NATIONAL EVALUATION OF THE NEW MEXICO CLIENT REFERRAL, RIDERSHIP, AND FINANCIAL TRACKING (CRRAFT) SYSTEM

FINAL EVALUATION REPORT

IPAS-II: Task 61006

Submitted to:

US Department of Transportation

Federal Transit Administration and

ITS Joint Program Office

Federal Highway Administration

Submitted by:

Science Applications International Corporation

TranSystems Corporation

July 29, 2005

Science Applications International Corporation
An Employee-Owned Company

TranSystems Corporation

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle National Evaluation of the New Mexico Client Referral, Ridership, and Financial Tracking (CRRAFT) System Final Evaluation Report		**5. Report Date** July 29, 2005
		6. Performing Organization Code
7. Authors R. Sanchez (SAIC), P. Rodriguez (TranSystems), C. Schweiger (TranSystems), M. Carter (SAIC)		**8. Performing Organization Report No.**
9. Performing Organization Name and Address Science Applications International Corporation (SAIC) 1710 SAIC Drive M/S T1-12-3 McLean, VA 22102		**10. Work Unit No. (TRAIS)**
		11. Contract or Grant No. DTFH61-02-C-00061; Task SA61006
12. Sponsoring Agency Name and Address United States Department of Transportation ITS Joint Program Office, HOIT-1 400 7th Street SW Washington, DC 20590		**13. Type of Report and Period Covered**
		14. Sponsoring Agency Code HOIT-1
15. Supplementary Notes Mr. Brian Cronin (Task Manager) Dr. Joseph I. Peters (COTR)		

16. Abstract

This final report describes the national evaluation of the New Mexico Client Referral, Ridership, and Financial Tracking (CRRAFT) System. The evaluation methodology assessed twelve hypotheses related to the expected outcomes of CRRAFT. To assess the hypotheses, three types of data collection and analyses were conducted: 1) quantitative measures; 2) surveys; and 3) interviews. The quantitative measures consisted of standard operating performance metrics typically used by transit providers and measurable aspects of the invoicing and reporting process. The changes in those measures before and after CRRAFT were analyzed.

An attitudinal survey was used to obtain user opinions on the impact of CRRAFT on their operations. Interviews were conducted with staff at the New Mexico Department of Transportation (NMDOT) Public Transportation Programs Bureau (PTPB), New Mexico Human Services Department, and the Alliance for Transportation Research Institute (ATRI) to review and discuss lessons learned and best practices with respect to the implementation, operations and maintenance of the CRRAFT system.

Overall, the Evaluation Team found that the CRRAFT system has had a more positive impact on the NMDOT's PTPB than on the transit agencies. Transit agencies generally agreed that the CRRAFT system is useful for tracking ridership and generating invoices/reports for submission to NMDOT. However, the CRRAFT system has presented several obstacles to complete acceptance of the system by transit agencies. Transit agencies that provided a large number of demand responsive trips tended to be dissatisfied with CRRAFT's overall performance. It appears that this dissatisfaction is related to the time required to manually enter trips into the scheduler, and then to reconcile scheduled and actual trips.

The report also presents user opinions about the most useful CRRAFT features, what other features users like to see added, and which features should be improved or changed. A summary of findings table is also provided.

Key Words CRRAFT, New Mexico Transit, Rural Transit, Federal Transit Administration	**18. Distribution Statement** No restrictions. This document is available to the public from: The National Technical Information Service, Springfield, VA 22161. This document is available to the public at: http://www.its.dot.gov/index.htm

19. Security Classif. (of this report) Unclassified	**20. Security Classif. (of this page)** Unclassified	**21.No of Pages** 90	**22. Price** N/A

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

<div style="border:1px solid">

NOTICE

This is a final report. Questions or comments on this report can be provided to SAIC via email, fax, or mail, addressed to:

Mark Carter

Science Applications International Corporation

1710 SAIC Dr. M/S T1-12-3

McLean, VA 22102

Phone: 202-366-2196

Fax: 202-493-2027

Mark.R.Carter@saic.com

</div>

TABLE OF CONTENTS

List of Figures

List of Tables

Glossary of Acronyms

ATRI	Alliance for Transportation Research Institute
CRRAFT	Client Referral, Ridership, and Financial Tracking
DHHS	U.S. Department of Health and Human Services
HSD-ISD	Human Services Department
FTA	Federal Transit Administration
ISD	Income Support Division (of HSD)
ITS	Intelligent Transportation System
JARC	Job Access Reverse Commute
JPO	Joint Program Office
MOE	Measure of Effectiveness
NMDOL	New Mexico Department of Labor
NMDOT	New Mexico Department of Transportation
NMHSD	New Mexico Human Services Department
NMSHTD	New Mexico State Highway and Transportation Department
PTPB	Public Transportation Programs Bureau
TANF	Temporary Assistance for Needy Families
USDOT	United States Department of Transportation
WtW	Welfare to Work

Executive Summary

This document presents the evaluation results for the national study of the New Mexico Client Referral, Ridership, and Financial Tracking (CRRAFT) System. The CRRAFT system is on the leading edge of a growing effort to significantly improve the coordination of human services transportation among social service agencies and transportation providers. Using technological solutions, systems such as CRRAFT are intended to improve accountability, reduce the misuse of transportation assistance, and deliver significant cost savings and/or system improvements. To investigate the extent to which these goals were met and to document best practices in deploying and operating such systems, the United States Department of Transportation (US DOT) contracted with Science Applications International Corporation and its partner TranSystems to conduct an independent evaluation of the CRRAFT system.

The evaluation methodology focused on developing twelve hypotheses related to the expected outcomes of CRRAFT, and assessing them. To assess the hypotheses, three types of data collection and analyses were conducted: 1) quantitative measures; 2) surveys; and 3) interviews. The evaluation of quantitative measures consisted of an analysis of standard operating performance metrics typically used by transit providers, and changes in those measures before and after CRRAFT. It also included measurable aspects of the invoicing and reporting process before and after CRRAFT. The data for this analysis came primarily from system performance figures archived by either the transportation providers or the New Mexico Public Transportation Programs Bureau (PTPB), and invoices and invoice submission logs archived by the PTPB. To offset the limited amount of archived quantitative measures available, the national evaluator proposed to conduct an analysis of the processes used before and after CRRAFT in order to estimate the impact of CRRAFT with both a survey and interviews. An attitudinal survey was used to obtain user opinions on the impact of CRRAFT on their operations. Interviews were conducted with staff of the PTPB, New Mexico Department of Transportation (NMDOT), and the Alliance for Transportation Research Institute (ATRI) to review and discuss lessons learned and best practices with respect to the implementation, operations and maintenance of the CRRAFT system.

Overall, the Evaluation Team found that the CRRAFT system has had a more positive impact on the NMDOT's PTPB than on the transit agencies. Transit agencies generally agreed that the CRRAFT system is useful for tracking ridership and generating invoices/reports for submission to NMDOT. However, the CRRAFT system has presented several obstacles to complete acceptance of the system by transit agencies. Transit agencies that provided a large number of demand responsive trips tended to be dissatisfied with CRRAFT's overall performance. It appears that this dissatisfaction is related to the time required to manually enter trips into the scheduler, and then to reconcile scheduled and actual trips. In addition to improving the scheduler module, other features of CRRAFT desired by transit agencies included improvements to allow the transit agencies to query their data and develop custom reports.

The Evaluation Team found that the percentage of reports that are submitted on time (43%) remained the same after the implementation of CRRAFT in Fiscal Year 2004 (FY04). However, the remaining reports, which are submitted after the deadline, are being submitted with longer delays, thus the average submission lag has increased after the implementation of CRRAFT. However, the time required by the PTPB to approve those invoices, once correctly submitted, has significantly decreased,

reducing the total time to pay transit providers for their invoices. This reduction on the approval time is due to improved communication regarding invoice problems, less missing supporting documents with invoices and faster access to those supporting documents. Table ES-1 shows the key findings for each of the hypothesis developed during this evaluation.

Table ES-1. Summary of Findings

#	Hypothesis	Finding
1[1]	Use of the system saves transit providers time invoicing and reporting to funding agencies	Not True. On average, the use of CRRAFT has not saved transit providers time invoicing and reporting to the PTPB. In fact, Transit agencies with higher ridership and demand responsive service may have had the opposite experience and are spending more time preparing invoices after the implementation of CRRAFT.
2[1]	Use of the system results in funding agencies having faster access to reports	Not True. On average, the use of CRRAFT has not resulted in funding agencies having faster access to invoices and reports. With the online system however, funding agencies may be able to monitor the numbers that transit agencies are entering into the system along the month.
3[1]	Reports created by the system are accurate and reliable. Use of the system reduces the time funding agencies spend checking and correcting reports and reduces money incorrectly allocated or invoiced	True. The use of CRRAFT has resulted in more accurate invoices and has saved time from funding agencies during the reviewing process. The fact that transit agencies know at all times their remaining balance in each line item seems to have helped reduce the number of incorrect amounts on invoices.
4	Use of the system reduces the time funding agencies spend researching and collecting information	True. The use of CRRAFT has in fact reduced the time funding agencies spend researching and collecting information
5[1]	Use of the system reduces the overall time required for transit providers to schedule demand response trips	Not True. The use of CRRAFT has increased the time to schedule demand response trips for a majority of transit agencies and the impact is particularly evident for Agencies entering schedule data for many trips.
6	Use of the system results in more efficient schedules for demand response trips	Mixed. For most users CRRAFT did not have a positive impact on the efficiency of the scheduled route or the development and use of the demand response schedule, but may have improved the efficiency for a few smaller transit agencies.
7	Use of the system reduces the number of unauthorized trips	Mixed. CRRAFT did not have a clear and decisive impact on the number of unauthorized trips.
8	Use of the system reduces the number of in-service breakdowns	Little/no impact. CRRAFT did not have an impact on the number of in-service vehicle breakdowns.
9	Use of the system reduces the operating cost of transit services	Mixed. For the providers, CRRAFT may result in higher operational costs for larger transit agencies that enter many demand response trips. However, the data analysis did not provide conclusive results about the relationship of CRRAFT with changes in operating cost alone or operating cost per trip.
10	Use of a Web-based system has minimized the time and cost of deployment, support, and maintenance	Mixed. CRRAFT appears to be useful for generating invoices, supporting auditing activities, but has resulted in many transit agencies doing additional work to use CRRAFT in support of NMDOT reporting/invoicing requirements.

---

[1] Key hypothesis

#	Hypothesis	Finding
11	Transit providers and funding agencies perceive that the benefits of the system outweigh its costs	Mixed. NMDOT and New Mexico Human Services Department (NMHSD) are generally pleased with the benefits of CRRAFT and generally agree that the benefits outweigh the costs. The transit agencies have mixed views, however larger Agencies, particularly those providing demand response service, were more likely to indicate that CRRAFT has been unsuccessful and that the costs outweigh the benefits.
12	Use of a single system improves communication between diverse agencies	True. For NMDOT, CRRAFT has resulted in better communication and coordination with transit agencies. For transit agencies, communication and coordination remained about the same or better.

1   INTRODUCTION

Beginning in 2000, the Alliance for Transportation Research Institute (ATRI) at the University of New Mexico has been working with the Public Transportation Programs Bureau (PTPB) of the New Mexico Department of Transportation to develop the Client Referral, Ridership, and Financial Tracking (CRRAFT) system.

