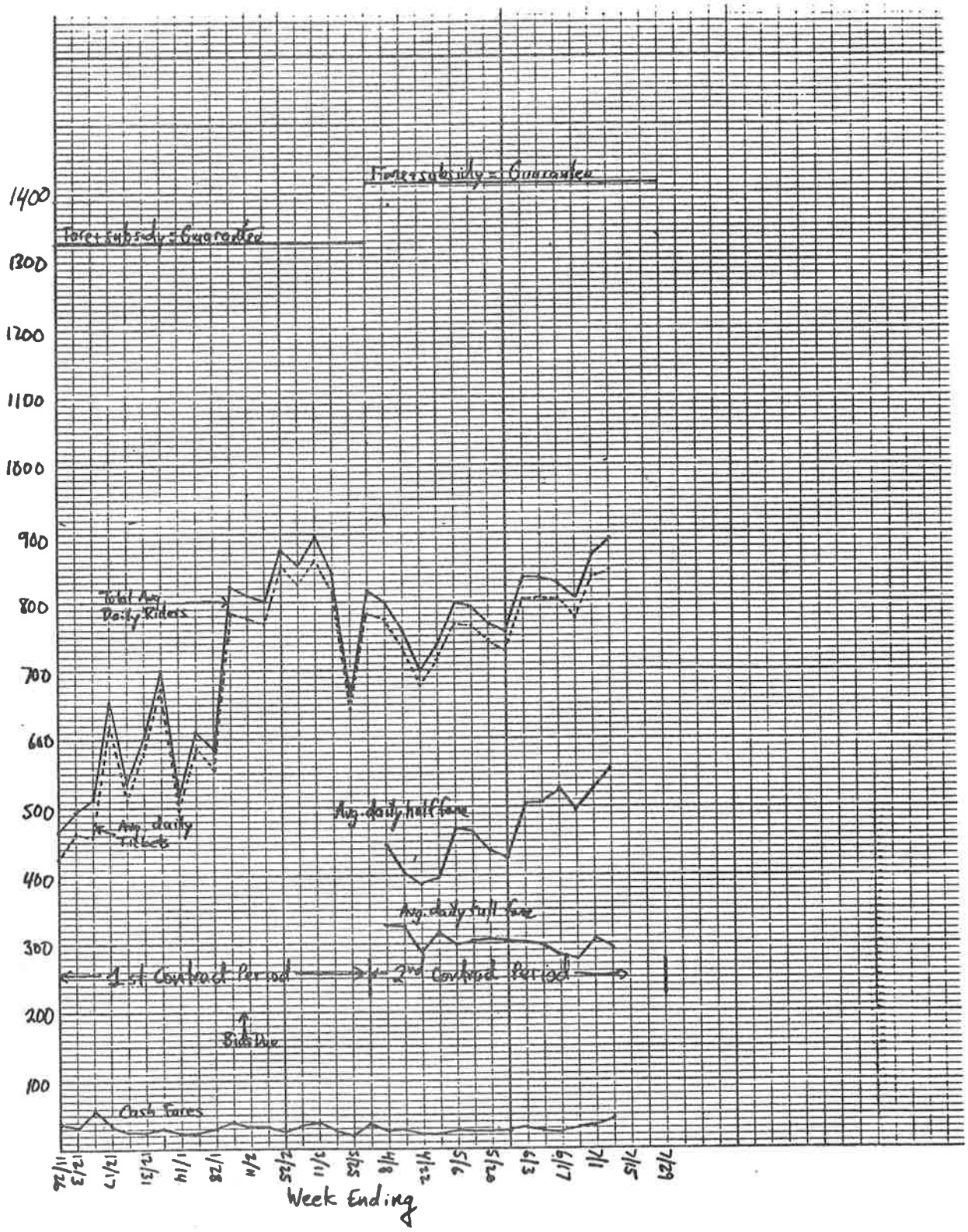


FIGURE 6-1.

DANVILLE RUNAROUND RIDERSHIP

some other mode. The analysis in 2a chooses a marketing-style approach, assuming that the major motivation behind the question is to be able to attract potential users by addressing the problems they identify with the system. This provides another test of provider initiative. Alternatively, by identifying the extent to which certain groups choose other modes for reasons which cannot be helped (e.g., privacy, work place outside of Danville), limits on patronage can be established and unproductive efforts avoided.

The most interesting mode choice issue, shown as 2b and 2c, concerns the choices made by those eligible for RTR, the taxi discount program, between continuing to use RTR and riding transit. Since the future of RTR is in doubt, so must be analysis plans concerning it. We know that most RTR registrants are able to use buses, but many may choose not to as long as taxi rides are affordable. These analyses will help determine the extent to which public fixed-route transit can meet the need being served by RTR. A telephone survey of RTR registrants will be useful in this analysis. It should not take place until the worst of winter weather is past, thus avoiding the effect of such weather and giving transit ridership a chance to grow. If a decision is made to discontinue or severely restrict RTR before then, a taxi survey should be scheduled before those plans are widely known. If RTR is discontinued or restricted, the effects of that change on "transit dependent" mode choice can be the subject of further study, as suggested in 2d.

One possible analysis of RTR registrants' mode choice not shown in the table is the estimation of a logit model for the bus-taxi choice. Such a project is under discussion with TSC. An important limitation of the logit model is that it assumes that taxi and bus are, in fact, closely competing modes, which may or may not be true for RTR registrants. We will know more on this point following the RTR telephone survey and an on-board survey. The analysis shown in 2b and 2c will give a strong indication of the extent to which time and cost explain RTR registrants' choices. If these factors seem important, and taxi and bus are found to be closely competing, estimation of a logit model may be indicated.

6.3 MOBILITY CHANGES

Increasing the mobility of transit dependents has been identified as an objective of the demonstration, and determining the extent of such an increase as a major objective of the evaluation. Item 3 of Table 6-1 identifies two major methods for addressing this issue: 1) retrospective and hypothetical questions on an on-board survey, and 2) cross-sectional analysis by analysis of covariance using trip rate data from a weighted random population sample surveyed during the project. The on-board method seems the only practical way to address mobility changes other than increased trip rate (see 3b). A third method is comparison of trip rates from before and after service implementation. Given large variances in trip rates, small expected changes, and large perturbations due to outside factors, we consider this method impractical and believe that results from it would necessarily be inconclusive. The conclusion is supported by an analysis done as part of the Phase I evaluation, regarding measuring the mobility impact of RTR and the Portland LIFT.[4]

Even the analysis of covariance approach will involve relatively expensive data collection and could produce inconclusive results. There are also unresolved questions about the methodology. An ordinal dependent variable (i.e., trips/day = 0,1,2,3, . . .) implies that certain assumptions of regression analysis are violated, namely independence of the error terms and constant variance of the error terms (heteroskedasticity) among observations. A journal article which discusses this problem,[5] suggests use instead of a multi-choice probit technique. The authors find that their method eliminates a bias in ordinary regression results; the bias in the example chosen, however, arises from all observations beyond a certain point being lumped together, thereby eliminating the influence of certain extreme observations. The authors do have a computer

---

[4] Crain & Associates, "Transit Dependent Mobility Measurement," Technical Memorandum for TSC, 28 September 1976.

[5] Richard D. McKelvey and William Zavoina, "A Statistical Model for the Analysis of Ordinal Level Dependent Variables," Journal of Mathematical Sociology, Vol. 4, 1975.

program written; it is not apparent, however, whether it is available for general use. An as yet unpublished work by Sheffi[6] develops a logit-based technique for the same problem, applying it specifically to trip generation rates for elderly and handicapped. He finds substantial agreement between results using the new technique and results with ordinary regression. His program is definitely still experimental. It appears that for our application, ordinary regression is inefficient, but not biased. Alternative techniques are experimental and, especially in the case of probit analysis, very demanding of computer time. For our purposes, therefore, any cross-sectional analysis of mobility changes should stay with the truly "off-the-shelf" technique of ordinary least squares regression.

Since on-board surveys will be conducted in any case, we should first use the method based on hypothetical questions to estimate the magnitude of the effect to be analyzed. At that time, plans for analyzing mobility changes should be reassessed. Budget considerations might also be significant, depending on the cost of other evaluation activities. The travel data required for the analysis of covariance is a question that we will be able to address better when results from the pre-implementation telephone survey are available.

Some form of random sample survey including a record of at least one day's travel by all modes would be needed. One possible source is the follow-up survey of respondents in the pre-implementation survey, scheduled for late March or early April 1978. The major disadvantage of this source is that the transit system will probably not have achieved its full impact by then. Alternatively, a new survey, either in the fall of 1978 or spring of 1979, could be used. Summer and winter dates are not recommended, as these seasons tend to have either above or below average travel. The spring 1979 follow-up survey has the advantage of a pre-selected sample weighted toward transit dependency. Re-interviewing the

---

[6]Yosef Sheffi, "Estimating Choice Probabilities Among Integer Alternatives," paper submitted to Transportation Research Board, no date.

same people a second time may be inadvisable (or unworkable) and obtaining a second such sample would be expensive and, maybe, impossible, given the large number of households already screened in October 1977. We tentatively recommend a spring 1979 general public survey, which can include a question on total trips made the day of the survey. This timing permits analysis of a fall 1978 on-board survey before settling on an analysis method. An unknown factor at this time is the role which the data requirements of Abt Associates' research for TSC will play in the latter stages of the demonstration.

TABLE 6-1. ANALYSIS OF DEMAND

ISSUES	ANALYSIS	DATA SOURCES
1. Transit Ridership		
a) How well patronized are the services provided?	Record patronage over the course of the project by route, weekday vs. Saturday.	Weekly Operating Statement
	Plot distribution of patronage by time of day and day of week. Update periodically.	Drivers' Passenger Checks; Weekly Operating Statement.
b) What is the composition of ridership compared to overall travel in Danville?	Determine following measures:	
	Transit trip distribution by purpose, trip length, origin zone, destination zone, frequency of repetition.	On-board survey
	Distribution of users by age (18 and under, 19-44, 45-64, 65+) sex, race, auto availability, income (under $5,000, $5,000-$10,000, $10,000-$15,000, over $15,000), RTR membership.	On-board survey
	Repeat whenever significant changes in service or ridership levels.	

TABLE 6-1. ANALYSIS OF DEMAND (cont.)

ISSUES	ANALYSIS	DATA SOURCES
1b cont.	Compare above distributions to:	
	Total Danville trip distribution by above categories.	October 1977 pre-implementation telephone survey.
	Total Danville population characteristics by above categories.	Same
c) How much of potential market is being reached?	By major residence zone, for transit dependents and total population, estimate trips/day "reasonably served" by transit (O&D within ¼ mile of route, maximum of one transfer needed, can be made 6am-6pm).	October 1977 pre-implementation telephone survey record of trips.
	Assign these trips to routes; compare resulting volumes to actual volumes (total and transit dependent).	Service description; Weekly Operating Statement (total riders by route); On-board survey (% transit dependent by route).
d) What modes are riders drawn from?	Tabulate responses to hypothetical and retrospective questions by age, sex, race, income, trip purpose, trip length, frequency of repetition, auto availability, RTR membership.	On-board survey; RTR telephone survey.
e) Does ticket system discourage ridership (especially occasional ridership)?	Ask non-users and users.	General public survey; on-board survey; RTR telephone survey.
	Determine number of continuing cash fare riders and apply fare elasticities from literature.	On-board survey; Weekly Operating Statement

TABLE 6-1. ANALYSIS OF DEMAND (cont.)

ISSUES	ANALYSIS	DATA SOURCES
1e cont.	Determine percentage of ridership which is by occasional users and compare to data from similar transit systems.	On-board survey
f) Do changing providers affect ridership?	Look for ridership changes unrelated to LOS problems at time of transition.	Weekly Operating Statement
g) Do service improvements increase ridership (or service problems lose it)?	Compare ridership time series data to measures of service (scheduled frequency, adherence to schedule, frequency of breakdown, route-miles, etc.) as derived in LOS analysis.	Weekly Operating Statement; results of LOS analysis.
2. Mode Choice		
a) Why don't non-users ride transit?	Ask non-users and users the importance of travel time, reliability, waiting, distance to stop, convenience to destination, privacy, amenities, etc., for work, school, shopping and other trips; compare user to non-user answers.	General public telephone survey.
	Compare for regular trips of non-users and users: distance to bus routes from origins and destinations, circuity of trip by transit, time of day of trip.	General public telephone survey.