The genesis of CRRAFT was the recognition of the need to simplify the increasing complexity of coordinating rural transit funding in New Mexico. The multiple funding agencies and programs (Federal Transit Administration [FTA] for Section 5310, 5311 and 3037 funding; New Mexico Human Services Department [NMHSD] for Temporary Assistance for Needy Families [TANF] funding; and the New Mexico Department of Labor [NMDOL] for Welfare-to-Work [WtW] funding) had already been coordinated organizationally with the PTPB serving as the pass-through agency for funding to the transit providers and reporting back to the funding agencies. However, the complexity of the referral and reporting requirements resulted in very time-consuming activities for transit providers and the PTPB alike. Additional complexity resulted from the fact that many clients of one funding agency are also clients of another, but not necessarily for the same kinds of trips.

CRRAFT is a Web-based software application that is intended to help simplify this process by creating a single application that will manage transit services for all transportation providers that receive rural transit (FTA Section 5311), Job Access Reverse Commute (JARC) (FTA Section 3037), WtW, and/or TANF funding. CRRAFT utilizes current information system technology to assist in the coordination process and efficient reporting of client services provided to state and federal agencies. For human service agencies, CRRAFT standardizes client transportation referral, improves the accountability of transportation use and costs, and reduces the misuse of transportation assistance. CRRAFT is Web-based, and therefore available to be used at any time, from any place (with Internet access), by authorized users. As a result, funding agencies can view reports in real-time and track their transportation funds as they are being utilized. For the transit operators, CRRAFT standardizes invoicing, ridership reporting, and simplifies transportation scheduling management[2].

In December 2001 and September 2003, USDOT ITS Joint Program Office (JPO) funding was provided to ATRI via FTA to develop CRRAFT, provide on-going user support and training, and begin integration with an automated payment system. Subsequently, the JPO selected CRRAFT to be the subject of a national evaluation, which was to conduct a System Impact Study to measure or confirm the expected outcomes of the system. This document is the Final Report for that national evaluation.

While the evaluation of the CRRAFT system was conceived as a System Impact Study to measure or confirm the expected outcomes of the system, it was not intended to assess the system's implementation process, usability, technical reliability, or operational procedures. Of particular interest for the evaluation were measurable impacts on transit and paratransit operations. Those impacts were measured in terms of standard operating performance metrics typically used by transit and paratransit

---

[2] Source: ATRI

providers, such as vehicle miles, revenue service hours, number of passengers, passengers per vehicle mile, and operating cost (separate from capital and sometimes administrative costs).

This document has five chapters. This first chapter provides an introduction to the CRRAFT system and the evaluation conducted. The second chapter describes the CRRAFT system in detail, including its history, scope and features. The third chapter summarizes the methodology followed to conduct the evaluation. Chapter 4 presents the results of the evaluation. The last chapter summarizes the main findings. The document also contains appendices that include the final interview guides and surveys used during the evaluation process.

2   OVERVIEW OF CRRAFT

2.1   The Need for CRRAFT

One of the key elements of public assistance programs is ensuring that recipients of these services have access to necessary transportation. In many states, this has resulted in a *de facto* partnership between human services agencies, which manage assistance programs, and transportation agencies, which provide transportation services. Figure 2-1 depicts the basic processes of this partnership in New Mexico.
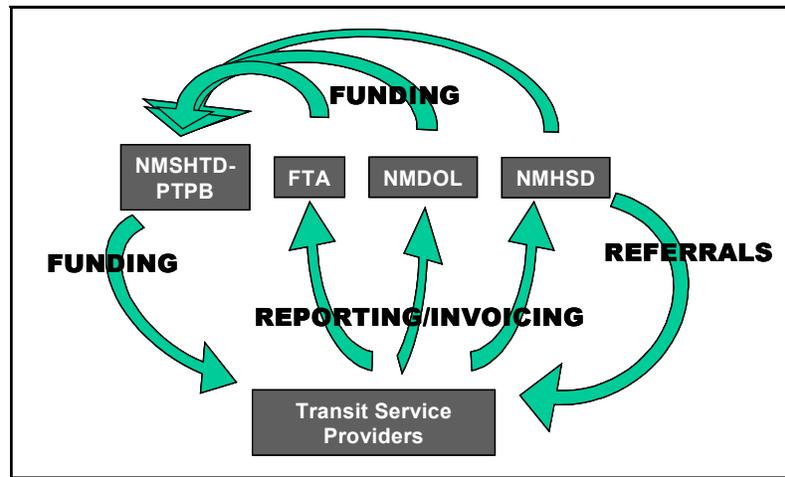
Figure 2-1. Overview of the Rural Transit Funding, Reporting, and Referral Process in New Mexico

The process begins when someone applies for government assistance with either the NMHSD or the NMDOL. The transportation needs of the applicant are reviewed and, if necessary, the applicant is approved for transportation assistance and referrals are provided to the individual transportation service providers. Each applicant may be approved to receive transportation assistance through one or more of several available assistance programs and the assistance may apply to one or more transit service providers.

The transit service providers track service usage by those approved for transportation assistance and submit periodic reports/invoices of this usage for reimbursement from NMHSD, NMDOL, and FTA. As mentioned previously, NMHSD provides transportation funding for TANF clients, while NMDOL administers transportation funds under the Welfare to Work program. FTA has three programs that provide funding through this process. Section 5310 funds capital acquisitions for transportation services designed to meet the mobility needs of elderly and disabled persons. Section 5311 funds capital, administrative, and operating expenses incurred in the provision of rural public transportation. Section 3037 funds the JARC Program, which provides transportation services to jobs and employment related services for welfare recipients and low income workers. Funds from NMHSD, NMDOL, and FTA flow to the New Mexico State Highway and Transportation Department (NMSHTD) and its Public Transportation Programs Bureau (PTPB), from which they are distributed to the individual transit service providers.

The CRRAFT application is specifically designed to help simplify this process and ease the tracking and reporting of the process.

2.2   The History of CRRAFT

The CRRAFT system began as a November 1998 project in which PTPB contracted with ATRI to produce a report entitled *Public Transportation: A Priority Link in Moving People to Work*. This study led to a more comprehensive effort titled *Moving Forward: A Transportation Toolkit for Welfare Reform,* which was funded by the NMHSD, Income Support Division (ISD). The *Toolkit* eventually became the statewide strategic JARC plan for New Mexico. The document recommended that the State, community transit providers, and Tribal departments and agencies work toward developing a coordinated transportation system, but recognized that significant barriers impeded coordination efforts.

In 2000, ATRI and its partnering agencies began looking for a technological solution to help with the coordination process. After due consideration, they decided to develop a software package in-house that would standardize transportation referral for clients of various agencies, authorize and track client trips, and report trip costs to funding agencies. Work continued under ATRI funding through 2001, with Beta testing occurring in the period from July to September 2001.

At about the same time, ATRI funding for transportation projects was reduced, jeopardizing the CRRAFT project. Although ATRI did continue funding work on CRRAFT, it also sought out other funding sources, resulting in obtaining Federal funding in December 2001 and September 2003.

With this new funding, ATRI began working closely with the Village of Los Lunas and the Zuni Reservation for a more directed field test of CRRAFT. CRRAFT development and testing by these agencies occurred during 2002, and rollout of the software to other agencies occurred during 2003. Beginning in Fiscal Year 2004 (October 2003 to September 2004), each of the transit agencies receiving Section 5311 or Section 3037 funding were required to use the CRRAFT application for record keeping and reporting. Table 2-1 shows the transit agencies that received funding through the PTPB (subgrantees) in FY02 and FY04. These are the agencies included in the analyses described in this report and those operating in FY04 that were required to use CRRAFT. As observed, some changes occurred from FY02 to FY04. For example, Farmington, which was a subgrantee in FY02, became municipal (meaning that it reached more than 50,000 inhabitants) and it is no longer funded through the PTPB. On the other hand, new agencies were created such as Colfax County, which was previously part of Las Vegas. Also, the South Central Council of Governments (SCCG) of Hatch and Socorro joined their operations in FY04.

Table 2-1. Transit Agencies Receiving Funding Through the PTPB and Required to Use CRRAFT in FY04

FY02				FY04		
Subgrantees	**3037**	**5311**		**Subgrantees**	**3037**	**5311**
Angel Fire	X	X		Angel Fire	X	X
Belen		X		Belen		X
Carlsbad	X	X		Ben Archer Health Center ^	X	
Clovis	X	X		Carlsbad	X	X
Espanola		X		Clovis	X	X
Farmington *	X	X		ColFax County ^	X	
Fort Sumner Housing Authority	X			Cuba ^^	X	
Go-For's Inc.	X			Espanola^^^		X
Grant County	X	X		Fort Sumner Housing Authority	X	
Hobbs		X		Go-For's Inc.	X	
Laguna		X		Grant County	X	X
Las Vegas	X	X		Hobbs		X
Los Alamos		X		Laguna		X
Los Lunas	X	X		Las Vegas	X	X
Na'Nihoozhi Center (NCI)	X			Los Alamos		X
Navajo Nation		X		Los Lunas	X	X
Portales		X		Na'Nihoozhi Center (NCI)	X	
Questa	X			Navajo Nation		X
Red River		X		Portales		X
Rio Arriba County	X			Questa	X	
Roswell	X	X		Red River		X
SCCG Hatch **	X			Rio Arriba County	X	
SCCG Socorro **	X			Roswell	X	X
Taos	X	X		SCCG Hatch/Socorro	X	
Zia Therapy	X	X		Taos	X	X
Zuni (ZEE)	X	X		Zia Therapy	X	X
				Zuni (ZEE)	X	X
Total	*18*	*19*		*Total*	*19*	*18*

Notes: * Became municipal (<50,000 pop), not funded via PTPB anymore
        ** Joined in FY04 in SCCG Hatch/Socorro
        ^ New start, previously part of Las Vegas
        ^^ New start, operating since 2002
        ^^^ In FY04, requested reimbursement for 1 month only

2.3 The Scope of CRRAFT

2.3.1 Geographic Scope

The CRRAFT application must be used by the 27 transit service providers in New Mexico that receive Section 5311 or Section 3037 funding. These rural transit service providers are scattered across the entire state of New Mexico. Figure 2-2 shows the location of these 27 transit agencies in New Mexico.

Location of Transit Providers
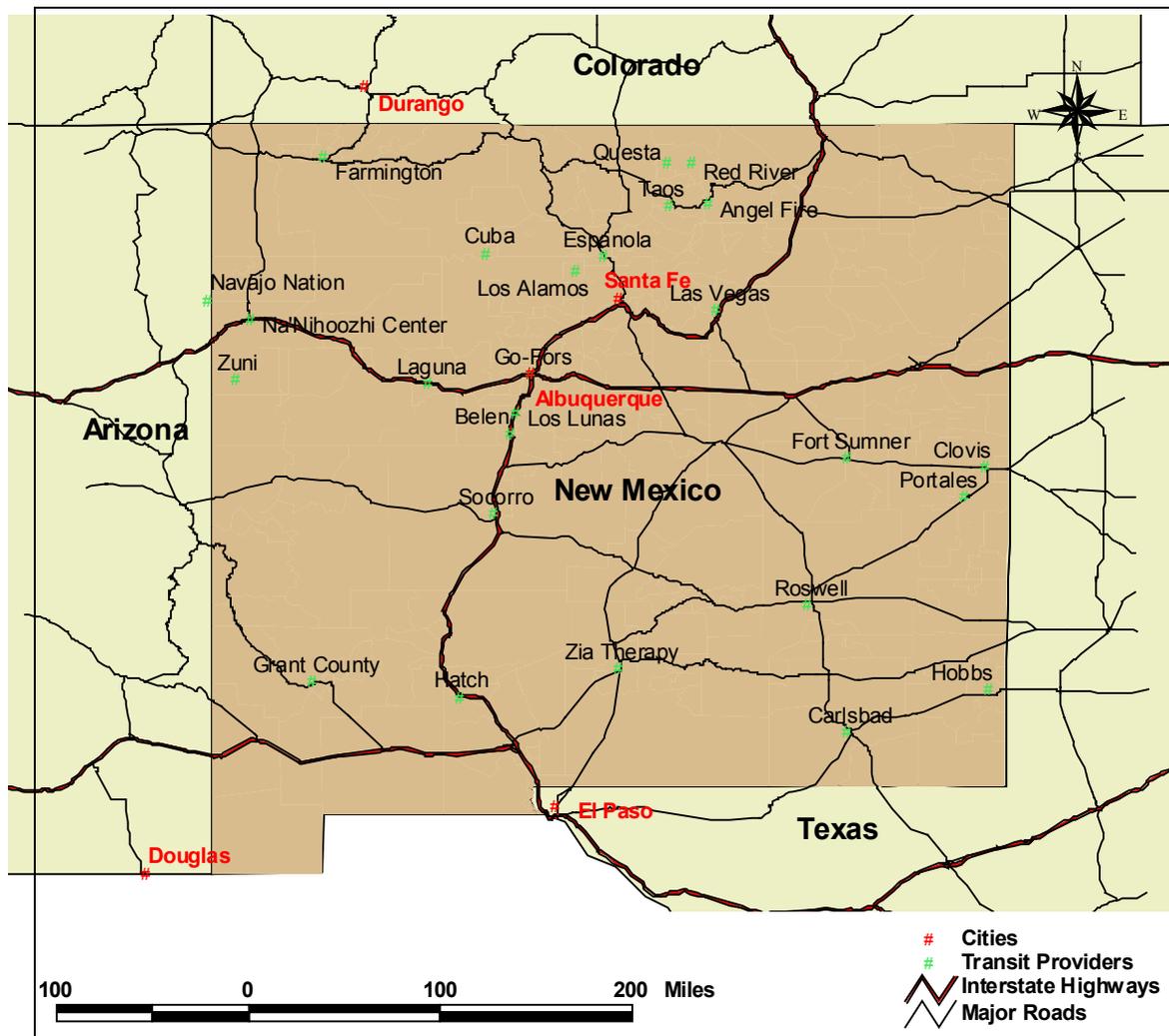
Figure 2-2. Location of Transit Providers in New Mexico

2.3.2 Institutional Scope

The CRRAFT project is a multi-organizational effort that involves many different stakeholder organizations. Currently, key players at the Federal, State and local levels involved in the CRRAFT project are:

- *The PTPB.* The PTPB is a bureau in the NMSHTD that oversees the state's FTA Section 5310, 5311, and 3037 programs. PTPB serves as the lead agency in eliminating transportation barriers of people moving from welfare to work. PTPB also leverages funds from the NMHSD and the NMDOL to provide matching amounts for FTA JARC grants in rural New Mexico. The agency has provided support and funding for development and deployment of the CRRAFT system and serves as the state administrator for the system.

- *The ATRI.* ATRI is an institute at the University of New Mexico that develops strategies and solutions to address New Mexico transportation issues. ATRI helped initiate the CRRAFT concept and has taken the lead in developing, deploying, and maintaining the CRRAFT system.

- *Rural transportation service providers.* These providers, most of which are members of the New Mexico Passenger Transportation Association (NMPTA), are the primary end users of the CRRAFT system

- *The NMHSD and NMHSD-ISD.* The NMHSD-ISD oversees the TANF program, which is overseen by the U.S. Department of Health and Human Services (DHHS). Under TANF, States, territories, and Native American tribes receive block grants that are used to cover benefits, administrative expenses, and services targeted to needy families. In New Mexico, the TANF program is entitled New Mexico Works, and part of the funding through this program goes through PTPB to provide transportation assistance to TANF clients.

- *The Federal Transit Administration (FTA).* FTA provides funding to support transit services in New Mexico, including JARC grants. In addition, FTA, in partnership with the JPO, is managing the CRRAFT project and evaluation.

- *The ITS JPO.* The ITS JPO oversees FHWA funding for ITS projects and is providing funding for the CRRAFT project and evaluation.

- *The NMDOL.* The New Mexico Department of Labor (NMDOL) oversees the New Mexico WtW program. One part of this program provided funding (through PTPB) for transportation assistance to welfare clients. However, the NMDOL went through a re-organization and re-directed these funds to their Workforce Investment program, thus CRRAFT is no longer used by the PTPB to manage the NMDOL WtW funds.

2.3.3   Technical Scope

CRRAFT is a Web-based application that is intended to help support the process for providing transportation assistance in New Mexico. The current modules of CRRAFT are[3]:

- Transit System Management. This module contains transit agency information including the type of service provided, transit agency employee names, and vehicle information. This module consists of three sub-sections: Transit Systems, Users/Employees, and Vehicle Inventory. Using this module, users can add/edit transit agency information, add/edit employee job type/function, enable CRRAFT usage privileges, and maintain detailed vehicle information (VIN, make, model, year, etc.) and maintenance information.

---

[3] Because a spiral development approach was used for CRRAFT, the features of the application may change with time. *Spiral development* is a family of software development processes characterized by repeatedly iterating a set of elemental development processes and managing risk so it is actively being reduced. Source: "Spiral Development: Experience, Principles, and Refinements" *Barry Boehm, edited by Wilfred J. Hansen*, Special Report CMU/SEI-00-SR-08, ESC-SR-00-08, June, 2000.

- Fiscal Management. This module allows the user to add/edit revenues, create/maintain administrative expenses, operating expenses, capital expenses, and budget information.

- Reports. This module contains three sub-sections, Reports Menu, FAQ's, and Tips and Tricks. The Reports Menu section allows the user to generate and print various reports: Client Trips, 5311 FTA Trips, Vehicle Inventory, 5311 Trips by Vehicle Mile and Hour, 5310 Quarterly Report, DVR (Division of Vocational Rehabilitation) Report, 5311 Quarterly Report, TANF Ridership, WTW Ridership, 5310 Ridership, JARC Ridership, PTPB Invoices, Submit Monthly Invoices, Driver Log Edit List, and Driver Fares. The FAQ's section provides users with a listing of frequently asked questions and answers. Similar to the FAQ's section, the Tips and Tricks section provides users with helpful information and guidance.

- System Administration. This module is accessible only to the State Administrator. There are four sub-sections: Accounts, Funding Providers, Referral Agencies, and NMHSD Transportation Regions. The Accounts section contains information about new/existing Revenue/Administrative Expense/Operating Expense/Capital Expense accounts. The Funding Providers and Referral Agencies sections contain the contact information for these providers and agencies. The NMHSD Transportation Regions contains the information about the New Mexico Human Services Department Regions.

- Client Management. This module contains transit agency client information derived from the Referral Agency Submittal forms. The sub-sections allow the entry/editing of client contact information, subscription trips, referral information (case number, service start/end date, referral agency, etc.), trip information (purpose, trip fares), and sanctions. A Smartcard Utilities feature is also available to allow users to issue/manage the Smartcards.

- Schedule Management. This module contains information about client trips for Demand Response transit service. The sub-modules consist of: Express Scheduling, Driver Log, Fixed Routes, Fixed Routes Monthly Ridership, and Process Usage Data. Express Scheduling portions allow the user to create/edit the daily schedule of trips for drivers. The driver log portions allow the user to manually enter the list of actual passengers and trip information. The Process Usage Data portions allow transit agencies with the Smartcard implemented to upload ridership information from the driver's PocketPC. The Fixed Routes and Fixed Routes Monthly Ridership portions allow the user to create/manage fixed route information and the monthly fixed route ridership data for each vehicle.

Although not operational during the time of this evaluation, the deployment of an Electronic Benefits Transfer (EBT) card system for authenticating transit users and tracking usage should be fully deployed in 2005. Called Intelligent Coordinated Transit (ICTransit), the system will consist of programmable cards, and EBT card readers and Pocket PCs which are installed in each bus. The cards will be pre-programmed with each client's information by each transit agency and distributed to clients. The EBT card readers will be used to validate each client before the start of each trip. Upon reading the card, the bus driver can use the Pocket PC to view/verify client data such as client name/type, funding agency, purpose of trip, etc. At the end of a driver's shift, the Pocket PC can be used to reconcile the driver's actual trips with those scheduled by the dispatcher.

2.4   Expected Outcomes of CRRAFT

CRRAFT was conceived to impact the transit providers and the funding agencies. The expected outcomes of each module of the system are summarized in Table 2-2.

Table 2-2. CRRAFT Modules and Expected Results

Module	Transit Provider Expected Outcomes	Funding Agency Expected Outcomes
Transit System Management	Better balancing of vehicle mileage, more efficient scheduling of maintenance, better prediction of vehicle replacement schedule, tracking of employee training and certification	Better access to information about status of publicly-funded vehicles and transit provider contacts
Fiscal Management	Consolidated revenue and expenses for budget monitoring	Better quality reports, better management and tracking of transportation costs and expenditures
Reports	Less time required to report to funding agencies	Less delay between end of reporting period and report, better quality reports
Client Management	Easy access to client information and eligibility for scheduling trips, avoid scheduling unauthorized trips	Better quality reports, accurate allocation of rides to funding agency, less time to research and collect information
Schedule Management	More efficient scheduling, better customer service	Reduced cost of transit trips (possibly)

3   EVALUATION METHODOLOGY

The main objective of this evaluation was to measure or confirm the expected outcomes of the CRRAFT system. To accomplish this objective, the evaluation methodology had four main phases:

1. Develop hypotheses

2. Determine approach to assess hypotheses

3. Collect Data

4. Analyze Data

This evaluation approach was first presented in the Evaluation Plan and Test Plan document, which discussed the first two phases and provided guidelines to conduct Phases 3 and 4. The following sections describe the efforts undertaken during Phases 1 through 3. The data analysis (Phase 4) is described at length in the next chapter – Evaluation Results.

3.1   Hypotheses Development

The first step of the evaluation was to take the expected outcomes presented in Table 2-2 and develop them into hypotheses. The hypotheses are statements that describe the expected outcomes in a more detailed and measurable manner. The expected outcomes and the set of 12 hypotheses developed are listed in Table 3-1. Hypotheses one, two, three and five are considered "key hypotheses."