TABLE 6-1. ANALYSIS OF DEMAND (cont.)

ISSUES	ANALYSIS	DATA SOURCES
b) What trips do RTR users continue to make on RTR rather than transit?	Ask RTR riders reasons for not using bus on a specific trip, or not using at all (e.g., no help from driver, packages, physical ease, any of reasons in 2a, etc.)	RTR telephone survey
	Estimate travel time and cost if RTR trip made by bus; compare to actual time and cost on RTR.	RTR telephone survey; transit service descriptions.
	Determine profile of continuing RTR users; compare to profile of pre-transit users.	RTR trip files and certification files.
c) What trips do RTR and other taxi users switch to making on transit? What type of RTR user uses transit?	Ask bus riders who would have made trip on RTR or regular taxi reasons for using bus (cost, image, convenience, etc.)	On-board survey
	Estimate travel time and cost for bus trip and same trip by taxi Compare ratios to result in 2b.	Transit LOS results; average taxi times from Phase I analysis.
	Determine profile of switching RTR members; compare to profile of all RTR members and of continuing RTR users.	On-board survey; RTR certification file; results of 2b.
d) If RTR is eliminated or restricted, what happens to RTR trips?	Determine drop in total taxi ridership; ask former RTR users what they do; compare number of RTR registrants on buses before and after discontinuance.	Taxi operator records; telephone survey of RTR users; on-board survey.

TABLE 6-1. ANALYSIS OF DEMAND (cont.)

ISSUES	ANALYSIS	DATA SOURCES
3. Mobility Changes		
a) Do transit dependents make more trips as a result of transit service?	Ask transit riders how (or if) used to make trips, or how (or if) would make trips now without transit. Tabulate by age, sex, income, trip purpose, car availability. Then trip rate increase= % of trips that would not be made x daily ridership/user for each subgroup.	On-board survey
	Depending on results of above, perform analysis of covariance on trip rate data using indicators of transit availability and transit dependence. For example, let T= Trips/person/day; S= Vector of socioeconomic characteristics; R= 1 if residence within ¼ mile of bus route, 0 otherwise; D= 1 if work, school or other regular destination within ¼ mile of bus route, 0 otherwise; X= 1 if no transfer required to get to regular destination, 0 otherwise; F= Frequency of service on nearest bus route. Estimate $T=f(S,R,D,X,F)$; determine average values of R,D,X,F $(\bar{R}_i,\bar{D}_i,\bar{X}_i,\bar{F}_i)$ for various transit dependent subgroups, defined by having characteristics S_i. Then $f(S_i,\bar{R}_i,\bar{D}_i,\bar{X}_i,\bar{F}_i) - f(S_i,0,0,0,0)$ is travel attributable to transit service. (If non-linear transformations of parameters are used, then averages must be of transformed values.	Spring 1979 general public survey; maybe interviews of RTR registrants.

TABLE 6-1. ANALYSIS OF DEMAND (cont.)

ISSUES	ANALYSIS	DATA SOURCES
b) Does transit service improve mobility in other ways (destinations, timing, lowered disutility)?	Ask transit riders about destination, time and mode substitutions for current trip if there were no transit service.	On-board survey
c) Do continuing RTR users use transit to increase travel?	Examine RTR use record of bus riders who are RTR members.	On-board survey or ticket receipts; RTR trip files.

7. CONCEPT EFFECTIVENESS AND ECONOMICS

The cost of providing transit service, together with the demand which it generates, is what will determine the future of transit in Danville after the demonstration is over. Comparing costs to the level of service provided (efficiency) will be a major guide in judging whether the user-side subsidy has provided the proper incentives to providers. Comparing levels of service and costs to usage in the context of similar figures from other cities and other modes in Danville, will determine what level and style of service makes sense in Danville. Data from all the foregoing analyses, plus cost data, are combined here, along with a lot of judgment, to arrive at the economic bottom line.

7.1 EFFECTIVENESS OF CONCEPT

Does the user-side subsidy, with periodic competitive bidding, give providers the incentive to operate efficiently and tailor services to demand? The first step toward answering this question is shown in item 1a of Table 7-1. Total cost data by operator can be allocated to routes and then all the productivity and efficiency measures shown computed with results from earlier chapters. These can then be compared with data from other cities and taxi operations in Danville. These analyses will be done with and without allocating the city's administrative overhead to services, in order to see the effect of this aspect of the user-side concept on economics (see 1b). Previous chapters have already discussed how the record of service changes and improvements can help judge the effectiveness of the concept in creating incentives to match service to demand and provide good quality service. Of course, poor matching of service to demand (providing more service than is needed in some places, for example) will show up in low productivity figures as well.

In a competitive market, profits are the signals that cause goods to be provided in an efficient way that closely matches the desires of purchasers. Free entry and competition are essential to this process, and also keep profits down to a reasonable level. The issue of providers' profits in Danville is an important one and a difficult one. Revenues will be known, but providers' true costs may be hard to determine. The City's contracts require that providers' books be open for inspection and auditing. It is not known what use the City plans to make of this right however. In all likelihood we will have to trust providers' accounting of costs by broad categories. The profit measure shown in the table is profit as percent of costs. Ideally we would like to know profit defined as percentage return on equity; however, it seems unlikely that we can do that.

Given a way to estimate profits, the history of profits over the course of the project, together with the subsidy levels offered and service levels provided, will reveal a great deal about how well the competitive market model explains providers' behavior. These issues have already been discussed in Chapter 4 in reference to Fig. 4-1; the analysis is indicated in item 1g of Table 7-1.

7.2 VIABILITY OF TRANSIT IN DANVILLE

When the demonstration is over, what will (or should) happen to transit in Danville? This depends on the cost of providing the service and the number of people who use it. If we assume that service of good quality has been provided efficiently and well marketed, i.e., that few additional passengers could be attracted for the money spent, then the appropriate measure is the cost per passenger-trip, or perhaps cost per passenger-mile. If good and efficient service has not been provided (which would call into question the subsidy concept and its usefulness as a tool for developing, as distinct from sustaining, transit service), then no good analysis of this point will be possible.

As indicated in 2b, our approach will be to use the operational

record by route to construct a function showing total cost and total passengers carried for a range of hypothetical service configurations. On-board survey data will provide information about transfers between routes which will be needed to account for the effect on one route's patronage of other routes' elimination. It will then be a matter of judgment, where on the curve, if anywhere, cost and passengers carried, and hence cost/passenger, are acceptable and feasible for Danville. On-board survey data will give us average trip lengths by route, permitting conversion of the curve to a cost vs. passenger-miles curve. This would permit better comparison to the primary alternative to fixed-route transit in Danville, namely taxi service. The curve can be redrawn assuming various levels of overhead resulting from the administration of the subsidy mechanism (e.g., ticket distribution, repeated start-up, conduct of bidding, etc.). The actual administrative overhead during the project will be estimated in the analysis shown in Chapter 4. The curve can also be redrawn assuming that some additional demand results from elimination of the ticket system, newer equipment, or more stable configuration of service, or other possible subsidy related problems. In this way the viability of transit under more conventional subsidy arrangements may be inferred.

TABLE 7-1. PRODUCTIVITY AND ECONOMICS

ISSUE	ANALYSIS	DATA SOURCES
1. Effectiveness of Concept		
a) What have efficiencies and productivities of services offered been?	Compute for each route and each bidding period, by weekdays vs. Saturday: Total cost (allocate by vehicle-miles) Cost/vehicle-mile Average daily ridership Average daily revenue, with and without subsidy Cost/passenger Cost/vehicle-hour Revenue/passenger Passengers/vehicle-mile Passengers/vehicle-hour Cost/passenger-mile	Weekly Operating Statements; provider accounts; on-board surveys.
b) What additional costs are paid by City as a result of the subsidy mechanism?	Estimate staff time, cost of printing and distributing tickets, cost of repeated start-ups, cost of conducting bidding, etc.	Grantee financial statements; provider contracts; interviews with staff.
c) Has service been provided "efficiently?"	Look for possible sources of inefficiency: driver work rules, vehicle and driver assignment, maintenance or vehicle condition, inefficient routing, cost of labor, etc.	Published service descriptions; labor agreements; provider accounts and internal records; driver survey; staff interviews.
	Compare measures from 1a: between providers; over time; to data from other cities.	Results of 1a; literature and contacts with state and local planners.

TABLE 7-1. PRODUCTIVITY AND ECONOMICS (cont.)

ISSUE	ANALYSIS	DATA SOURCES
d) Was service efficiently matched to demand?	See 1b, Table 5-1.	
e) Was incentive created to provide good service?	See Table 5-1, especially 1b, 1c, 1d, 4a, 4d, 4e, 5a.	
	Ask users and non-users to rate reliability, convenience, amenities, general satisfaction.	On-board survey; general public survey.
f) How much profit do providers make?	Compute revenue-cost as percent of cost for each operator each bidding period.	Weekly Operating Statements; provider internal accounts.
g) Is a competitive equilibrium reached?	Compare results of 1f with history of service changes and subsidy rate changes. When profits are high, determine if this causes service expansion and/or improvement or acceptance of lower revenues for same service (both good). When profits are low (or negative), determine if providers take initiative to improve things or just demand higher subsidy. Examine history of profits, subsidy and service levels in light of Fig. 4-1.	Results of previous steps.
2. Viability of Transit in Danville		
a) Did the demonstration provide a good test of the viability of transit in Danville?	Determine whether a good, quality level of service, of stable configuration, was offered long enough for ridership to grow and level off.	Results of LOS and demand analysis.

TABLE 7-1. PRODUCTIVITY AND ECONOMICS (cont.)

ISSUE	ANALYSIS	DATA SOURCES
b) What is the cost/passenger trip as a function of total trips provided.	From 1a find best cost on each route at all levels of service offered during project. Using O-D data, determine passengers and cost for variously configured systems, from one-route to largest. Graph results. (Use provider-incurred costs only.)	Results of 1a; on-board surveys.
c) How is this function affected by subsidy mechanism used?	Adjust result of 2b with city costs from 1b; consider results of 1c.	
d) Would service have been better or more patronized under conventional subsidy arrangements.	Consider results of previous analysis: Effect of tickets Effect of changing service or providers Effect of short term contracts Cost of vehicle rents.	
e) What subsidy is needed to support various levels of service?	Compute theoretical subsidy needed to make up difference between costs and revenues for configurations studied in 2b.	
f) Is fixed-route transit an efficient mode in Danville?	Compare results of 2b to cost of taxi operations. Determine at what level, if any, fixed-route transit is cheaper than taxis.	Taxi rate schedules; taxi operator records.

8. OTHER EVALUATION ISSUES

The issues of transferability; effects on social services and social agency transportation; effects on government finances; effects on downtown sales, parking and circulation; and any effects of the service on energy use in Danville will be treated in this chapter.

Government finance impacts will be addressed simply by totalling local expenditures on administration and operations. If cross-subsidies occur, we will document those; in particular, certain programs to promote transit could involve loss of revenue to City departments outside of transit operations. There may also be cost savings in cutting back on services (notably school bus service) that are duplicated by Runaround service.

We will estimate overall energy use impacts based on previously-described measures of mode shift, average transit and non-transit trip lengths, and fuel consumption estimates for bus, private cars and taxicabs. No major effects on downtown sales, parking or circulation are expected. These will be documented only to the extent that they become local issues. Two issues which will be treated in somewhat more detail are transferability and social agency impacts.

8.1 SOCIAL AGENCY IMPACTS

Runaround service could have a major impact on social agencies by making it easier for their clients to get to their programs. In the case of those agencies which operate or pay for transportation, Runaround service may stimulate cutbacks in operations or cost-savings in substituting transit for taxi payments.