Table 3-1. CRRAFT Expected Outcomes and Preliminary Set of Research Hypotheses

No.	Hypothesis	Expected Outcome
1	Use of the system saves transit providers time invoicing and reporting to funding agencies	Reduce transit provider time required to prepare and submit reports to funding agencies.
2	Use of the system results in funding agencies having faster access to reports	
3	Reports created by the system are accurate and reliable. Use of the system reduces the time funding agencies spend checking and correcting reports and reduces money incorrectly allocated or invoiced	Provide transit providers with improved tracking of transportation benefits used, more accurate allocation of costs resulting in better quality reports to funding agencies.
4	Use of the system reduces the time funding agencies spend researching and collecting information	Provide funding agencies with improved access to information about transit systems, vehicle inventories, clients, client use of transportation benefits, sanctions, transit costs, and budget expenditures.
5	Use of the system reduces the overall time required for transit providers to schedule demand response trips	Speed up trip scheduling process by improving access to client eligibility and vehicle availability information
6	Use of the system results in more efficient schedules for demand response trips	Improve access to information about trips requested, trips scheduled and vehicle availability to improve the efficiency of demand response trip schedules

Table 3-1. CRRAFT Expected Outcomes and Preliminary Set of Research Hypotheses (continued)

No.	Hypothesis	Expected Outcome
7	Use of the system reduces the number of unauthorized trips	Improve access to client eligibility to avoid scheduling unauthorized trips
8	Use of the system reduces number of in-service mechanical breakdowns	Improve vehicle condition by improving access to information about vehicle mileage and age
9	Use of the system reduces the operating cost of transit services	Improve funding agency and transit agency efficiency
10	Use of a Web-based system has minimized the time and cost of deployment, technical support, and maintenance	Develop a system with minimal costs for deployment, technical support, and maintenance.
11	Transit providers and funding agencies perceive that the benefits of the system outweigh its costs	Provide value for investment in the CRRAFT System
12	Use of a single system improves communication between diverse agencies	Improve coordination between funding agencies and between funding agencies and transit providers

3.2 Determining Approach to Assess Hypotheses

The assessment of the hypotheses was done through Measures of Effectiveness (MOEs) assigned to each hypothesis (i.e., change in overall time saved preparing reports and invoices, time saved scheduling trips). For most of the hypotheses, the MOEs were assessed before and after the implementation of CRRAFT to understand the impact of the system. Three approaches were designed to collect and analyze the data necessary to assess the MOEs:

1. Analysis of quantitative measures

2. Analysis of surveys and interviews with transit providers

3. Analysis of interviews with funding agencies and ATRI

3.2.1 Analysis of Quantitative Measures

This is an analysis of standard operating performance metrics typically used by transit providers, and changes in those measures before and after CRRAFT. It also included measurable aspects of the invoicing and reporting process before and after CRRAFT. The data for this analysis came primarily from system performance figures archived by either the transportation providers or the PTPB, and invoices and invoice submission logs archived by the PTPB.

Because CRRAFT was already in operation throughout New Mexico, before and after comparisons of these measures depended on the availability of archived data related to these performance metrics. The Evaluation Team noted that a lack of knowledge on the availability of archived data limited the extent to which the plans for the evaluation could be finalized. In order to remove this ambiguity, a preliminary assessment was conducted. The primary purpose of this assessment was to identify the types of archived data that were available to support this evaluation and to determine if sufficient quantitative data of usable quality were available for a before/after analysis of the CRRAFT system. Table 3-2 summarizes the results of this assessment. Note that not all of the hypotheses shown in

Table 3-1 are included in this summary since the Preliminary Assessment focused only on hypotheses that required the evaluation of quantitative data elements.

Table 3-2. Summary of Preliminary Assessment Findings

No.	Hypothesis	Measure of Effectiveness	Data Elements	Availability	Notes
1	Use of CRRAFT saves transit providers time invoicing and reporting to the funding agencies	Change in overall time saved preparing reports and invoices	Before and after staff time to prepare reports, time to maintain data in system	Subjective only	Transit providers do not track, but can provide subjective assessment of time saved.
2	Use of the system results in funding agencies having faster access to reports	Change in time between end of reporting period and report submittal	Before and after days between end of reporting period and report submittal	Objective and Subjective	Data available in PTPB logs for FY2002. Should be available for current FY.
3	Reports created by CRRAFT are accurate and reliable and use of the system reduces the time funding agencies spend checking and correcting reports and reduces money incorrectly allocated or invoiced.	Change in percent of errors, time saved correcting or checking, money saved from accurate allocations	Before and after percent errors, staff time spent checking and correcting errors, dollars lost due to incorrect allocations	Some objective data to use as a sample	Hypothesis cannot be tested until verification functionality has been added to CRRAFT (early Spring 2004). Cannot verify that past data are complete - depends on program manager.
5	Use of the system reduces the overall time required for transit providers to schedule demand response trips	Time saved scheduling trips	Before and after staff time required (or assigned) to schedule trips	Subjective data only	Transit providers do not track, but can provide subjective assessment of time saved.
6	Use of the system results in more efficient schedules for demand response trips	Change in passengers per revenue mile or revenue hour	Before and after total passengers, revenue miles, revenue hours	Objective and Subjective	Data available for Section 5311 providers only.
7	Use of CRRAFT reduces the number of unauthorized trips	Change in number of unauthorized trips provided and dollar value of unauthorized trips	Before and after number of unauthorized trips, dollar value of unauthorized trips	Subjective data only	Audit files not complete or detailed enough to include data.

Table 3-2. Summary of Preliminary Assessment Findings (continued)

No.	Hypothesis	Measure of Effectiveness	Data Elements	Availability	Notes
8	Use of the system reduces the number of in-service mechanical breakdowns	Change in miles between revenue service breakdowns	Before and after vehicle miles, in-service mechanical failures	Yes, for those using the Vehicle module	Past data available. Need to wait for CRRAFT to include mileage functionality (Summer 2004).
9	Use of CRRAFT reduces the operating cost of transit service	Change in operating cost per revenue mile or revenue hour	Before and after operating cost, revenue miles, revenue hours	Yes	Data available for Section 5311 providers only. Cost per passenger available for JARC. Significant variation from month to month - may need to use annual average.
10	Use of a Web-based system has minimized the time and cost of deployment, technical support, and maintenance.	Comparison of CRRAFT costs to those of similar commercially available products	One-time and on-going costs for CRRAFT and commercially available similar products	Possibly	Have not obtained from ATRI, but may be able to do our own research.

3.2.2   *Analysis of Surveys and Interviews with Transit Providers Staff*

To offset the limited amount of archived quantitative measures available, the national evaluator proposed to conduct an analysis of the processes used before and after CRRAFT in order to estimate the impact of CRRAFT. For example, CRRAFT provides a uniform and consistent set of reports to PTPB, which should decrease the amount of manual processing required to handle those reports. Both quantitative and qualitative subjective data were collected for this portion of the study, largely through interviews and surveys with operating agencies.

An attitudinal survey was used to obtain user opinions on the impact of CRRAFT on their operations. In order to facilitate analysis, the survey consisted primarily of questions whose responses are numbers in a linear scale (e.g., "What impact has CRRAFT had on the time spent preparing reports for PTPB?" with responses like "1 It takes a lot longer with CRRAFT; 2 It takes a little bit longer with CRRAFT; 3 The time required is about the same with and without CRRAFT; 4 It takes a little bit less time with CRRAFT; or 5 It takes a lot less time with CRRAFT").

3.2.3   *Interviews with Funding Agencies and ATRI*

Interviews were conducted with staff of the PTPB, NMDOT, and the ATRI to review and discuss lessons learned and best practices with respect to the implementation, operations and maintenance of

the CRRAFT system that were not previously identified in the CRRAFT Case Study[4]. Interviews with ATRI staff responsible for developing and maintaining CRRAFT provided costs of developing CRRAFT, plans for future enhancements to the system, and the expected costs for these enhancements. Because one of the benefits of CRRAFT is the creation of a uniform processing system for the 27 participating agencies, which facilitates future enhancements, this type of information is important in understanding the full benefits of CRRAFT.

3.2.4   Summary

The hypotheses and these analysis approaches for assessing them formed the basis for the evaluation. A summary of the evaluation approach including hypotheses, MOEs, data sources and evaluation method is presented in Table 3-3.

Table 3-3. The Evaluation Approach for the CRRAFT Evaluation

No.	Hypothesis	MOE	Data Sources	Evaluation Methods
1	Use of the system saves Transit providers time invoicing and reporting to funding agencies	Transit provider staff opinions on time requirements	Surveys of transit provider staff	Analysis of survey results
		Review of invoicing and reporting process, before and after CRRAFT	Interviews with selected transit provider staff	Analysis of processes to estimate time requirements
2	Use of the system results in funding agencies having faster access to reports	Time lag between end of reporting period and report submission dates	PTPB invoice submission logs	Before and after comparison
		Transit provider staff opinions on report timing	Surveys of transit provider staff	Analysis of survey results
		Funding agency staff opinions on report timing	Survey of funding agency staff	Analysis of survey results
3	Reports created by the system are accurate and reliable. Use of the system reduces the time funding agencies spend checking and correcting reports and reduces money incorrectly allocated or invoiced	Review of report error and resubmission logs	Transit provider archives of resubmitted invoices	Review of resubmitted reports
		Transit provider staff opinions on report accuracy	Surveys of transit provider staff	Analysis of survey results
		Funding agency staff opinions on report accuracy	Survey of funding agency staff	Analysis of survey results
		Funding agency staff opinions on time spent checking and correcting reports	Survey of funding agency staff	Analysis of survey results
4	Use of the system reduces the time funding agencies spend researching and collecting information	Funding agency staff opinions on research time	Survey of funding agency staff	Analysis of survey results
5	Use of the system reduces the overall time required for transit providers to schedule demand response trips	Transit provider staff opinions on time requirements	Surveys of transit provider staff	Analysis of survey results

---

[4] CRRAFT Case Study conducted by Multisystems (now TranSystems)in 2002.

Table 3-3. The Evaluation Approach for the CRRAFT Evaluation (continued)

#	Hypothesis	MOE	Data Sources	Evaluation Methods
6	Use of the system results in more efficient schedules for demand response trips.	Passengers per revenue mile (5311 subgrantees)	Before data in monthly invoices After data maintained by CRRAFT	Before/after comparison
		Passengers per revenue hour (5311 subgrantees)		
		Per passenger operating cost (5311 and 3037 subgrantees)		
		Passengers per trip		
		Transit provider staff opinions on efficiency of demand response schedules	Surveys of transit provider staff	Analysis of survey results
7	Use of the system reduces the number of unauthorized trips	HSD-ISD assessment of the extent of unauthorized trips	HSD-ISD management evaluation	Review of evaluation report
		Transit provider staff opinions on the extent of unauthorized trips	Surveys of transit provider staff	Analysis of survey results
		Funding agency staff opinions on the extent of unauthorized trips	Survey of funding agency staff	Analysis of survey results
8	Use of the system reduces number of in-service mechanical breakdowns	Transit provider staff opinions on the frequency of in-service breakdowns	Surveys of transit provider staff	Analysis of survey results
9	Use of the system reduces the operating cost of transit services	Operating cost per revenue hour (5311 subgrantees)	Before data in monthly invoices After data maintained by CRRAFT	Before/after comparison
		Operating cost per revenue mile (5311 subgrantees)		
		Operating cost per rider (5311 and 3037 subgrantees)		
		Transit provider staff opinions on changes in the operating cost	Surveys of transit provider staff	Analysis of survey results
10	Use of a Web-based system has minimized the time and cost of deployment, technical support, and maintenance	Cost comparison of CRRAFT and commercially available products	ATRI report on relative costs[a]	Review of report findings
		CRRAFT development staff opinions on the time and cost of deployment, support, and maintenance	Interviews with CRRAFT development staff	Review of interview findings
11	Transit providers and funding agencies perceive that the benefits of the system outweigh its costs	Transit provider staff opinions on the costs and benefits of CRRAFT	Surveys of transit provider staff	Analysis of survey results
		Funding agency staff opinions on the costs and benefits of CRRAFT	Surveys of funding agency staff	Analysis of survey results
12	Use of a single system improves communication between diverse agencies	Transit provider staff opinions on interagency communication	Surveys of transit provider staff	Analysis of survey results
		Funding agency staff opinions on interagency communication	Surveys of funding agency staff	Analysis of survey results

Notes: a.   This report was not located. The Evaluation Team determined during the early stages of the project that if this report was not available, then doing independent research to reproduce those results was not a cost-effective alternative. Hence, the assessment of this MOE was abandoned.