According to the Phase I report, eleven of 22 social agencies in Danville provided or paid for client transportation at the start of the RTR project. We believe that the situation has changed since then, at least regarding the vehicles that the agencies operate. The Vermilion County Rehabilitation Center, for example, now has three mid-size buses, acquired through the UMTA 16(b)(2) program, which are not noted in the Phase I report. For purposes of this analysis, we would consider adding governmental programs, such as the City's CETA program, to the list of agencies.

The analysis would concentrate on a survey of all known agencies and programs in Danville, shown in Table 10-1 as occurring in the third contract period. The timing of this survey is not critical. If the time shown conflicts with developing requirements, notably surveys for Abt Associates' attitudinal research, we would propose moving this survey and its analysis to the fourth or fifth contract periods.

The survey would categorize each agency's program, inventory its vehicles and any vehicles disposed of during the project, estimate the number of clients using the Runaround for agency programs, and ask about the system's impact on clients, agencies operations, and transportation expenditures. A second source of data will be records of bulk ticket sales to agencies, who then presumably pass them on to clients.

8.2 TRANSFERABILITY

The project is most likely to produce transferable results concerning the user-side subsidy mechanism and related features, namely the competitive bidding process and the ticket system. The analysis of taxi vs. bus trade offs by RTR registrants may also be of interest elsewhere as an indication of the relative merits of these solutions to transportation problems of the

elderly and handicapped. It is doubtful whether the viability issue will produce much that is directly applicable to other cities, at least not beyond what is already known from transit systems in other small cities.

Regarding the user-side subsidy mechanism, there are many features of Danville and of the demonstration which could dilute the usefulness of results here for other sites. Many small cities without transit service probably do not have an established, large-scale transit provider with the facilities and local familiarity that ATC has in Danville. The four-month cycle of bidding is a unique feature of the project which is unlikely to be repeated in a non-demonstration setting. The impact of working closely with federal officials and consultants, receiving constant advice and assistance, including extensive data collection, will also have to be considered. In the case of cities of much different size or socioeconomic make-up, we will have to look for the ways these have influenced the project and conjecture about results were conditions different.

9. SUMMARY AND CONCLUSIONS

(to be completed in Final Report)

10. WORK PLAN

10.1 GRANTEE DATA COLLECTIONS

The grantee is responsible for major data collections, and especially for surveys. The major data collection efforts are described in the following sections.

10.1.1 Pre-implementation Survey

This survey, already conducted in October 1977, was a combined random-digit dialing telephone and mail-out/pick-up self-administered survey. The forms are reproduced in Appendix C. In all, 3629 households living in Danville and Tilton were screened on the basis of car ownership. Individuals from all 0-car households, 1 in 2 one-car households, and 1 in 8 multiple car households were selected randomly for interviews. This procedure is designed to weight the sample towards transit dependents, and hence maximize the number of respondents who, if re-interviewed, will turn out to be transit users.

After refusals, 833 completed interviews were obtained, including socioeconomic data, detailed travel data for one day, and attitudinal data. Of those interviewed, 682 agreed to complete the longer, self-administered attitudinal questionnaire, which was hand-delivered or mailed out. Of these, 412 were eventually completed and picked up.

10.1.2 Follow-Up Survey

In July 1978, there will be a follow-up, post-implementation survey of the respondents from the pre-implementation survey. Both of these surveys are required for attitudinal research being conducted for TSC by Abt Associates. From our point of view, this survey will provide information on

frequency of transit use by various subgroups, awareness of the transit system, reasons for non-use, and success of marketing efforts. The follow-up survey will be conducted by telephone by an outside survey organization under contract to Danville.

10.1.3 RTR Telephone Survey

The survey looks for interaction and trade-offs between bus and taxi use by RTR members. This is done by asking directly about the relative advantages of each, and asking about recent travel on each mode. Two questions on hypothetical mode choice in the absence of RTR or transit will test the extent to which bus and taxi are actually substitutes for each other. The sample will be based on the June 1977 ridership file. People who registered after that time will not be interviewed. The sample will be weighted toward more frequent users of RTR. As of June 1977, about half of those registered had taken at least 12 project trips. Our base sample will consist of every third member of this group (about 560 people) and every fifteenth member of the remaining group (about 110 people). Based on the June 1977 data, about half the resulting sample uses the project in one month. We do not expect to interview everyone in this base sample. From this sample we will delete people who were called in the pre-implementation survey, and people who, based on our August 1976 survey, are known to have left the program, have disconnected phones, died, etc. From the remaining group, we will aim for 400 completed interviews.

A similar survey could be conducted in March 1979, if RTR is discontinued, to probe the effects of that change.

10.1.4 Transit Driver Survey

In other studies we have found drivers to be anxious to provide information. Since they have more continuous contact with the service than anyone else, their observations are often

very useful. Rather than rely on anecdotal bits of reporting, a formalized procedure should be used. With cooperation of management, a mailed-out, mail-back survey is quite adequate. If drivers in Danville are as anxious to make their opinions known as those elsewhere, we should obtain a high response rate from this procedure. This survey should be conducted twice during the project as part of the scheduled Periodic Data Collections, probably in the second and fifth contract periods.

10.1.5 On-Board Surveys

On-board surveys will be the most efficient method of obtaining data from bus users. Given the small size of the Danville transit system, very good samples should be obtainable with a few days of riding by a small force of surveyors. Some form of on-board survey, or close substitute, should be conducted in two or three contract periods, depending on the extent of provider and service changes during the project.

The first on-board survey, toward the end of the first contract period, will include attitudinal questions about various system features, trip purpose, payment form, user characteristics, frequency of use, a question on hypothetical mode choice were there no transit, and a question on RTR membership. A second on-board survey should be scheduled for fall of 1978, when system use has had a chance to stabilize more. At that time it would make sense to ask questions about origin and destination, possibly substituting a telephone survey of ticket buyers to permit more careful recording of travel data. At both times, approaching all riders on two days of service should provide 500-1000 completed forms (assuming we can avoid obtaining more than one form from any riders) which would be more than adequate.

10.1.6 General Public Survey

A small sample attitude, bus use, and awareness survey should be conducted toward the end of the project. This survey will assess the overall success of the system in the eyes of Danville residents. It will help Danville in its decisions about changes or continuation of the service once the demonstration is over. This survey may also provide trip data for use in the mobility change analysis. In a random sample of Danville residents, we expect most to have never used the system. Thus the survey will serve as a non-user survey. A sample of 300 residents of Danville, contacted by telephone, should be adequate unless mobility change analysis is to be done. A much larger sample will be required in that case. The Follow-Up Survey discussed in Section 10.1.2 will serve a similar function earlier in the project.

10.1.7 Street-Side Time Checks

Schedule reliability can be measured very simply by recording the arrival and departure times of all buses as they pass through downtown. Since all buses pass through the same two-block transfer zone, this can be accomplished with two observers, one on each side of the street. This should be done for two hours in the morning, two hours at mid-day, and two hours in the afternoon, for several days, at least once in every contract period, plus whenever there is reason to believe reliability has changed. A form for this purpose is shown in Appendix D.

10.1.8 Ticket Receipt Filing

To assist in evaluation of the ticket system, and to provide back-up data on user origins and frequency of use, the receipt portion of all ticket books sold will be kept in a file ordered by sequence number.

10.1.9 Used Ticket Data Processing

One week's worth of tickets turned in by providers would be matched to the associated receipts in the file just described. This will permit an analysis of ticket buying/using behavior (assuming receipts have date of purchase added to them) and an analysis of users origins. This analysis will be done during the second contract period, and again later in the project following major service changes.

10.1.10 Summary of Data Collections

Table 10-1 summarizes the probable sequence of data collections during the project.

10.2 EVALUATION WORK PLAN

The evaluation work plan is summarized in Figure 10-1. Each task is described in more detail below.

10.2.1 Task 1: Pre-implementation Planning, Coordination, Monitoring

During the planning stage of the project, and in advance of completing a formal evaluation plan, the evaluation contractor must monitor the project and perform preliminary evaluation planning. Specific subtasks are:

a) Coordinate with the grantee on project design and implementation planning to ensure compatibility with evaluation needs and objectives.
b) Monitor project status.
c) Prepare a preliminary memorandum on the evaluation, which prioritizes evaluation issues and data collection needs, and addresses budgetary requirements for the evaluation and associated data collection.

TABLE 10-1.

SUMMARY OF DATA COLLECTIONS

1st Contract Period	2nd Contract Period	3rd Contract Period	4th Contract Period	5th Contract Period
Streetside Time Checks →				
RTR Telephone Survey	Follow-up Survey	Transit On-board Survey	Driver Survey	General Public Survey
Transit On-board Survey	Driver Survey	Social Agency Survey	RTR Telephone Survey	
	Used Tickets	Used Tickets		

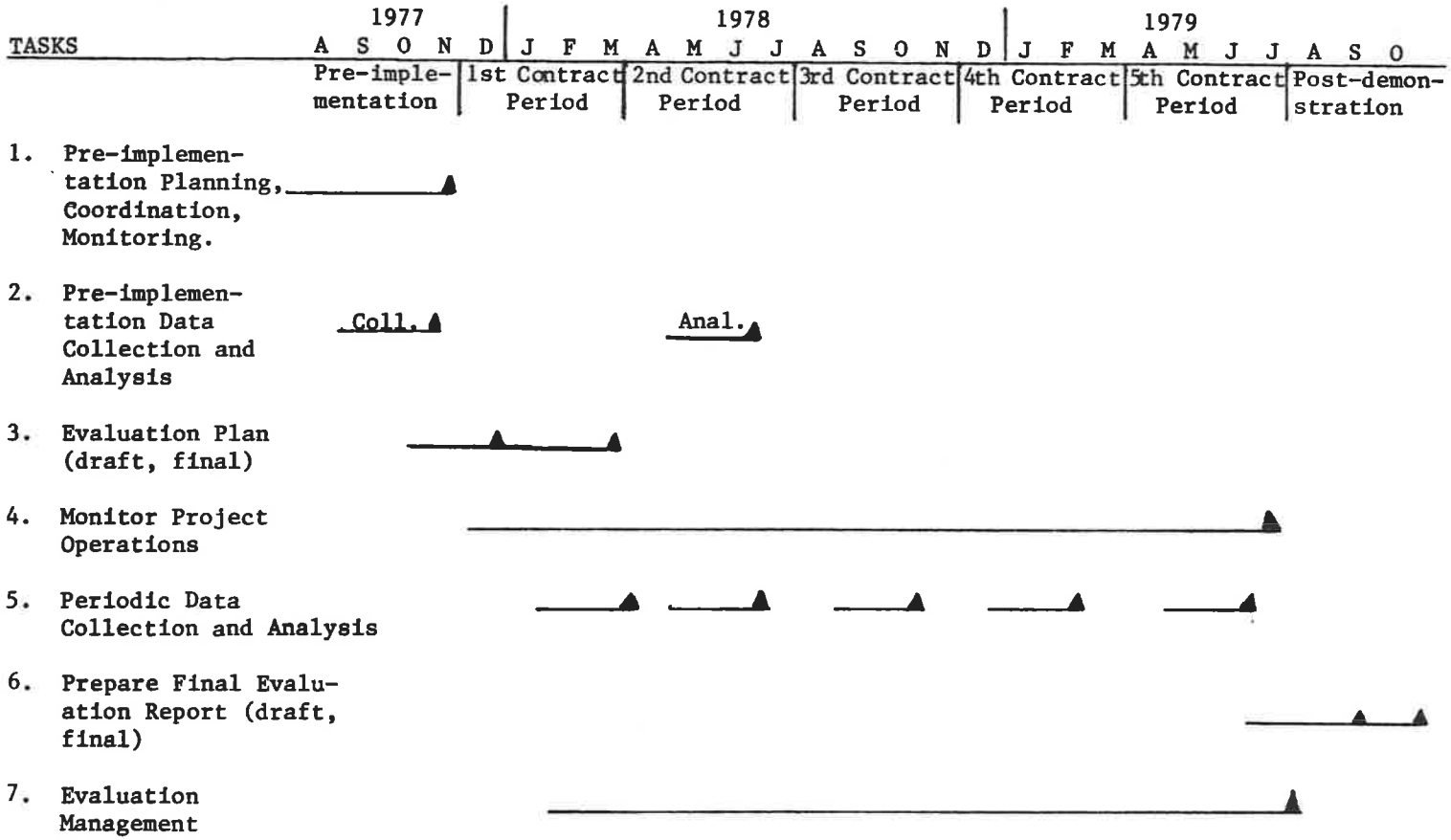


FIGURE 10-1. SCHEDULE OF EVALUATION TASKS

d) Meet and coordinate by telephone with TSC to discuss the results of Task 1c, an Evaluation Framework, and the pre-implementation data collection (Task 2).

Task 1 Products: Preliminary evaluation planning memorandum; monthly progress reports.

10.2.2 Task 2: Pre-implementation Data Collection and Analysis

Pre-implementation data collection has been judged necessary to provide base-line data for the evaluation, to satisfy TSC's obligations to Abt Associates, and to serve TSC demand modelling efforts. Associated subtasks are:

a) Coordinate with TSC and Abt Associates on pre-implementation data requirements and survey methodology.
b) Coordinate with and assist TSC and Abt Associates on survey design and planning.
c) Monitor and provide technical assistance to grantee's conduct of the pre-implementation survey.
d) Coordinate with and assist TSC and Abt Associates on data reduction.
e) Analyze survey results to provide base-line socio-demographic and travel data.

Task 2 Products: Memorandum on survey design and methodology.

10.2.3 Task 3: Evaluation Plan

a) Determine data and accounting outputs of the demonstration as implemented.
b) Based on 3a and TSC Evaluation Framework, prepare a review draft of an Evaluation Plan.
c) Based on TSC, UMTA, and grantee comments, prepare a final Evaluation Plan.

Task 3 Products: Draft Evaluation Plan, Final Evaluation Plan

10.2.4 Task 4: Monitor Project Operations

a) Maintain continuous contact with the project by means of telephone, letter and personal visits.
b) Document major events; follow local news coverage and marketing campaigns; observe operations; interview project and provider staff, local officials; monitor weather.
c) Monitor project ridership and operational statistics, service problems, ticket sales and distribution.
d) Monitor conduct of competitive bidding.
e) Monitor project finances.
f) Coordinate with TSC, UMTA, the grantee and other contractors on continuing project design, service changes, and selection of providers.
g) Prepare and submit monthly reports summarizing 4a-f.
h) Prepare and submit an Annual Demonstration Status Report.

Task 4 Products: Monthly Demonstration Status Reports, Annual Demonstration Status Report

10.2.5 Task 5: Periodic Data Collection and Analysis

The major data collection activities are described in Section 10.1 above and summarized in Table 10-1. They are planned to be executed on a periodic basis corresponding to the anticipated schedule of four-monthly competitive biddings. This includes providing questions for inclusion in the Follow-up Survey and analyzing the results of that survey as it pertains to the evaluation. Analysis of ticket receipts is shown as part of Task 4c above. Subtasks are:

a) Coordinate with TSC, UMTA, the grantee and other contractors on data collection needs and timing.
b) Provide technical assistance to grantee on design of data collection instruments, administration, and data reduction.
c) Monitor and provide technical assistance to grantee's conduct of data collections.

d) Perform statistical and graphical analysis of data according to the Evaluation Plan.

e) Make results available to other contractors, TSC, UMTA, and grantee to assist in service planning, marketing, competitive bidding, etc.

Task 5 Products: Summaries of data collection designs and results to be included in Monthly Reports.

10.2.6 Task 6: Prepare Final Evaluation Report

a) Prepare and submit review draft of a Final Evaluation Report according to the outline of this Evaluation Plan.

b) Based on TSC, UMTA and grantee comments, prepare and submit a finalized, camera-ready Final Evaluation Report.

Task 6 Products: Final Evaluation Report review draft; finalized Final Evaluation Report.

10.2.7 Task 7: Evaluation Management

a) Coordinate with the TSC technical monitor on evaluation plans and revise the Evaluation Plan as needed.

b) Monitor evaluation progress with respect to schedule and budget and report to the TSC technical monitor.

c) Request work authorizations through technical task directives and amendments as needed.

Task 7 Products: Monthly Evaluation Status Reports; Evaluation Plan revisions as needed.

APPENDIX A

BIDDING SPECIFICATION FOR FIRST COMPETITIVE BIDDING

DEPARTMENT OF PLANNING AND DEVELOPMENT

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

DAVID S. PALMER
Mayor

JOHN WEAVER
Director

August 25, 1977

Thank you for your interest and response to the advertisement regarding the City of Danville's Transit Program. Enclosed you will find the copy of the City's Request for Proposal along with a copy of the recently completed Transit Development Plan for Danville. We hope the plan will aid you in the submittal of your proposal.

While we attempted to give you a good idea of exactly what we are doing in Danville, if any questions should arise, please feel free to phone me at (217) 446-0803.

The City of Danville is looking forward to the re-establishment of transit service and hopes that you will be able to become involved in this program with us.

Sincerely,

Dan Bolton

Dan Bolton
Project Manager

DB/mh
Enclosure

DEPARTMENT OF PLANNING AND DEVELOPMENT

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

DAVID S. PALMER
Mayor

JOHN WEAVER
Director

REQUEST FOR PROPOSAL FOR FIXED ROUTE TRANSIT SERVICE

The City of Danville, Illinois, a community of 43,000 people located in Vermilion County (east-central Illinois) about four miles from the Indiana-Illinois border, is planning to re-establish fixed-route transit services.

In November 1970 transit service was discontinued in Danville when Bee Line Transit Corporation, a local carrier, ceased operations. Since that time, Danville has been without regularly scheduled transit services. Recently the City was awarded a two-year grant under the Service and Methods Demonstration Program of the U.S. Mass Transportation Administration to test a new way of developing and operating fixed-route transit services. The City's objective is to establish a fixed-route transit service to meet its citizen's transportation needs at the lowest cost possible. The City has established subsidy levels and procedures for operating transit, and requests specific service proposals from qualified transportation providers (including the routes, schedules, and fares) based on the provider's assessment of the demand for fixed-route service. (Danville's recently completed Transit Development Plan, which proposed several routes and indicated the anticipated ridership levels, is available as an aid for this assessment.) These proposals, or service plans, shall be submitted no later than September 15, 1977. Service is scheduled to begin by November 15.

Under this demonstration project the operation of fixed-route transit will differ from a traditional fixed-route transit system in several important ways:

Method of subsidy. Most subsidies for transportation services are made available directly to the transportation provider for offering certain specified services at fares which produce insufficient total revenues to cover the provider's costs. An alternative subsidy technique which this project will employ is to pay the subsidy to the providers only for those passengers that are served. In this way the subsidy payments serve as an incentive to offer services attractive to the public at the lowest possible cost. During the demonstration project, this technique will allow the City to determine what fixed-route service is justified by demand and what the costs per passenger will be to provide it.

Method of fare payment. In order to accommodate the accounting requirements for subsidy payment, fare payment will be in the form of transit tickets which passengers will purchase from the City. Cash fare payments will be allowed; however, the City will pay a subsidy only on tickets collected, not cash. For this reason, the operators might want to set cash fares substantially higher than the regular ticket fares to encourage riders to use tickets.

Fares. The City is willing to support fixed-route transit service at a subsidy to fare ratio of 2:1. For example, if the fare is 30 cents, the operator will receive 30 cents worth of tickets which he will submit

to the City. The payment to the operator will be the 30 cents paid in tickets by the passenger plus 60 cents subsidy for a total payment of 90 cents.

Transfers will be utilized so that the riders can transfer from one route to another (to the same or a different provider) without paying double fare. A passenger will pay 10 cents for a transfer slip on the first route, and hand the transfer slip to the provider on the second route. Transfer slips will identify the issuing provider, and will be punched to limit use to the day and time issued. Providers will be required to report transfers issued, and to turn in transfers received along with used tickets. Payment for transfers will be computed by reducing the total value of tickets submitted by each provider by 10 cents for each transfer issued, and then increasing the value by 10 cents for each transfer received. That is, for each transfer received, a provider will receive a total payment of 10 cents from the passenger plus 20 cents subsidy from the City.

The City has established a maximum ticket fare of 50 cents (including the 10-cent transfer fee) and a maximum subsidy of $1.00, for a total maximum cost per passenger of $1.50.

Providers are encouraged to set their own fares for each route they propose to operate. The City does not require that fares be uniform along a route: that is, flat fares are not a requirement. The City will print tickets in 5-cent and 10-cent denominations to allow for such fare variation.

Multiple providers. The City may contract with different providers for transit services on different routes or at different times of the day or week. However, the transit system will be marketed as one entity by the City. All vehicles will be painted uniform colors and will display the designated transit system logo. It is envisaged that all vehicles will be air-conditioned and equipped with two-way radios.

Renewal of service contracts. Service contracts will be for a period of four months. A few weeks prior to the expiration date, patronage and service levels on each route will be reviewed. At this first time of re-bidding, and each time thereafter, any qualified bidder may bid on existing service or propose new service. For those routes experiencing low ridership and high costs, for example, the City will entertain proposals for service at lower costs, e.g., with smaller vehicles or longer headways.

Protection against loss. It is not the intention of the City or the Urban Mass Transportation Administration that any private operator suffer business losses as a result of their participation in this project. Therefore, during the initial four-month contractual period, and possibly for subsequent periods as well, all service will be covered by a minimum guaranteed payment based upon revenue vehicle miles of service. The guaranteed payment will not include any profit: throughout the project the only way of earning profit will be through the passenger tickets and cash fares.

Contractual responsibilities. The contracts between the City and the providers will specify the contractual responsibilities of each party. Because this is an UMTA demonstration project, it will involve considerable data collection about the operation and costs of the service as well as surveys of the riders.

Briefly the responsibilities under the project are:

City Responsibilities

(1) Review service proposals.

(2) Award permission to operate routes to selected operators and negotiate service contracts.

(3) Market transit service. (The City has contracted with an established marketing firm to develop initial marketing strategy.)

(4) Pay for painting vehicles uniform color, and repaint to original colors if utilization in transit services is terminated.

(5) Sell tickets to public.

(6) Redeem used tickets from operators, calculate subsidy amounts and issue checks on a regular basis.

(7) Monitor service.

(8) Collect such data as required by the evaluation contractor (probably involving on-board surveys.)

(9) Renegotiate contracts for service.

Responsibilities of Providers

(1) Hire and train drivers.

(2) Provide vehicles for operation of service.

(3) Garage and maintain vehicles.

(4) Operate service as specified in contract with the City.

(5) Provide information to the City and/or the evaluation contractor as needed.

(6) Batch used tickets and transfers by route and by day and submit them weekly to the City for processing.

Content of Service Proposal

Each proposal should contain a brief written description of the service plan indicating the proposed routes, hours and days of operation, service schedules, and fares (in tickets and cash). The type of vehicles to be used including seating capacity, age, and condition of vehicle should be described. The provider's capabilities and past transportation experience should be presented. A breakdown of the cost per revenue vehicle mile to be used as a minimum guaranteed payment should be submitted using the attached cost breakdown form. Again, the City is only interested in receiving actual costs with no profit included in these costs.

The proposals can contain several different service options regarding the number and location of routes, types of vehicles, hours of service and schedules, and fares. A separate cost breakdown form should be submitted for each different service option presented.

Criteria for service awards. In reviewing the service proposals, the City will have the assistance of consultants and staff of the Urban Mass Transportation Administration. Fares and service levels will be the primary consideration, together with the minimum guarantee payment required per revenue vehicle mile. The qualifications and experience of the provider and his demonstrated capability of providing his proposed service will also be weighed. The City reserves the right to negotiate modifications to the proposals and may request documentation and justification of specific costs and operating procedures.