3.3   Data Collection

In this phase of the evaluation, and based on the approaches previously determined, the Evaluation Team collected data from a number of sources, including relevant documents and archived data from the CRRAFT system. Also included in the data collection efforts were surveys and interviews with transit provider and funding agency staff. The following subsections describe the data collection efforts.

3.3.1   Data and Documents

The Evaluation Plan identified several electronic and physical documents that were needed to assist with the assessment of the hypotheses. These documents are also summarized in Table 3-3 above under the column called Data Sources. These documents and data were collected as follows.

PTPB Invoice Submission Logs

The PTPB files include a folder for each transit provider receiving Section 5311 and/or Section 3037 (JARC) funding. Separate files are kept for each fiscal year. Each of these files includes, among other things, a log of the invoice/payment process. These invoice submission logs for FY02 and FY04 were consulted by the Evaluation Team. One of these logs is presented as an example in Appendix A.

These invoice submission logs provided, among others, the date of initial invoice submission, any problems or errors with the invoice, the date of the final invoice submission had there been errors on the initial invoice, the date the invoice was entered into the PTPB database, and the date the invoice was given third level approval at PTPB (accepted for payment). These data provided the team with the ability to analyze the submission lag (days between the date at which invoices are actually submitted and the submission deadline) before (FY02) and after (FY04) the implementation of CRRAFT. With these data, the team was also able to determine how often errors were found in the invoices and re-submissions were required before and after CRRAFT. The time required to resolve erroneous invoices was also determined. Finally, the data also allowed the Team to calculate the time required by PTPB to approve the invoices, before and after CRRAFT.

The Evaluation Plan anticipated the review of invoice re-submittal records kept by the transit providers. However, not all the providers kept these records and the Evaluation Team decided to conduct the analysis based solely on the records in the Submission Logs kept at the PTPB. Yet, the issue of invoice re-submission was included in the surveys to the Providers.

Monthly Invoices for FY02 and FY04

The Evaluation Team collected the monthly invoices submitted by the transit providers to the PTPB before (FY02) and after (FY04) CRRAFT. Section 5311 providers include number of passengers, number of revenue miles, hours of service provided, and operating cost on those invoices. Section 3037 providers include number of passengers and operating costs. For FY02 the monthly invoices were Excel-based invoices, for FY04 the invoices were produced by CRRAFT. An example of these invoices is shown in Appendix B.

The data in the invoices were utilized to calculate commonly used operational metrics (i.e. ridership, cost per revenue hour) to compare the performance of transit providers before (FY02) and after (FY04) CRRAFT.

Some of the data found in CRRAFT for FY04 were found to be out of range. Specifically, Carlsbad, Hobbs, Las Vegas, Los Lunas, Taos, and Zuni had suspicious figures for several entries of monthly vehicle miles, and Navajo Nation, Taos, and Zia Therapy had out of range figures for a few entries of monthly vehicle hours. For example, the monthly vehicle hours for Zia Therapy range between 501 and 591 in all months in FY04 except for November 2003, in which the recorded vehicle hours are 85,580. The agencies were asked about these extremely high figures of vehicle hours and vehicle miles, and they cited errors in the CRRAFT system as the cause for these outliers in the data. Navajo Nation and Zia Therapy only had one month out of twelve with erroneous vehicle hours data. Thus, the outlier number was thrown out and replaced by the average of the remaining eleven months. This procedure could not be repeated with the other agencies because the number of months with suspicious figures was higher. Hence, Taos was not included in analyses including vehicle hours and no analyses were done with the vehicle miles metrics.

HSD-ISD Management Evaluation.

An HSD-ISD evaluation was conducted in June 2002, which included an audit of nine transit providers. The Evaluation Team collected a copy of this report because the section on quarterly fiscal reporting includes documentation of discrepancies between what providers billed NMSHTD and the amount they were reimbursed. These data will help assess Hypothesis No. 7 about the extent of unauthorized trips.

ATRI Report on Costs of Commercial Systems.

During the preliminary assessment, it was mentioned that this report was produced by ATRI; however during the data collection effort, the Team found out that although ATRI did conduct an informal review of available commercial products that could be used to provide the types of services included in CRRAFT, an official report on the topic was never written or could not be located. The Evaluation Team determined during the early stages of the project that if this report was not available, then doing independent research to reproduce those results was not a cost-effective alternative. Hence, the assessment of the MOE associated with this report was abandoned.

The CRRAFT Case Study.

A case study of CRRAFT that provides information on CRRAFT, its origins, its costs, and plans for its future was also collected and reviewed. The case study was mostly used to obtain background information as needed. This CRRAFT case study was one of the "best practices" analyzed by Multisystems (now part of TranSystems) for a report submitted in 2002.

3.3.2   Surveys of Transit Provider Staff

Surveys of transit provider staff were conducted by the Evaluation Team to obtain opinions on the impact of CRRAFT on transit operations. Derived from the expected outcomes and hypotheses, a survey was developed that explored user attitudes and perceptions of CRRAFT's impact on such day-to-day operations as preparing monthly invoices, scheduling demand responsive trips, and operational efficiency and cost. The survey consisted of four types of questions: multiple choice (where responses were selected from a list of six choices), fill-in questions on time estimation, ranking of CRRAFT features, and two open-ended (free text) questions. A copy of the survey questions are shown in Appendix C.

The survey was administered to CRRAFT users at 26 transit agencies (representing about 60 users). Prior to distributing the surveys, each transit agency supervisor was contacted via telephone. The telephone call provided an opportunity to present an overview of the evaluation and survey, obtain some background information from the transit agency, and enlist their participation. Afterwards, the surveys were distributed in late December 2004 and early January 2005 via E-mail, and were returned either by E-mail, fax, or U.S. mail. In some cases, follow-up phone calls were made to transit agencies to clarify responses or comments on completed surveys or to make a request for their survey(s). Forty surveys were returned representing 24 of the 26 transit providers (a return rate of about 92%). At some transit agencies, each CRRAFT user completed one survey. At others, multiple users completed a single survey. This difference was permitted because at some transit agencies CRRAFT responsibilities were distributed to multiple staff members (e.g., Person A responsible for the scheduling, Person B preparing the monthly invoices).

The survey data were manually entered into a database and descriptive statistics were computed using SPSS (Statistical Program for the Social Sciences) statistical software. In cases where multiple surveys were returned from the same transit agency, an average rating (or score) was computed for each question and used in the SPSS analysis to simplify the interpretation of the statistics. This data manipulation method reduced the bias that would result in over-weighting ratings from agencies submitting multiple surveys, especially when compared to surveys submitted from transit agencies that combined the responses from multiple users into one survey. The survey results are presented in Chapter 4 of this report.

3.3.3　*Interviews with Funding Agencies, PTPB, ATRI and Transit Providers*

The Evaluation Team interviewed the managers and staff at the NMHSD, NMDOT, ATRI, and several transit agencies. Two different interview guides were developed. The interview guide for funding agency managers/staff (see Appendix D) investigated what was working well with CRRAFT, what needed improvement, and what other functions would be useful additions to CRRAFT. The interview guide for Transit Agency Managers (see Appendix E) focused on gathering information about their experience with the CRRAFT application and the effect CRRAFT has had on their organization. Transit providers were split over time savings, efficiency, accuracy, operational impact, and overall opinion of CRRAFT.

NMDOT and ATRI interviews were held in face-to-face meetings that took place in early December 2004. NMHSD and most transit agency interviews were held over the telephone in December 2004 and January 2005. Most interviews were completed in 30 to 60 minutes.

Since the number of interviewees was relatively small, a statistical analysis of the responses was not conducted. The results of these interviews, which were primarily anecdotal in nature, were used to guide follow-up discussions and explore operational changes resulting from the use of CRRAFT.

In addition to the initial interviews, follow-up discussions were conducted with five transit agencies in April 2005 during the New Mexico Public Transport Association Conference in Albuquerque. These discussions allowed a more thorough investigation of issues that were raised when the data and survey results were analyzed. It also provided an opportunity for gaining a clearer picture of the performance and perceptions of CRRAFT.

4   CRRAFT EVALUATION RESULTS

This chapter describes on the results of the evaluation. The results are organized not in terms of the evaluation activities that were performed, but in terms of the different types of impacts CRRAFT had on the transit agencies. Thus, the subsections describe the results of all evaluation activities that relate to the following topics:

- Impact of CRRAFT on Invoicing and reporting (Hypotheses 1, 2, 3 and 4)
- Impact of CRRAFT on Trip scheduling (Hypotheses 5 and 6)
- Impact of CRRAFT on Trip authorization (Hypothesis 7)
- Impact of CRRAFT on Vehicle maintenance (Hypothesis 8)
- Impact of CRRAFT on Operating efficiency and costs (Hypothesis 9)
- The costs and benefits of CRRAFT (Hypotheses 10 and 11)
- Interagency communication and coordination (Hypothesis 12)

4.1   The Impact of CRRAFT on Invoicing and Reporting

This subsection describes the impact CRRAFT has had on the invoicing and reporting process. It includes the timeline of invoice submissions and the extent to which the submitted invoices contain errors. It also covers the time transit providers spend producing invoices and reports. The extent to which CRRAFT helps the funding agencies research and collect the information they need is also discussed. Associated with this impact are hypotheses 1 through 4.

The transit agencies must submit a months' invoice by the 25th of the following month. For example, the invoice for July 2005 must be submitted by August 25th 2005. Often, the invoices are submitted later than the deadline, the time between the deadline and the actual submission date is called the Submission Lag. When the invoice is submitted, the PTPB reviews it and if any errors are found, they contact the transit agency to solve the problem. Often, this encompasses an invoice re-submission. Once the invoice is accepted by the PTPB, they enter it into their system and process it. When third level approval is given to the invoice, it means the invoice has been approved for payment. Figure 4-1 shows a schematic of this invoice submission, review, and approval process.
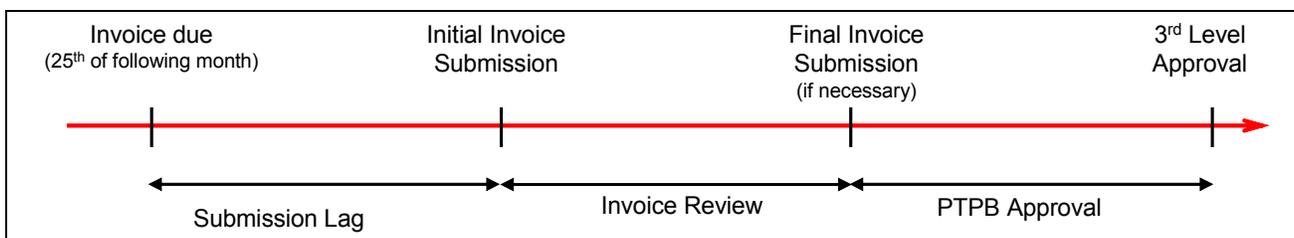
Figure 4-1. Invoicing Timeline

4.1.1   Hypothesis 1

Use of the system saves transit providers time invoicing and reporting to funding agencies.