Marketing

The City will assume primary responsibility fro marketing the system. A nationally known marketing firm with experience in transit systems has been retained by the City to create an image for the system as a whole and design marketing campaigns which the City will carry out. This will include selection of a name for the whole system, creation of a color scheme and a system logo. The City will paint vehicles with the system colors and logo (operators may use a detachable logo sign if they wish to use the vehicles for other purposes when not in transit service). The City will also provide removable route signs for vehicles, lock boxes for ticket collection, route markers designating streets on which buses operate, and bus shelters and/or benches. The City will print and distribute schedules and route maps, as well as maintain an information number during normal business hours. Providers may conduct additioning marketing efforts, but no marketing costs may be included in the guaranteed cost per mile.

COST BREAKDOWN FOR

FOUR-MONTH CONTRACT PERIOD

COMPANY NAME_____ DATE_____

ADDRESS_____ CONTACT PERSON_____

_____ PHONE NUMBER ( )_____

	TOTAL COST	PER REVENUE VEHICLE MILE COST
TRANSIT SERVICES		
Driver's wages and benefits, vehicle rents, maintenance, parts, fuel, lubricants.	$_____	$_____/mile
ADMINISTRATION		
Management, secretarial, accounting.	$_____	_____/mile
INSURANCE & SAFETY		
Liability & property damage @_____ per vehicle.	$_____	_____/mile
OTHER		
Garage & office rent, utilities, telephone & postage, printing, office supplies, etc.	$_____	_____/mile
TOTAL	$_____	$_____/mile

APPENDIX B

LETTER TO PROSPECTIVE VENDORS;

RULES FOR DISPLAY AT VENDOR SITES

CITY OF DANVILLE

402 N. HAZEL STREET • DANVILLE, ILLINOIS 61832 • (217) 446-0803

DAVID S. PALMER
MAYOR

JOSEPH A. HUFFMAN
COMMISSIONER OF
ACCOUNTS AND FINANCE

GERALD G. ARNHOLT, JR.
COMMISSIONER OF
PUBLIC HEALTH AND SAFETY

WILLIAM C. STRADER
COMMISSIONER OF
STREETS AND PUBLIC WORKS

RAYMOND T. RANDALL
COMMISSIONER OF
PUBLIC PROPERTY

November 18, 1977

The City of Danville would like to thank you for your generosity and excellent display of community spirit in playing this vital role in our new Mass Transit System - called the Runaround.

In return for your help, we feel that this special service you are offering will bring more persons into your establishment and, in addition, we will provide advertising space inside our transit vehicles.

Although our ledger form appears complicated, it is not. We have attempted to keep your time at an absolute minimum to facilitate your ease in handling this most important link in our City's transit system.

The following is a description of our ledger sheet:

Line A, (reading across) refers to the three types of ticket books you will have available. You will have a $2.00 regular fare ticket book (containing 5 tickets) and an $8.00 regular fare ticket book (containing 20 tickets). These two books are for the general public. In addition you have a $2.00 special half-fare book for the elderly (age 65) and over, the handicapped (of any age) and students 18 and under. These persons will have identification that they must show in order to purchase these half priced booklets.

Identification required for special ticket books: Elderly and Handicapped - must show medicare card or plastic R.T.R. card (blue, red or orange in color). Students 18 and under - unless easily identified - student I.D.

Each ticket book has a sequence number printed on it's cover and this number should be recorded in the appropriate A, B, or C column in the center of the page - depending on which book type is sold. We would also like the individual "seller" to initial each transaction and record the amount of money collected for each sale.

Summary:
For each sale we would like the following items recorded:

a) the quantity of each type of book sold
b) the sequence number of each type of book sold
c) the seller's initials
d) the amount of money collected

The front cover of each ticket book has a place for the buyer's name, address, and phone number. Each booklet buyer must fill in this information and then the seller detaches the top copy to file with his receipts for that period.

On a regular basis, our staff will collect your records, receipts, and money and replenish your ticket supply. If any questions or problems should arise, please call our office at 431-0653, also you may tell anyone with any questions to call our office at the same number.

Again, thank you for your help and we hope that this will help you likewise.

Sincerely,

David S. Palmer,
Mayor of the City of Danville

RUNAROUND TICKET OUTLETS - MASTER FILE

ID#	NAME	CONTACT	ADDRESS	PHONE
01	City Planning	Dan Bolton	400 N. Hazel	431-0653
02				
03				
04	Lake Shore National	Dan Wright	2431 N. Vermilion	443-4488
05				
06	Meis Department Store	Doris Reed	2917 Vermilion	443-3701
07	Genie's Wienies	Jerry Lockhart	2917 Vermilion	446-7800
08	Holiday IGA	Brenda Trimble	Holiday Square	443-3667
09	Zayre	Jeff Barnes	1419 Bowman	446-3681
10	First Nat'l Bank	Max Peterson	15 W. Main	442-0362
11	Palmer Amer. Nat'l	Dorothy Weller	2 W. Main	446-6450
12	American Savings & Loan	Randy Campbell	714 Vermilion	442-0270
13	Iroquois Federal Savings & Loan	Alan Martin	619 N. Gilbert	446-0184
14	Fidelity Savings & Loan	Mary Ward	137 Vermilion	442-2255
15	Webster Heskett	Mary Ward	137 Vermilion	442-4924
16	Mel's IGA	Mel Lewis	717 Vermilion	442-8232
17	Eisner's Vermilion	Glen Williamson	422 Vermilion	442-1171
18	Walgreen Drug Store	Margaret Rohrer	56 Vermilion	443-0618
19	Bank of Danville	Lily Files	100 N. Gilbert	443-3300
20	Eisner's Main	Gary Dokey	1112 E. Main	446-2445
21	Danville Junior Coll.	Fay Hughes	2000 E. Main	443-1811
22	V. A. Adm. Hospital	Robert Van Gorder	1900 E. Main	442-8000
23	Engle's Food Mart	Frank Engle	1618 E. Fairchild	442-9061
24	Convenience Food Mart	Mike Swider	East Main	442-4154
25	D & D Food Superette	Bob Day	309 S. Buchanan	446-0516
26	Southtown Hardings Pharmacy	Tom Ciecka	525 S. Gilbert	446-9287
27	Southtown True Value Hardware	Bill Turner	15 W. 4th	446-3413
28	Lake View Medical Center	Mary Hodgman	812 N. Logan	443-5201
29	Harold's Star Market	Gary Cox	106 W. Voorhees	442-7169
30	Second Natl. Bank	Harold Moe	27 N. Vermilion	442-6200
30A	Second Natl. Bank	Harold Moe	300 N. Vermilion	442-6200
31	MER-CHE	Jack Morphew	723 Oak	443-0616
32	Deluxe Restaurant	Peter Paulos	21 North	442-0685
33	St. Elizabeth	Mary Kaye Sweiker	600 Sager	442-6300

CITY OF DANVILLE

402 N. HAZEL STREET • DANVILLE, ILLINOIS 61832 • (217) 446-0803

DAVID S. PALMER
MAYOR

JOSEPH A. HUFFMAN
COMMISSIONER OF
ACCOUNTS AND FINANCE

GERALD G. ARNHOLT, JR.
COMMISSIONER OF
PUBLIC HEALTH AND SAFETY

WILLIAM C. STRADER
COMMISSIONER OF
STREETS AND PUBLIC WORKS

RAYMOND T. RANDALL
COMMISSIONER OF
PUBLIC PROPERTY

NOVEMBER 21, 1977

ALL TICKET SALES MUST BE CASH OR MONEY ORDER.
(NO CHECKS WILL BE ACCEPTED AT THIS SALES SITE-
THEY WILL ONLY BE ACCEPTED THROUGH THE MAIL AT
THE RUNAROUND OFFICE AT CITY HALL.)

ALL HALF-FARE (½) TICKET SALES MUST BE ACCOMPANIED
BY APPROPRIATE IDENTIFICATION

ALL ELDERLY (AGE 65 AND OVER) MUST SHOW R.T.R.(TAXI)
CARD OR MEDICARE CARD.

ALL HANDICAPPED (OF ANY AGE) MUST SHOW R.T.R. CARD
OR MEDICARE CARD.

ALL STUDENTS (AGE 18 AND UNDER) MUST SHOW STUDENTS
I.D. (PARENTS MAY PURCHASE TICKETS FOR THEIR CHILDREN)

* IN ORDER TO OBTAIN ANY APPROPRIATE IDENTIFICATION *
CALL THE RUNAROUND OFFICE AT 431-0653

PURCHASERS: PLEASE FILL IN TOP COPY SO THAT WE CAN
REPLACE LOST OR STOLEN TICKET BOOKS AT
CITY HALL.

TICKET BOOKS AVAILABLE:
A. $ 2.00 REGULAR FARE BOOKS
B. $ 8.00 REGULAR FARE BOOKS
C. $ 2.00 HALF-FARE (½) BOOKS

APPENDIX C

OCTOBER 1977 PRE-IMPLEMENTATION

TELEPHONE SURVEY FORMS

A (10/7/77)

DANVILLE TRANSIT STUDY

CARD 1

Call Record and Screening Questionnaire

Phone Number:_____ Interviewer:_____ Respondent ID: [ ][ ][ ][ ]

(1-4)

Call Record

	Household Outcome							Respondent Outcome		
Call	Date/Time	No Answer	Busy	Business/ Disconnect	Not Resident	Refused	Screened Out	Not At Home Call Back Date/Time	Refused	Completed Date/Time
First Call	/							/		/
Callback 1	/							/		/
Callback 2	/							/		/
Callback 3	/							/		/

INTRODUCTION: Hello, my name is _____, and I am calling for the City of Danville. We are doing a study to help plan transit service in Danville and we need your opinions to help plan the system. Could you take a few minutes to answer some questions about your family and its transportation needs? (IF NECESSARY, SCHEDULE A MORE CONVENIENT TIME FOR INTERVIEW AND INDICATE ABOVE. TRY TO COMPLETE SCREENING QUESTIONS TO AVOID UNNECESSARY CALLBACKS.)

A. First, let me make sure I have the correct number. Is this __? READ NUMBER FROM TOP OF PAGE. IF INCORRECT, TERMINATE AND REDIAL.

B. IF NOT CLEAR: Is this a business or a private home or apartment? IF BUSINESS, TERMINATE INTERVIEW AND INDICATE ABOVE ON CALL RECORD.

C. Is your household located in the City of Danville or Tilton. (IF NO, TERMINATE AND INDICATE ABOVE ON CALL RECORD).

D. Could you tell me how many motor vehicles members of this household own or lease? Please include only automobiles, vans, and pickup trucks.

(CHECK RESPONSE IN TOP BOX)

None ___ 5-0	One ___ -1	Two or More ___ -2
X		

IF THERE IS AN "X" UNDER THE NUMBER OF VEHICLES IN HOUSEHOLD:
Ask Questions G-1 and G-2 on the back of this page.
IF NO "X" UNDER NUMBER OF VEHICLES:
Ask questions E, F-1, and F-2 and Terminate.

E. Now a couple of questions about the size of your household. How many boys are there under the age of 16? Girls under 16? How many men 16 to 64? Women? And how many men are there 65 or over? Women?

RECORD NUMBER OF:

	Males		Females	
Under 16....	_____	(6)	_____	(9)
16 to 64....	_____	(7)	_____	(10)
65 and over	_____	(8)	_____	(11)

F-1. Could you tell me if the total family income, before taxes, is over or under $10,000?

Over $10,000.....12-1 (ASK E-2)

Under $10,000.... -2

F-2. Is it over or under $25,000?

Over.....-3

Under.....-4

THANK RESPONDENT AND TERMINATE INTERVIEW

ASK THESE QUESTIONS ONLY OF HOUSEHOLDS SELECTED IN QUESTION D:

G-1. The next section of our study requires that I talk to a particular member of your household about their travel. In order to do this, I need to know how many people, including yourself, are currently living in your household. For example, how many boys are there under the age of ten? Girls? (CONTINUE FOR EACH CATEGORY):

		Males	Females
	Under 10	_____(13)	_____(19)
↓ Adults ↓	10-15	_____(14)	_____(20)
	16-20	_____(15)	_____(21)
	21-54	_____(16)	_____(22)
	55-64	_____(17)	_____(23)
	65 and over	_____(18)	_____(24)

COMPUTE: Total Men (over ten years old) _____ Total Number of Adults (over ten years old) in Household _____

USE ABOVE NUMBERS TO SELECT APPROPRIATE RESPONDENT FROM GRID BELOW:

1

NUMBER OF MEN IN HOUSING UNIT	1 adult	2 adults	3 adults	4 or more
0 Men	Adult	Oldest Woman	Oldest Woman	Youngest Woman
1 Man	Adult	Woman	Youngest Woman	Man
2 Men		Youngest Man	Youngest man	Youngest Woman
3 Men			Oldest Man	Woman or Youngest Woman
4 or More				Youngest Man

G-2. Based on the number of men and women in your family, the person I need to speak to is the: READ FROM SELECTION GRID. Can you tell me, is this person 18 or older?

Yes, 18 or older..... 25-1 (ASK TO SPEAK TO SELECTED RESPONDENT)

No, is under 18..... -2 (ASK QUESTION H)

H. ASK ONLY IF SELECTED RESPONDENT IS UNDER 18 YEARS OLD: Because the person I will be interviewing is younger, I have one further question I need to ask you. Would you please stop me when I read the income range that includes the combined total income of all members of your household before taxes are taken out?

Under $5,000.....26-1

At least $5,000 but under $10,000... -2

At least 10, but under $15,000..... -3

At least $15,000 but under $25,000.. -4

$25,000 or more..... -5

80-1

ASK TO SPEAK TO SELECTED RESPONDENT. IF NOT AVAILABLE, MAKE APPOINTMENT TO CALL BACK AND RECORD DATE AND TIME ON CALL RECORD.

CARD 2

ATTACH SCREENING QUESTIONNAIRE HERE

Respondent Number (From Screening Questionnaire): ☐☐☐☐ 1-2-3-4

B

(10/7/77)

DANVILLE TRAVEL SURVEY

Telephone Interview

(REPEAT INTRODUCTION IF NECESSARY)

DEMOGRAPHICS

1. Sex of respondent (DO NOT ASK)

Male.....5-1
Female..... -2

2. What is your relationship to the head of the household?

Head of Household.....6-1
Spouse..... -2
Child..... -3
Other adult relative..... -4
Adult in shared HH..... -5
Other_____ -6
(Specify)

3a. Are you currently (READ LIST-CODE ALL THAT APPLY):

Working full-time.....7-1
Working part-time.....8-1
} ASK 3b

A student.....9-1 → SKIP TO QUESTION 3c

Keeping house.....10-1
Retired or not looking for work.....11-1
Unemployed and looking for work.....12-1
} SKIP TO QUESTION 3d

3b. (IF EMPLOYED) What is the address or location of the place where you work?_____

☐☐☐☐☐☐☐☐☐☐ (13-22)

3c. (IF STUDENT) What is the address or location of the place where you go to school?_____

☐☐☐☐☐☐☐☐☐☐ (23-32)

3d. In all, how many members of your household are employed full-time (including yourself)? _____ (33)

4. How long have you lived in Danville or Tilton?

DO NOT READ

- Less than 1 year . . . 34-1
- 1-2 years . . . . . -2
- 3-4 years . . . . . -3
- 5-7 years . . . . . -4
- 8-10 years . . . . . -5
- Over 10 years . . . . -6

5. How old are you?

- 10-15 . . . 35-1 → SKIP TO QUESTION 8
- 16-19 . . . -2
- 20-44 . . . -3
- 45-64 . . . -4
- 65 or over. -5

ASK QUESTION 6

6. Do you have a driver's license?

- Yes 36-1
- No . . . . -2

7. Do you have any physical or other difficulty driving (or that would prevent you from driving)?

- No 37-1
- Some difficulty . . -2
- Can't drive at all . -3

7a. Are you aware of the RTR, or Reduced Taxi Rates, program here in Danville?

- Yes . . . . . 38-1 → ASK QUESTION 7b
- No . . . . . -2 → SKIP TO QUESTION 8

7b. Are you enrolled in the RTR program?

- Yes 39-1
- No 39-2

8. Would you have any physical or other difficulty using a regular transit vehicle by yourself?

No	40-1
Some difficulty . . .	-2
Couldn't use	-3
Don't know	-4

9. Is an auto usually available to you as a driver or passenger for the following purposes (ASK ONLY APPLICABLE CATEGORIES)?

	Yes	No	N.A.
To get to work	41-1	-2	-3
To get to school	42-1	-2	-3
To go shopping	43-1	-2	
For social/recreational purposes	44-1	-2	

10. IF HOUSEHOLD OWNS ONE OR MORE CARS, PICKUPS, OR VANS (FORM A, Q. D), ASK: How many of your family vehicles are air conditioned?

(INDICATE NUMBER) _____ (45)

11. How many bicycles do you and other members of your household own?

(INDICATE NUMBER) _____ (46-47)

12. How many other two-wheeled vehicles (motocycles, motorbikes, mopeds) do you and other members of your household own?

(INDICATE NUMBER _____ (48-49)

13. IF RESPONDENT DRIVES A CAR (Q.6), ASK: Do you give rides to other members of the household?

Yes	50-1
No	-2
Does not apply. . . .	-3

14. IF RESPONDENT IS A PARENT (Q.2), ASK: Do you allow your children to travel around town by themselves?

Yes	51-1
No	-2
Does not apply. . . .	-3

TODAY'S TRAVEL

15a. Now I'd like to ask you about any traveling you did today--where you went, how you traveled, and things like that. Let's start with the first trip you made today. (CHECK HERE IF RESPONDENT SAYS HE/SHE DID NOT TRAVEL ANYWHERE TODAY, AND SKIP TO QUESTION 16a.)..... ☐ 52-1

80-2

	15b. About what time did you begin your first trip today?	15c. Where did you start from? (RECORD INTERSECTION OR STREET ADDRESS. DO NOT WRITE IN BOXES)	15d. (CIRCLE APPROPRIATE CODE FOR STARTING POINT) Home = 1 Work = 2 Shop = 3 School = 4 Social/Recreational = 5 Serve Passenger = 6 ASK AND RECORD PASSENGER'S PURPOSE ALSO Other = 7
Trip 1	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 2	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 3	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 4	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 5	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 6	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 7	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7

CONTINUE EACH TRIP ON NEXT PAGE

	15e. Where did you go? (RECORD INTERSECTION OR STREET ADDRESS. (DO NOT WRITE IN BOXES)	15f. What was the purpose of this trip? (READ LIST IF NECESSARY). (CIRCLE APPROPRIATE CODE) Home = 1 Work = 2 Shop = 3 School = 4 Social/Recreational = 5 Serve Passenger = 6 ASK AND RECORD PASSENGER'S PURPOSE ALSO Other = 7	15g. How did you make this trip (READ LIST IF NECESSARY). CIRCLE APPROPRIATE CODE NUMBER.) Drove alone.....-1 Drove with passenger-2 As passenger in private vehicle.....-3 Taxi-full fare.....-4 Taxi RTR.....-5 School bus...-6 Walked.....-7 Bicycle.....-8 Motorcycle...-9 Other.....-0	
Trip 1		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	80-3
Trip 2		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	80-4
Trip 3		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	80-5
Trip 4		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	80-6
Trip 5		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	80-7
Trip 6		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	80-8
Trip 7		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	80-9

	15b. About what time did you begin your first trip today?	15c. Where did you start from? (RECORD INTERSECTION OR STREET ADDRESS. DO NOT WRITE IN BOXES)	15d. (CIRCLE APPROPRIATE CODE FOR STARTING POINT) Home = 1 Work = 2 Shop = 3 School = 4 Social/Recreational = 5 Serve Passenger = 6 (ASK AND RECORD PASSENGER'S PURPOSE ALSO Other = 7
Trip 8	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 9	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 10	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 11	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 12	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 13	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 14	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 15	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2		RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7

CONTINUE EACH TRIP ON NEXT PAGE

	15e. Where did you go? (RECORD INTERSECTION OR STREET ADDRESS. (DO NOT WRITE IN BOXES)	15f. What was the purpose of this trip? (READ LIST IF NECESSARY). (CIRCLE APPROPRIATE CODE) Home = 1 Work = 2 Shop = 3 School = 4 Social/Recreational = 5 Serve Passenger = 6 ASK AND RECORD PASSENGER'S PURPOSE ALSO Other = 7	15g. How did you make this trip (READ LIST IF NECESSARY). CIRCLE APPROPRIATE CODE NUMBER.) Drove alone.....-1 Drove with passenger-2 As passenger in private vehicle.....-3 Taxi-full fare.....-4 Taxi RTR.....-5 School bus...-6 Walked.....-7 Bicycle.....-8 Motorcycle...-9 Other.....-0	
Trip 8		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-0
Trip 9		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-1
Trip 10		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-2
Trip 11		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-3
Trip 12		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-4
Trip 13		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-5
Trip 14		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-6
Trip 15		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-7

16a. (AFTER COVERING ALL TRIPS MADE TODAY, ASK) Do you plan to make any more trips today?

No . . . . . -1 (SKIP TO QUESTION 17)

Yes . . . . . -2 (ASK QUESTION 16b)

	16b. About what time will your next trip be?	16c. Where will you start from? (RECORD INTERSECTION OR STREET ADDRESS. DO NOT WRITE IN BOXES)	16d. (CIRCLE APPROPRIATE CODE FOR STARTING POINT) Home = 1 Work = 2 Shop = 3 School = 4 Social/Recreational = 5 Serve Passenger = 6 ASK AND RECORD PASSENGER'S PURPOSE ALSO Other = 7
Trip 1	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2	(5-8)	RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 2	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2	(5-8)	RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 3	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2	(5-8)	RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 4	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2	(5-8)	RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 5	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2	(5-8)	RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 6	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2	(5-8)	RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7
Trip 7	_____ am pm (CIRCLE ONE) (5-8) 9-1 -2	(5-8)	RESPONDENT 20-1 -2 -3 -4 -5 -6 -7 PASSENGER 21-1 -2 -3 -4 -5 -6 -7

CONTINUE EACH TRIP ON NEXT PAGE

	16e. Where will you go? (RECORD INTERSECTION OR STREET ADDRESS. DO NOT WRITE IN BOXES)	16f. What will be the purpose of this trip? (READ LIST IF NECESSARY). (CIRCLE APPROPRIATE CODE) Home = 1 Work = 2 Shop = 3 School = 4 Social/Recreational = 5 Serve Passenger = 6 ASK AND RECORD PASSENGER'S PURPOSE ALSO Other = 7	16g. How will you make this trip? (READ LIST IF NECESSARY). CIRCLE APPROPRIATE CODE NUMBER.) Drove alone.....-1 Drove with passenger-2 As passenger in private vehicle.....-3 Taxi-full fare.....-4 Taxi RTR.....-5 School bus...-6 Walked.....-7 Bicycle.....-8 Motorcycle...-9 Other.....-0	
Trip 1		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-8
Trip 2		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-1 80-9
Trip 3		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-2 80-0
Trip 4		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-2 80-1
Trip 5		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-2 80-2
Trip 6		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-2 80-3
Trip 7		RESPONDENT 32-1 -2 -3 -4 -5 -6 -7 PASSENGER 33-1 -2 -3 -4 -5 -6 -7	34-1 -2 -3 -4 -5 -6 -7 -8 -9 -0	79-2 80-4

17a. Now I am going to read you five qualities which people have told us are important to them when they make trips around town, and I'd like you to tell me which one is most important to you. (READ LIST, INDICATE WHICH IS MOST IMPORTANT).

b. And, which would you say is least important (RECORD BELOW UNDER LEAST IMPORTANT).

c. Of the three qualities left (READ THREE NOT YET CHOSEN), which is most important to you? (RECORD UNDER "NEXT MOST IMPORTANT".)

d. And which is least important? (RECORD UNDER NEXT LEAST IMPORTANT).

	a. Most Important	b. Least Important	c. Next Most Important	d. Next Least Important
That it is inexpensive	5-1	-2	-3	-4
That it is enjoyable	6-1	-2	-3	-4
That it is fast	7-1	-2	-3	-4
That it is comfortable	8-1	-2	-3	-4
That it is convenient	9-1	-2	-3	-4

18a. Now let's talk about how you feel about several possible ways of getting around town. Specifically, I'm talking about going in a car, taking a taxi, riding in a bus, if there were one, or walking. For example, which of the four ways of getting around the city do you feel is the most expensive? Which would you say is the least expensive? Of the two remaining, which do you feel is generally the next most expensive? RECORD EACH RESPONSE BELOW UNDER THE APPROPRIATE COLUMN.