To assess this hypothesis, the Evaluation Team relied on an analysis of the actual invoice submission dates, an answer to one question in the survey to transit agencies, and the interviews and discussions

with staff at transit agencies. No quantitative data were collected specifically regarding the time spent preparing invoices. However, the submission dates for all invoices during FY02 and FY04 were collected[5] allowing the Evaluation Team to calculate the Submission Lag as

Submission Lag = Actual initial invoice submission date – Submission deadline

The Submission Lag may be regarded as a proxy for the time required to prepare the invoices because if an invoice is submitted with longer delay it could be assumed that it took longer to prepare it.

The invoice submission dates for some months were missing in several of the providers Logs. As a result, only 82% in FY02 and 80% in FY04 of the expected data points were available. However, the Evaluation Team considered that approximately 80% of data completeness was sufficiently representative to conduct this analysis. Figure 4-2 presents the frequency and cumulative distributions of the Submission Lag before (FY02) and after (FY04) the implementation of CRRAFT. As observed, the shape of the distributions changed between the two years. In FY02, the frequency distribution is more skewed towards the left, which implies that more invoices were submitted on-time or with less delay than in FY04.

The data show that the same proportion of invoices (43%) was submitted on or before the deadline in both years. However, for the remaining 57% that were submitted late in both years, the average delay in FY02 is 18 days while in FY04 is 36 days. While in FY02, 11% of the invoices were submitted more than 30 days late, in FY04 that number went up to 25%. Furthermore, in FY02 the longest Submission Lag was 70 days while in FY04 it was more than 120 days. Thus, according to the data on Submission Lag, it may be concluded that on average, the time required to prepare invoices in FY04 increased with respect to FY02.

The survey question regarding this topic and the interviews with the transit agencies' staff, provided some insight into this situation. In the CRRAFT survey, transit agency users were asked the question "*To what extent do you think the CRRAFT system affects the time you spend preparing the monthly invoices and reports that you must submit?*." Using a five-point rating scale (ranging from one, "It takes a lot longer with CRRAFT" to five, "It takes a lot less time with CRRAFT", and three means The time required is about the same with or without CRRAFT"), transit agency users were divided on the impact of CRRAFT on the amount of time spent preparing invoices and reports.

The survey results showed that approximately 53% of the respondents thought it took longer to prepare monthly invoices with CRRAFT, about 43% thought it took less time, and about 4% indicated it took about the same amount of time. The distribution of responses is shown in Figure 4-3.

---

[5] Source: Invoice Submission Logs kept on file at the PTPB
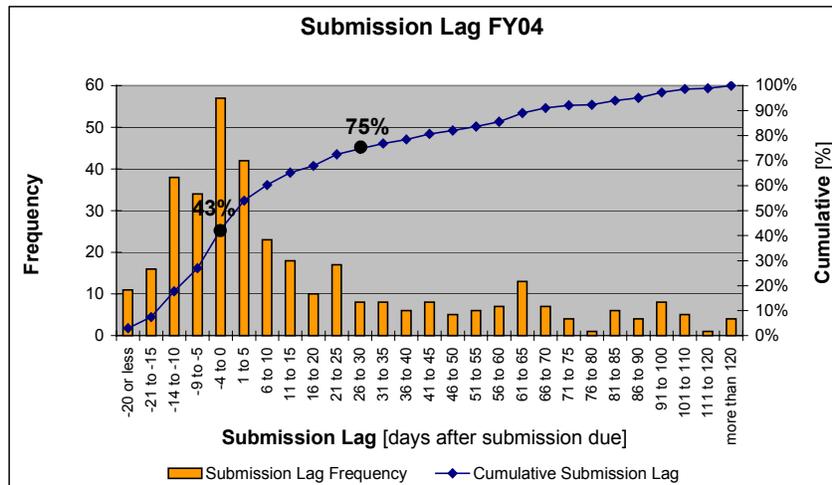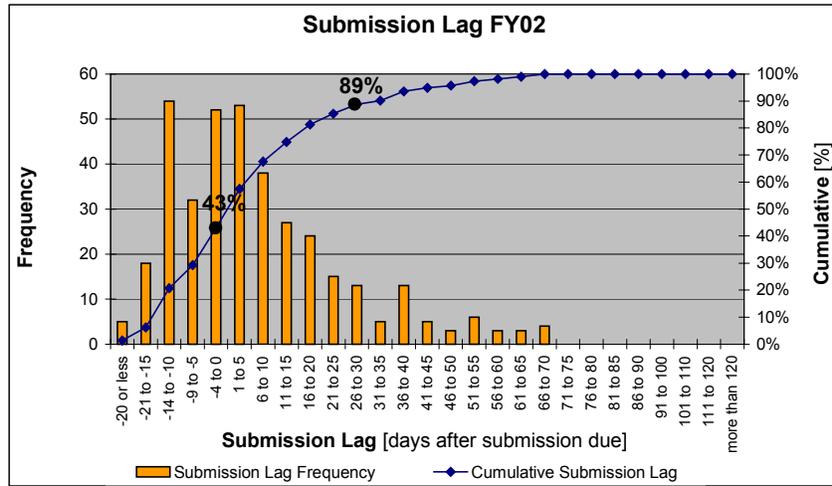
Note: A negative Submission Lag indicates that the invoice was submitted on-time (before the deadline)

Figure 4-2. Submission Lag before (FY02) and after (FY04) CRRAFT
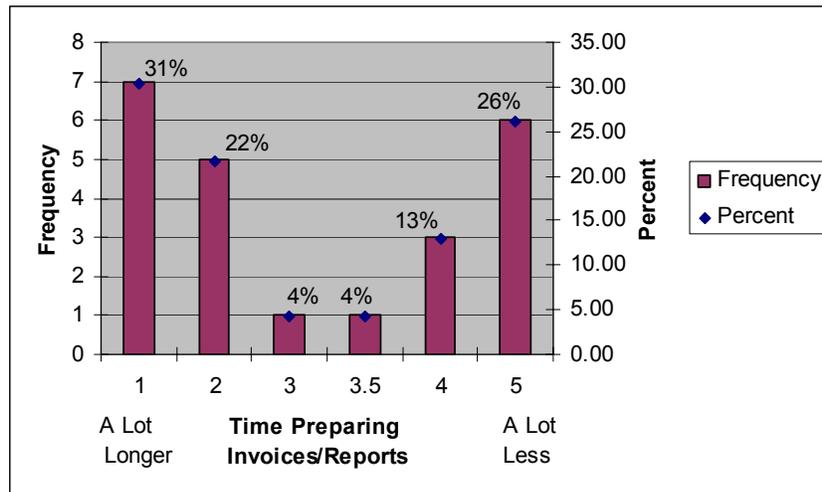
Figure 4-3. Ratings of the Effect of CRRAFT on Time Preparing Invoices/Reports

To investigate why transit agencies had divided opinions, an analysis was done to examine if there were differences in the invoice preparation time ratings based on the number of trips provided in FY04 and type of route service. (The type of funding was also examined but the sample sizes were deemed too small to make meaningful comparisons.) Figure 4-4 shows the ratings as a function of 2004 ridership. A trend line overlaying the graph slopes to the right and has a negative correlation (R=-0.34), indicating that there is an inverse relationship between number of trips and invoice preparation time rating. In other words, the greater the number of trips a transit agency provided the more likely it was to rate invoice preparation times as taking longer using CRRAFT. Or conversely, transit agencies with fewer riders tended to rate invoice preparation times as being less with CRRAFT.
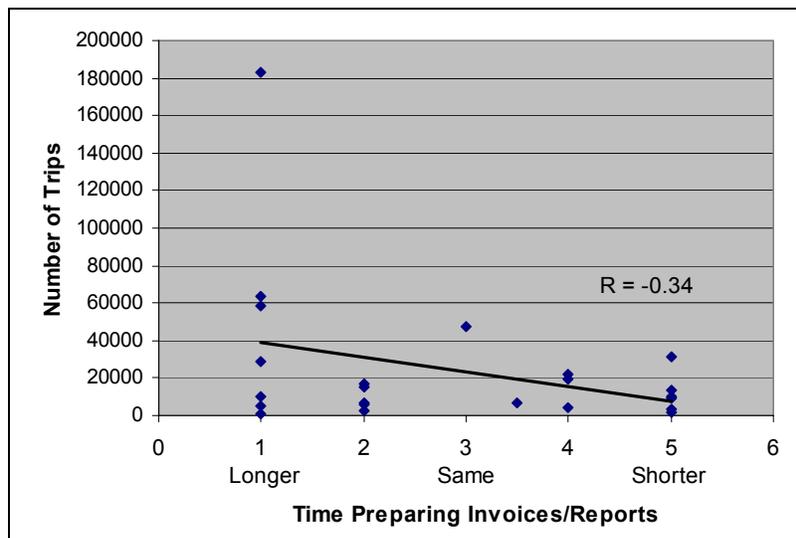
Figure 4-4. Ratings of Time Preparing Invoices for All Transit Agencies

Although the small sample sizes limit the statistical analyses, an analysis was also conducted to investigate whether a relationship existed between invoice preparation ratings and the type of routes (i.e., demand responsive, fixed route, or mixed) a transit agency provided. Examining the survey ratings for invoice preparation time (where one indicates "A lot longer", three indicates "About the same", and five indicates "A lot shorter") as a function of type of route did not explain the differences in invoice preparation time ratings. As shown in Table 4-1 the average invoice preparation time ratings for transit agencies providing demand responsive routes and mixed route service indicates "the time is about the same" (ratings of 2.93 and 2.94, respectively). Further complicating the analysis was the fact that only a single rating (1.00) was available for transit agencies providing fixed route service. However, when transit agency ridership data were included, a trend became evident for transit agencies providing demand response service. Figure 4-5 (a) and (b) shows the invoice preparation time ratings as a function of the number of trips in 2004. The trend line in Figure 4-5 (a) indicates that the greater the number of trips the more an Agency was inclined to rate invoice preparation times as taking longer with CRRAFT (R=-0.52). Although the small sample size makes the results dubious, Figure 4-5 (b) shows an opposite trend for transit agencies providing both fixed-route and demand-response services (R=0.386).

Table 4-1. Average Invoice Preparation Time Ratings by Type of Route

	Demand Responsive	Fixed Route	Both Types of Services
Average Invoice Preparation Time Rating*	2.93	1.00	2.94
Number of Transit Agencies Responding	14	1	8

* Rating between 1 and 5 where 1 indicates "A lot longer", 3 indicates "About the same", and 5 indicates "A lot shorter" time to prepare invoices with CRRAFT.

Discussions with CRRAFT stakeholders seem to support these results. Through the interviews, meetings, and discussions with stakeholders the Evaluation Team learned that in preparing monthly invoices, transit agencies must enter different types of ridership information depending on the type of service they offer to their riders. Agencies providing demand responsive route service must enter information on each rider into CRRAFT to build a log of scheduled pick-ups/drop-offs. The CRRAFT planned schedule is then later reconciled with the actual pick-up/drop-off information. Transit agencies with a fixed-route or both types of services require less data entry. In the case of fixed-route service, agencies are required to enter only totals and not the detailed pick-up/drop-off information.

(a)   (b)
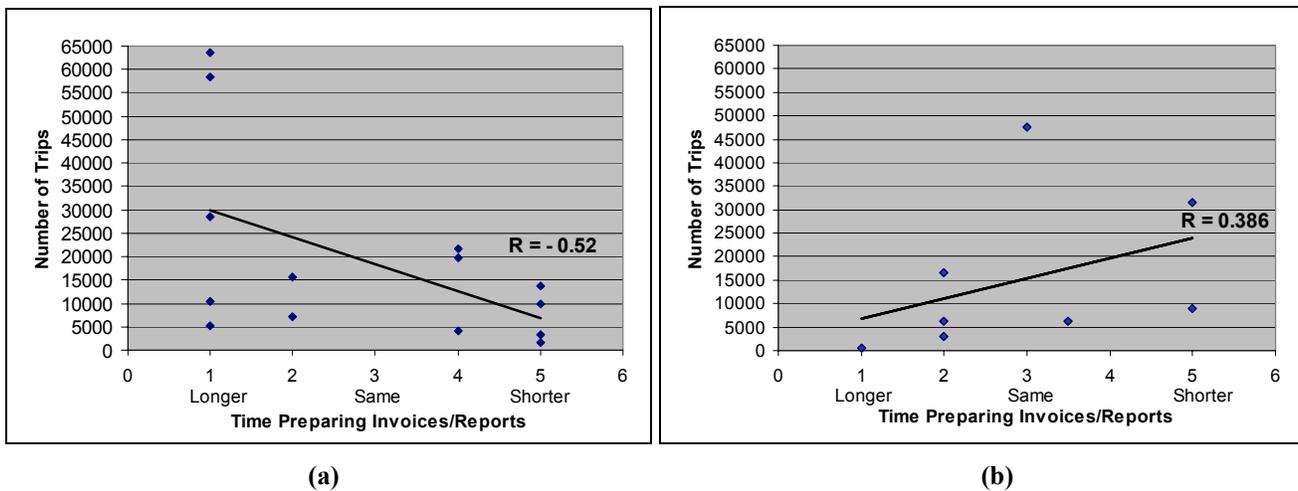
Figure 4-5. Ratings for CRRAFT Invoice Preparation Times for (a) Demand Responsive Only and (b) Mixed Route Service Transit Agencies by Number of Trips

During the interviews and discussions, CRRAFT users also explained that some transit providers are still using and maintaining records in Excel spreadsheets like before they were required to use CRRAFT. As a result, the double record-keeping requires extra resources and may be causing an increase in invoice preparation time and consequently preventing them from submitting invoices on time.

Hypothesis assessment

The analysis of invoice submission dates showed that on average, providers submitted their invoices in FY04 (when CRRAFT had already been implemented) with longer delays than in FY02, which may imply that the use of CRRAFT has not facilitated the preparation of their invoices. The survey and

discussion with transit agencies yielded that transit agencies with higher ridership and with demand responsive service are more likely to find that their invoice preparation time has increased since the implementation of CRRAFT.

The Evaluation Team found that, on average, the use of CRRAFT has not saved transit providers time invoicing and reporting to the PTPB. In fact, transit agencies with higher ridership and demand responsive service may have had the opposite experience and are spending more time preparing invoices after the implementation of CRRAFT.

4.1.2   Hypothesis 2

Use of the system results in funding agencies having faster access to reports.

To assess this hypothesis, the Evaluation Team relied on two questions asked in the survey to transit agencies and in the interviews with NMDOT staff, and the analysis of the actual invoice submission dates. The Submission Lag results presented in the previous section are also indicative of how fast the funding agencies have access to invoices and reports before and after CRRAFT. Funding agencies have access to the information when the invoice and its attached reports are submitted. The funding agencies may observe online the numbers entered by the transit agencies up to some point in the month, but is not until the transit agency finalizes its numbers and submits the invoice that the final figures are known.

As presented in Figure 4-2, the data show that the same proportion of invoices (43%) was submitted on or before the deadline in FY02 and FY04 years. For the remaining 57% that were submitted late in both years, the average delay in FY02 is 18 days while in FY04 is 36 days. These results imply that the funding agencies are not having faster access to invoices and their attached reports, in fact they may be obtaining them with longer delays.

This finding contrasts with the perceptions of NMDOT staff. In the CRRAFT survey for NMDOT users, NMDOT was asked the question "*To what extent do you think the CRRAFT system affects whether these monthly invoices and reports are submitted by the submission dates?*" Using a five-point rating scale (ranging from "With CRRAFT, a lot fewer reports are submitted by the submission date" to "With CRRAFT, a lot more reports are submitted by the submission date"), NMDOT users felt that with CRRAFT more reports were submitted by the submission dates. NMDOT estimated that before CRRAFT was implemented, about 80% of invoices were submitted by the submission date. Now with the implementation of CRRAFT about 95% of the invoices were being submitted on time. Comparing these perceptions with the results of the data analysis (i.e. only 43% of the invoices in both years were submitted on time), it appears that the staff at the NMDOT were optimistic about the impact of CRRAFT on on-time submission of invoices.

Two similar questions were also posed to the transit agencies. Although their estimates of percentages of invoices submitted on-time does not match the actual number found through the data analysis, their general perception that reports were submitted with longer delay after CRRAFT seems to support the results obtained by the data analysis.

In the transit agency survey, users were asked the question "*To what extent do you think the CRRAFT system affects your ability to submit the monthly invoices and reports by the submission dates?*" Using a five-point rating scale (ranging from "A lot less likely to submit by the submission date with CRRAFT" to "A lot more likely to submit by the submission date with CRRAFT"), transit agency users were divided on the impact of CRRAFT on submitting invoices and reports by the submission dates.

The survey results shown in Figure 4-6 shows that approximately a third of the respondents thought CRRAFT made it less likely to submit an invoice on-time, a third thought it took about the same amount of time, and a third thought CRRAFT made it more likely to submit by the due date.
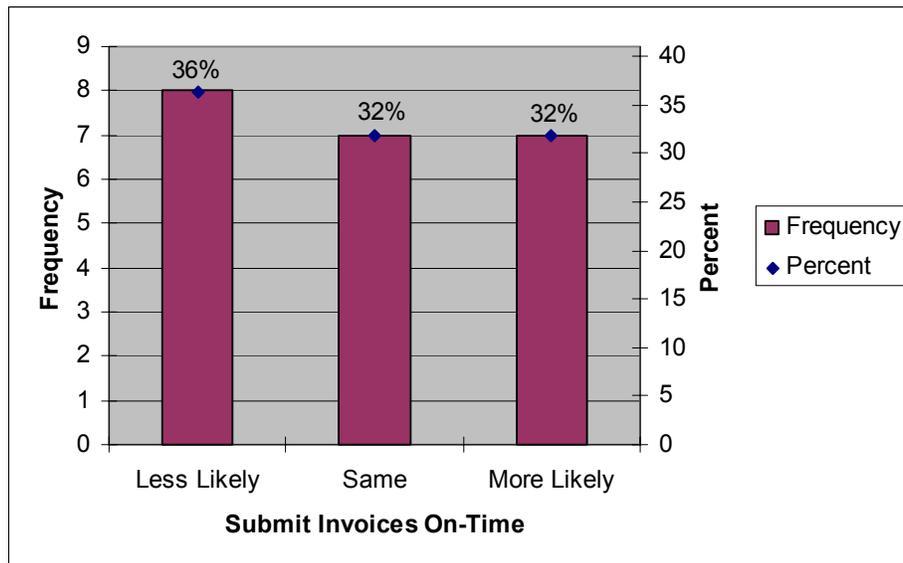
Figure 4-6. Ratings of the Effect of CRRAFT on Ability to Submit Invoices by Submission Date

The CRRAFT users were also asked to estimate the percentage of time invoices were submitted on time both before and after CRRAFT. They were asked:

> "*What percentage of time do you think these reports were submitted by the submission date before and after you started using CRRAFT?*
>
> *Before CRRAFT, reports were submitted on time about ___ % of the time*
>
> *After CRRAFT, reports were submitted on time about ___ % of the time*"

Twenty transit agencies provided both before and after CRRAFT percentage estimates. Based on these estimates, Before CRRAFT, reports were submitted on time about 85% of the time. After CRRAFT, reports were submitted on time about 76% of the time.

Hypothesis assessment

Despite the perceptions at NMDOT that more invoices were submitted on-time after CRRAFT implementation, the data show that, in fact, the same percentage of invoices was submitted on-time and that those invoices that are late, are being submitted with longer delays. The perceptions at the transit agencies seem to support the results of the data analysis.

The Evaluation Team found that on average, the use of CRRAFT has not resulted in funding agencies having faster access to reports. With the online system however, funding agencies may be able to monitor the numbers that transit agencies are entering into the system throughout the month, but some agencies seem not to be using the system on a day-to-day basis. Instead, they just enter the data required at the end of the month to submit the invoice.

4.1.3   Hypothesis 3

Reports created by the system are accurate and reliable. Use of the system reduces the time funding agencies spend checking and correcting reports, and reduces money incorrectly allocated or invoiced.

To assess this hypothesis, the Evaluation Team relied on the analysis of the quantitative data regarding the number of errors encountered in invoices, the time spent solving those errors, and the answers to two questions asked in the survey to transit agencies and in the interviews with NMDOT staff.

The PTPB receives the invoices submitted by the transit providers and they often find errors or missing backup information. In that case, the PTPB spends some time solving the problem with the invoice and in several cases a new invoice must be submitted. This review time was calculated as follows:

Review Time = Final Invoice Submission date – Initial invoice submission date

In some cases, when the initial invoice is correct, there is no Review Time. The Evaluation Team reviewed the Invoice Submission Logs to analyze the notes recorded on them regarding errors and problems with the invoices. The Evaluation Team found that the overall number of problems with initial invoices was significantly reduced from 20% of the cases in FY02 to 11% of the cases in FY04.

During the Preliminary Assessment and Evaluation Plan stages of this project, the Evaluation Team's understanding was that the CRRAFT system would not allow incorrect invoices to be submitted. Therefore, it was assumed that there would not be re-submissions using the CRRAFT system, which would provide the basis for comparison to FY02 data. However, as mentioned before, it was found that still 11% of the invoices were submitted with some type of problem and required the attention of the PTPB to resolve it.

The most common problems found with the invoices were those that led to invoice re-submissions, such as charges to line items with no balance, which required a budget adjustment. Another common problem was the lack of back up information, missing ridership reports, and missing quarterly operations report. In FY02, 55% of the problems with invoices required an invoice re-submission and 45% were other types of problems, mostly missing information. In FY04, those numbers changed to 67% and 33%, respectively (see

Table 4-2).

In addition to a lower number of invoices with problems, the Review Time was also reduced in FY04. The average number of days required to finalize an invoice with problems was 33 in FY02 (standard deviation: 25 days) and 9 in FY04 (standard deviation: 5 days).