	Car	Bus	Taxi	Walking
Most expensive	10-1	11-1	12-1	13-1
Least expensive	-2	-2	-2	-2
Next most expensive . . .	-3	-3	-3	-3

18b. Again, thinking of these four ways of getting around town, which would you say is generally the most enjoyable to you, the car, the bus, a taxi, or walking? Least enjoyable? Next most enjoyable?

	Car	Bus	Taxi	Walking
Most enjoyable	14-1	15-1	16-1	17-1
Least enjoyable	-2	-2	-2	-2
Next most enjoyable . . .	-3	-3	-3	-3

18c. And which would you say is generally the fastest way of getting around town? The slowest way? The next fastest way?

	Car	Bus	Taxi	Walking
Fastest	18-1	19-1	20-1	21-1
Slowest	-2	-2	-2	-2
Next fastest	-3	-3	-3	-3

18d. Of the four methods we are discussing, which would you say is generally the most comfortable as far as you are concerned? The least comfortable? The next most comfortable?

	Car	Bus	Taxi	Walking
Most comfortable	22-1	23-1	24-1	25-1
Least comfortable	-2	-2	-2	-2
Next most comfortable . .	-3	-3	-3	-3

18e. Finally, which of the four (car, bus, taxi, walking) would you say is generally the most convenient for you? The least convenient? The next most convenient?

	Car	Bus	Taxi	Walking
Most convenient	26-1	27-1	28-1	29-1
Least convenient	-2	-2	-2	-2
Next most convenient . .	-3	-3	-3	-3

19a. Thinking now just about traveling by car, taking a taxi, or walking, which do you prefer most for getting around in Danville? Which do you prefer second most for getting around Danville?

	Prefer Most	Prefer Second Most
Car	30-1	31-1
Taxi	-2	-2
Walking	-3	-3

19b. When the bus service becomes available in Danville, where in this list would it fall? Would you prefer it most for getting around town, second, third, or fourth most?

	Most Prefer	Second	Third	Fourth
Bus	32-1	-2	-3	-4

20a. So far, we have been talking about standard size buses, like one finds in most cities. But some places are also starting to use so-called "minibuses". These buses are smaller than a regular bus but somewhat larger than a van. If the route the bus took and the fare were the same, and the amount of time you had to wait for the bus was the same, which do you think you would prefer, the regular sized bus or the mini-bus, or wouldn't it make much difference to you?

Regular sized	33-1	
Minibus	-2	→ ASK QUESTION 20b.
Wouldn't make much difference	-3	SKIP TO QUESTION 21.

20b. Why do you say that?

_____

_____ (34-35)

21. Now I'm going to read you a list of statements concerning transportation-related issues in the area. Please indicate whether you agree or disagree with each of these statements.

	Agree	Disagree	(DO NOT READ) Neither Agree nor Disagree
a. It is necessary to reduce the use of cars in the city by supplying an effective public transit system	36-1	-2	-3
b. By and large, cars have outlived their usefulness except for trips between cities or trips out into the country . . .	37-1	-2	-3
c. Driving in the city is frustrating and can cause anxiety and tension	38-1	-2	-3
d. Riding on public transportation makes people feel uncomfortable	39-1	-2	-3
e. I would feel embarrased taking someone to a social function by public transit	40-1	-2	-3
f. Drastic action must be taken to improve the public transit service in this city	41-1	-2	-3
g. A car is more than just transportation; having a nice car to drive is appealing in itself . .	42-1	-2	-3

21. (Con't)	AGREE	DISAGREE	(DO NOT READ) Neither Agree nor Disagree
h. Traffic congestion in this city is a major problem in itself	43-1	-2	-3
i. Although cars are sometimes necessary, they are also a nuisance. I'd just as soon do without one if other transportation met my needs	44-1	-2	-3
j. I enjoy/would enjoy driving a car	45-1	-2	-3
k. Not having a car available is like being trapped	46-1	-2	-3
l. The lack of adequate transportation facilities sometimes leads to squabbles in our family	47-1	-2	-3
m. Cities and towns should actively discourage people from using cars by making it more difficult to drive and park	48-1	-2	-3
n. Children need good public transportation or they make too many demands on their parents to drive them around	49-1	-2	-3
o. Your social life definitely suffers if there is no car available	50-1	-2	-3
p. To be honest, there is no public transportation system I can picture that would make me give up my car in the city	51-1	-2	-3
q. If you don't take the bus all the time, trying to get directions from the driver on how to use it can be awkward and embarrasing	52-1	-2	-3
r. When you get right down to it, the only people who use a bus system are those who can't afford to get around any other way	53-1	-2	-3

22. Are you aware that the city of Danville will soon be starting a public transportation system?

Yes 54-1

No . . . . . -2

23. Present plans indicate that this service will provide transportation on certain routes that will go within three blocks of anywhere in the City of Danville. It will operate weekdays and Saturdays between 6 am and 6 pm and will be available at scheduled times--probably every half hour. The one-way fare probably would be 40¢ to anywhere within the City of Danville. Do you think you will use the transit service after it becomes available?

No . . . . . 55-1 → (SKIP TO QUESTION 26)
Yes . . . . . -2 (ASK QUESTION 24a)

24a. (IF YES TO QUESTION 23) Would you use is for (ASK FOR EACH):

	Yes	No	Not Sure
Trips to work or school	56-1	-2	-3
Shopping trips	57-1	-2	-3
Other trips	58-1	-2	-3

24b. Assuming that a trip is going from one place to another--so that, for example, going to work or school and returning home is 2 trips--how many trips do you think you would make on the transit service (ASK FOR EACH PURPOSE INDICATED YES OR NOT SURE IN 24A) in a week?

	Number of Trips Per Week	
Going to school or work:	_____	(59-60)
Going shopping:	_____	(61-62)
Other trips:	_____	(63-64)

25a. It may be possible to buy books of bus tickets in selected stores. Assuming the cost per ride would be the same, do you think you would be likely to buy tickets ahead of time?

Buy ahead of time 65-1
Not buy ahead of time . . . -2

25b. Now, assuming the cost per ride would be noticeably less, do you think you would be likely to buy tickets ahead of time?

Buy ahead of time 66-1
Not buy ahead of time . . . -2

26. Regardless of whether or not you intend to use the transit system, I'd like to know a little about what things would be important to you in deciding whether or not to take the transit system. I will read several things, and for each one, I'd like you to tell me if it would be very important, somewhat important, or would it be not at all important in your deciding whether or not to take the transit. For example, how important would it be to you in deciding to take the transit that it be brightly decorated? Would it be very important, somewhat important, not very important, or not at all important? What about (RECORD BELOW AND REPEAT FOR EACH ITEM ON THE LIST).

	Very Important	Somewhat Important	Not at all Important
Brightly decorated	66-1	-2	-3
That the driver is friendly and courteous	67-1	-2	-3
That the vehicle is clean .	68-1	-2	-3

27. (ASK ONLY IF RESPONDENT IS OVER 18 AND INCOME QUESTION WAS NOT ALREADY ASKED; OTHERWISE, GO TO CLOSING).

Just one more question and we'll be through. Please stop me when I read the income range that includes the combined annual income of all members of your household before taxes are taken out.

Under $5,000	67-1	At least $15,000, but under $20,000	-4
At least $5,000, but under $10,000	-2	$25,000 or more . . .	-5
At least $10,000, but under $15,000	-3		

CLOSING

We want to thank you for your help in this study. We have a few more questions we would like to ask you to complete this survey, but we don't want to take up more of your time now. Instead, we would like to send a messenger tomorrow evening to drop off a short questionnaire for you to fill out, which we will pick up from you later in the evening. In order to do this we need your name and address:

Name _____

Address _____

_____

Will you be home tomorrow evening? Yes ____ 68-1

No ____ -2

(IF RESPONDENT SAYS HE/SHE WILL NOT BE HOME, CHECK HERE, SAY): ☐ (69-1)

The messenger will drop it off anyway and you can leave it by your front door after you have completed it.

(IF RESPONDENT SAYS HE/SHE WILL NOT COMPLETE THE QUESTIONNAIRE, CHECK HERE ☐ (70-1). TRY TO FIND OUT WHY RESPONDENT REFUSES AND THEN SEE IF HE/SHE WILL CHANGE HIS/HER MIND. IF CHANGES MIND, CHECK HERE ☐ (71-1)

IF RESPONDENT AGREES TO COMPLETE DROP-OFF QUESTIONNAIRE, REMEMBER TO FILL IN RELEVANT INFORMATION ON FRONT PAGE OF FORM C. 79-2 80-5

APPENDIX D

SCHEDULE CHECK FORM

RUNAROUND SCHEDULE CHECK

Page ____ of _____ By ___________ Date ___/___/___ Time On _______ am/pm

Eastbound/Westbound Weather ______________

	ROUTE 1		2		3		4		5		6		7		8		9	
	Time	Bus#	Time	Bus#	Time	Bus#	Time	Bus#	Time	Bus#	Time	Bus#	Time	Bus#	Time	Bus#	Time	Bus#
Arr.																		
Dep.																		
Arr.																		
Dep.																		
Arr.																		
Dep.																		
Arr.																		
Dep.																		
Arr.																		
Dep.																		
Arr.																		
Dep.																		
Arr.																		
Dep.																		
Arr.																		
Dep.																		
Arr.																		
Dep.																		
Arr.																		
Dep.																		

Comments: ____

APPENDIX E

MARCH 1978 ON-BOARD SURVEY FORM

Runaround

Surveyor_____
Date_____
Route_____

PLEASE HELP THE CITY OF DANVILLE PLAN TRANSIT SERVICE FOR YOU

1. WHAT IS (OR WAS) THE MAIN PURPOSE OF THIS TRIP?

   1◯ WORK
   2◯ SHOP
   3◯ SCHOOL
   4◯ SOCIAL/RECREATION
   5◯ MEDICAL
   6◯ OTHER

2. HOW MANY MINUTES DID YOU WAIT FOR THIS BUS? _____

3. IF THERE WERE NO RUNAROUND BUS SERVICE IN DANVILLE, HOW WOULD YOU HAVE MADE THIS TRIP?

   1◯ DRIVE CAR
   2◯ PASSENGER IN CAR
   3◯ TAXI
   4◯ WALK
   5◯ OTHER
   6◯ WOULDN'T HAVE MADE THE TRIP AT ALL

4. WAS THERE A CAR AVAILABLE TO YOU AS A DRIVER OR PASSENGER TO MAKE THIS TRIP?

   1◯ YES
   2◯ NO

5. ARE YOU REGISTERED IN THE REDUCED TAXI RATES (RTR) PROGRAM?

   1◯ YES
   2◯ NO

6. HOW DID YOU PAY FOR THIS RIDE?

   1◯ TICKET FROM $2 (5-RIDE) BOOK
   2◯ TICKET FROM $8 (20-RIDE) BOOK
   3◯ HALF-FARE TICKET
   4◯ CASH

7. IF YOU USED A HALF-FARE TICKET, ARE YOU...

   1◯ 65 OR OVER
   2◯ 18 OR UNDER
   3◯ HANDICAPPED

8. HOW OFTEN DO YOU RIDE THE RUNAROUND?

   1◯ SEVERAL TIMES A WEEK
   2◯ ABOUT ONCE A WEEK
   3◯ ONCE EVERY 2 OR 3 WEEKS
   4◯ ONCE A MONTH OR LESS
   5◯ THIS IS MY FIRST TRIP

(PLEASE TURN OVER)

9. IF YOU COULD PAY THE 40¢ OR 20¢ FARE IN CASH, INSTEAD OF WITH A TICKET, WOULD YOU RIDE THE RUNAROUND MORE OFTEN?

1◯ YES 2◯ NO 3◯ NOT SURE

10. PLEASE RATE THE FOLLOWING FEATURES OF THE RUNAROUND SERVICE:

		EXCELLENT (1)	GOOD (2)	FAIR (3)	POOR (4)
A.	SERVICE EVERY HALF HOUR OR HOUR	◯	◯	◯	◯
B.	BUYING TICKETS IN ADVANCE	◯	◯	◯	◯
C.	40¢ AND 20¢ TICKET FARE	◯	◯	◯	◯
D.	EASE OF BUYING TICKETS	◯	◯	◯	◯
E.	$1.00 CASH FARE	◯	◯	◯	◯
F.	THE ROUTES	◯	◯	◯	◯
G.	PICKING YOU UP ON TIME	◯	◯	◯	◯
H.	TIME IT TAKES TO GET WHERE YOU'RE GOING	◯	◯	◯	◯
I.	AVAILABILITY OF INFORMATION	◯	◯	◯	◯
J.	CLEANLINESS OF BUSES	◯	◯	◯	◯

11. SEX: 1◯ MALE 2◯ FEMALE

12. AGE: 1◯ 18 OR LESS 2◯ 19-44 3◯ 45-64 4◯ 65 OR MORE

13. ANNUAL HOUSEHOLD INCOME:

1◯ UNDER $5,000 2◯ $5,000-$10,000 3◯ $10,000-$15,000
4◯ OVER $15,000

14. COMMENTS OR SUGGESTIONS_____

_____

Please return this form to the survey taker, the Runaround office in City Hall, or the bus driver on your next Runaround trip. Thank you for your cooperation. This information is confidential and for statistical purposes only.

APPENDIX F

MARCH 1978 RTR TELEPHONE SURVEY FORM

3/2/78

MARCH 1978 RTR TELEPHONE SURVEY

1. Interviewer _____
2. Date Completed _____
3. Time Completed _____

4. ID No. _____
5. Name _____
6. Address _____

   _____
7. Phone _____

Hello, I'd like to speak to (name from item 5).

- If not available, determine when to call back and note on control sheet and here: _____

  _____
- If it is not possible to interview RTR member, terminate call and note reason here and on control sheet: _____

  _____

8. My name is _____; I'm calling for the City of Danville to ask you a few questions about the City's Reduced Taxi Rates program. According to our records you have registered for the RTR program. Is that correct?

If respondent says "no," thank and and terminate. Check here _____

9. Good. First, we'd like to know about how often you usually use RTR. Would you say you use it. . .

1 - Several times a week
2 - About once a week
3 - Two or three times a month
4 - About once a month
5 - Less than once a month
6 - Never

10a. Do you recall when was the last time you made a trip using RTR?

1 - Today, yesterday or day before yesterday
2 - Within the last week
3 - Within the last month
4 - Longer than a month ago
5 - Remember last trip but aren't sure how long ago it was
6 - Can't recall last trip → Skip to Question 12 → page 6

10b. What day of the week was this on? _____

If not sure, determine weekday or weekend.

10c. Did you make a roundtrip by taxi? 1 - Yes 2 - No

If "yes," say "We'd like to talk about the first part of the round-trip."

10d. Where did you start from on this trip? _____

_____

If "home," that's enough. Otherwise get address, street intersection, or a well-known place (VA Hospital, for example).

10e. About what time did you leave? _____ AM/PM

10f. What was the purpose of this trip?

Read choices if necessary.

1 - Shopping
2 - Medical
3 - Personal Business (e.g., bank, beauty parlor, etc.)
4 - Recreation/Social
5 - School
6 - Work
7 - Church
8 - Home
9 - Other _____

10g. Where did you go on this trip? _____

_____

10h. Did anyone else go with you on this trip?

1 - Yes 2 - No

This refers only to people travelling together as a group.

If yes → 10i. How many others went with you? _____

10j. If the RTR program did not exist, that is, if you had to pay full fare to ride taxis in Danville, how do you think you would have made this trip?

1 - Full-fare taxi
2 - Drive
3 - Passenger in car
4 - Bus
5 - Walk
6 - Other
7 - Wouldn't have made trip
8 - Don't know

If trip just recorded was made more than 2 days ago, skip to Question 12. → page after next

11a. Have you made any other trips on RTR in the last 3 days?	1-yes 2-no	1-yes 2-no	1-yes 2-no
If no, skip to 12 → next page			
11b. When was the last time you used it before the time we just discussed?	_____	_____	_____
Record day of week			
11c. Roundtrip by taxi?	1-yes 2-no	1-yes 2-no	1-yes 2-no
If "yes," say "We'd like to talk about the first part of the roundtrip."			
11d. Where did you start from?	_____	_____	_____
	_____	_____	_____
11e. What time did you leave?	_____AM/PM	_____AM/PM	_____AM/PM
11f. Trip purpose?	1-Shop 6-Work 2-Med 7-Church 3-Pers. Bus. 4-Rec/Soc 8-Home 5-School 9-Other	1-Shop 6-Work 2-Med 7-Church 3-Pers. Bus. 4-Rec/Soc 8-Home 5-School 9-Other	1-Shop 6-Work 2-Med 7-Church 3-Pers. Bus. 4-Rec/Soc 8-Home 5-School 9-Other
11g. Where did you go?	_____	_____	_____
	_____	_____	_____
11h. Did anyone else go with you?	1-yes 2-no	1-yes 2-no	1-yes 2-no
11i. How many?	_____	_____	_____
11j. If RTR did not exist, how do you think you would have made this trip?	1-Taxi 5-Walk 2-Drive 6-Other 3-Pass. 7-No trip 4-Bus 9-Don't know	1-Taxi 5-Walk 2-Drive 6-Other 3-Pass. 7-No trip 4-Bus 9-Don't know	1-Taxi 5-Walk 2-Drive 6-Other 3-Pass. 7-No trip 4-Bus 9-Don't know

Go to 11a → top of this page

12. Did you know that there is now a bus service running in Danville again? It's called the Runaround.

1 - Yes 2 - No

If no, skip to 25. → next to last page

13. How many blocks from your home is the nearest place to catch the Runaround bus? _____

If respondent lives on bus route, write "0"

14. What street is that on? _____

15. Did you know that the bus will stop for you anywhere along its route?

1 - Yes
2 - Wasn't sure
3 - No

16. Did you know that you can buy half-fare tickets for the Runaround with your RTR card?

1 - Yes
2 - Wasn't sure
3 - No

17. Have you ever used the Runaround? 1 - Yes 2 - No

If no, skip to Question 22. → Page 10

18. Would you say that you use the Runaround . . .

1 - Almost every day
2 - At least once a week
3 - At least once every two or three weeks
4 - Once a month or less

19a. Do you recall the last trip you made on the Runaround?

1 - Same day or previous day
2 - Within a week
3 - Within a month
4 - Longer than a month ago
5 - Remembers trip but isn't sure how long ago
6 - Can't recall last trip → Skip to Question 25. → Next to last page

19b. What day of the week was that on? _____

If not sure, determine weekday or weekend.

19c. Did you make a roundtrip on the bus? 1 - Yes 2 - No

If "yes," say "We'd like to talk about the first part of the round trip."

19d. Where did you start from on this trip? _____

_____

"Home" is enough, otherwise get address, street intersection, or a well-known place.

19e. About what time did you leave? _____ AM/PM

Get time respondent left the place just given, not time he/she got on bus.

19f. What was the purpose of this trip?

1 - Shop
2 - Medical
3 - Personal Business (e.g. bank, beauty parlor)
4 - Recreational/social
5 - School
6 - Work
7 - Church
8 - Home
9 - Other

Read choices if necessary.

19g. Where did you go on this trip? _____

_____

"Home," is enough; otherwise get address, street intersection, or a well-known place.

19h. If there were no Runaround bus service in Danville, how do you think you would have made this trip?

1 - Taxi
2 - Drive
3 - Passenger in car
5 - Walk
6 - Other
7 - Wouldn't have made trip → Skip next Question
9 - Don't know → Skip next Question

Assume RTR is available for taxi.

19i. What would you say was the major reason why you took the bus instead of (name mode given above)? _____

_____

If trip just recorded was more than 2 days ago, skip to Question 21 → Page after next

20a. Have you made any other trips on the Runaround in the last 3 days?	1-yes 2-no	1-yes 2-no	1-yes 2-no
If no, skip to 21 → next page			
20b. When was the last time you used it before the trip we just discussed?	_____	_____	_____
Record day of week			
20c. Roundtrip by Runaround?	1-yes 2-no	1-yes 2-no	1-yes 2-no
If "yes," say "we'd like to talk about the first part of the roundtrip."			
20d. Where did you start from?	_____ _____	_____ _____	_____ _____
20e. What time did you leave?	_____AM/PM	_____AM/PM	_____AM/PM
20f. Trip purpose?	1-Shop 6-Work 2-Med 7-Church 3-Pers. Bus. 4-Rec/Soc 8-Home 5-School 9-Other	1-Shop 6-Work 2-Med 7-Church 3-Pers. Bus. 4-Rec/Soc 8-Home 5-School 9-Other	1-Shop 6-Work 2-Med 7-Church 3-Pers. Bus. 4-Rec/Soc 8-Home 5-School 9-Other
20g. Where did you go?	_____ _____	_____ _____	_____ _____
20h. If the Runaround did not exist, how do you think you would have made this trip?	1-Taxi 5-Walk 2-Drive 6-Other 3-Pass. 7-No trip 9-Don't know	1-Taxi 5-Walk 2-Drive 6-Other 3-Pass. 7-No trip 9-Don't know	1-Taxi 5-Walk 2-Drive 6-Other 3-Pass. 7-No trip 9-Don't know

Go to 20a. → top of this page

21. What problems or difficulties have you had in using the Runaround? _____

_____

Skip to Question 25 → next page

22. What would you say is the major reason why you've never used the bus? _____

_____

If reason is one of health or physical disability, skip to Question 26 → last page

23. Have you bought any tickets for the Runaround?

1-yes 2-no

If "yes," skip next question

24. If you didn't have to buy tickets in advance to ride the Runaround, would you be more likely to ride the bus?

1-definitely
2-probably
3-maybe
4-probably not
5-definitely not
6-didn't know about tickets
9-don't know

25. Now we'd like you to compare the bus and taxis.

> If respondent has little or no experience with Runaround, ask for responses based on feeling about how buses would be if they did use them.

a) First, which would you say usually takes less time to get you where you're going, bus or taxi?

1 - Bus
2 - Taxi
Don't read this choice. → 3 - Same
9 - Don't Know

b) Which is (would be) more comfortable?

1 - Bus
2 - Taxi
Don't read this choice. → 3 - Same
9 - Don't Know

c) Which do you (would you) generally have to wait less time for?

1 - Bus
2 - Taxi
Don't read this choice. → 3 - Same
9 - Don't Know

d) Which is more convenient to use?

1 - Bus
2 - Taxi
Don't read this choice. → 3 - Same
9 - Don't Know

e) Which is more likely to get you where you're going on time?

1 - Bus
2 - Taxi
3 - Same
4 - Don't Know

Don't read this choice. → 3 - Same

f) Is it easier for you to get in and out of a taxi or on and off a bus?

1 - Bus
2 - Taxi
3 - Same
4 - Don't Know

Don't read this choice. → 3 - Same

26. Have you moved since you registered for RTR?

If necessary say, "Do you still live at (address from control sheet)."

1 - Moved 2 - Haven't moved

If moved → 27. Where do you live now?

_____

_____

28. Are there any other comments or suggestions you'd like to make about RTR or the Runaround?

_____

_____

_____

Those are all the questions we have. Your answers have been very helpful. We'd like to thank you for your time. Good-bye.

APPENDIX G
REPORT OF INVENTIONS

A diligent review of the work performed under this contract has revealed that no new innovations, discoveries, or inventions of a patentable nature have been made. Nonetheless, the findings of and methodologies employed in this document will provide valuable input to persons involved in designing and evaluating urban transportation systems, particularly those utilizing the user-side subsidy concept.

☆U.S. GOVERNMENT PRINTING OFFICE: 1978—700-448/191

140 Copies