Table 4-2. Summary of Invoices with Problems Before and After CRRAFT

Item	FY02		FY04	
	No. of invoices	% of Total	No. of invoices	% of Total
Total Invoices with problems	75	20%	42	11%
	No. of invoices	% of invoices with problems	No. of invoices	% of invoices with problems
Invoices that required re-submission (e.g. budget adjustment required)	41	55%	28	67%
Invoices with other problems (e.g. missing back-up information)	34	45%	14	33%

The results obtained from the data analysis were, to some extent, supported by the answers obtained from the NMDOT and transit agencies during the surveys and interviews. In the CRRAFT survey for NMDOT users, NMDOT was asked the question "*To what extent do you think the CRRAFT system affects the accuracy of the monthly reports that are submitted?"* Using a five-point rating scale (ranging from "A lot less accurate with CRRAFT" to "A lot more accurate with CRRAFT"), NMDOT users indicated that they thought using CRRAFT made the submitted reports a lot more accurate. NMDOT estimated that Before CRRAFT was implemented, up to about 60% of the reports required corrections. However, after use of CRRAFT became mandatory only about 10% of reports required corrections. As a result, NMDOT users estimated that because of CRRAFT, the time spent checking and correcting reports has gone from approximately one week per month before CRRAFT down to about one hour per month with CRRAFT.

These percentages, however, contrast with the percentages obtained by the data analysis, which yielded that before CRRAFT about 20% of the invoices were submitted with errors, instead of the 60% estimated by NMDOT users. This overestimation for FY02 may be due to the fact that although only 20% of the invoices were submitted with errors, solving the problems consumed a lot of time and resources and it may have seemed that the number of invoices with problems was higher.

Transit agency users were also asked about the accuracy and problems with the invoices, and their answers point to the same direction of the data analysis and NMDOT perspectives. In the transit agency survey, users were asked the question "*To what extent do you think the CRRAFT system affects the accuracy of the monthly reports that are submitted?"* Using a five-point rating scale (ranging from "A lot less accurate with CRRAFT" to "A lot more accurate with CRRAFT"), transit agency users were divided on the impact of CRRAFT on the accuracy of the submitted invoices.

The survey results shown in Figure 4-7 shows that half of the respondents thought CRRAFT made the monthly reports more accurate, a little over a third thought CRRAFT made them less accurate, and about 14% thought invoice accuracy was about the same.
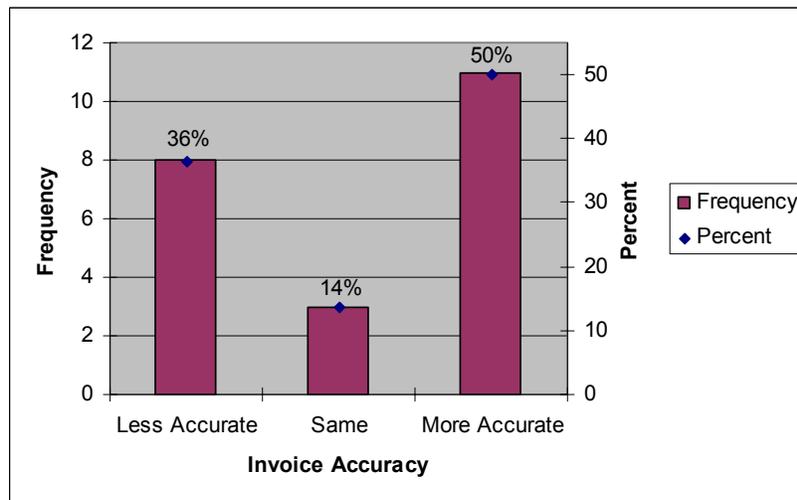
Figure 4-7. Ratings of the Effect of CRRAFT on Invoice Accuracy

The transit agencies were also asked to estimate the percentage of time submitted invoices required corrections both before and after CRRAFT. They were asked:

> *"What percentage of time, before and after you started using CRRAFT, did submitted reports require later revisions to correct problems with the reports?*
>
> *Before CRRAFT, reports required corrections about ____ % of the time*
>
> *After CRRAFT, reports required corrections about ____ % of the time"*

Nineteen transit agencies provided both before and after CRRAFT percentage estimates. The estimates were nearly identical, with transit agencies reporting that reports required corrections about 15.7% of the time Before CRRAFT and about 15.4% of the time After CRRAFT.

Two additional comparisons were made to show user estimates of how CRRAFT affected the accuracy of invoices submitted with CRRAFT. Figure 4-8 (a) and (b) shows before and after percentages for users that indicated (a) that invoices were less accurate with CRRAFT and (b) that invoices were more accurate with CRRAFT.

Hypothesis assessment

The data analysis showed that the number of problems with submitted invoices and the time required to solve them was reduced from FY02 to FY04. The surveys and interviews with both, Transit and funding agencies seem to support this finding.

The Evaluation Team found that the use of CRRAFT has resulted in more accurate invoices and has saved time from funding agencies during the reviewing process. The fact that transit agencies know at all times their remaining balance in each line item seems to have helped reduce the number of incorrect amounts on invoices.
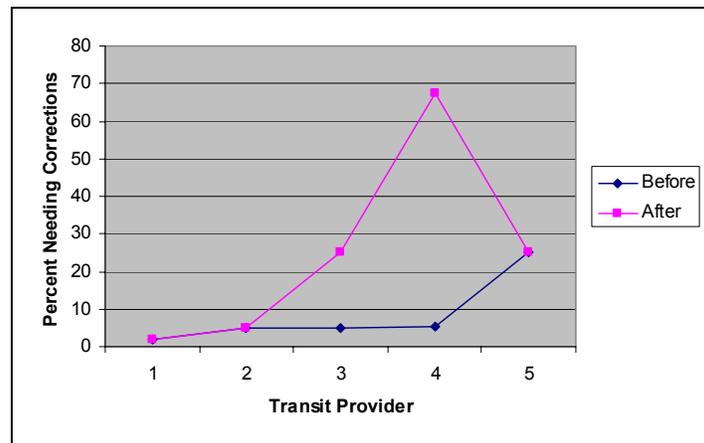
(a) Users indicating invoices were less accurate
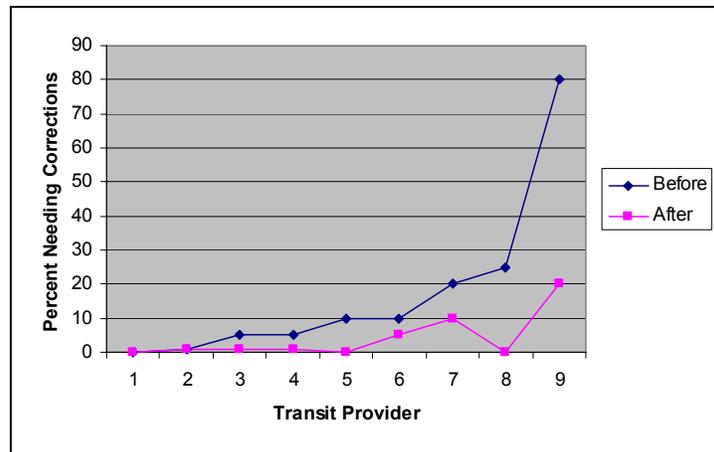
(b) Users indicating invoices were more accurate

Figure 4-8. Percentages of invoices needing corrections

4.1.4   Hypothesis 4

Use of the system reduces the time funding agencies spend researching and collecting information.

The assessment of this hypothesis was based on the analysis of the quantitative data regarding the time spent by the PTPB reviewing and approving invoices, and questions asked during the interview with staff from NMDOT's PTPB.

Once a correct invoice has been received by the PTPB, an internal approval process takes place at the Bureau. The time required for this approval was calculated as:

Approval Time = 3rd level approval date – Final Invoice Submission date

Figure 4-9 shows the frequency distribution of the approval time in FY02 and FY04. As observed, there was a significant decrease in the time required to process and approve final invoices in FY04 with respect to FY02. While in FY04, 80% of the invoices were processed and approved within 12 days of their submission, in FY02 within 12 days of submitted only 44% of the invoices had been

processed. The average time to process and approve the invoices by the PTPB was 16 days in FY02 and 9 days in FY04.

These results, obtained from the data analysis, were supported by the answers obtained from staff at the PTPB.
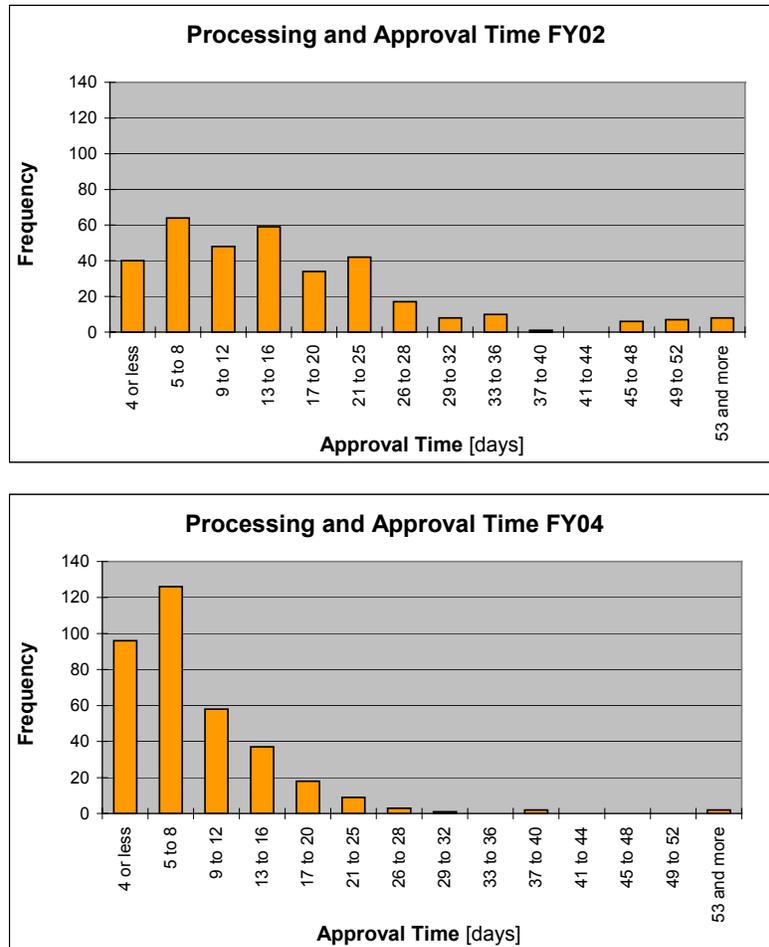
Figure 4-9. Frequency distribution for Approval Time in FY02 and FY04

In the CRRAFT survey for NMDOT users, NMDOT was asked the question "*To what extent do you think the CRRAFT system affects the time you spend reviewing and verifying the monthly invoices and reports that are submitted by transportation providers?*" Using a five-point rating scale (ranging from "It takes a lot longer with CRRAFT" to "It takes a lot less time with CRRAFT"), NMDOT users indicated that using CRRAFT took a little bit to a lot less time to review and verify the transit agency invoices and reports. NMDOT estimated that before CRRAFT was used, each error-free invoice took about 15-20 minutes to review, and now with CRRAFT it takes about 10 minutes for each invoice. Despite this efficiency, the NMDOT CRRAFT users stated during interviews that CRRAFT could still be improved to help both NMDOT and transit agency users. One such improvement mentioned by

NMDOT was the ability to use CRRAFT to process capital invoices instead of doing them manually. Other examples of suggested improvements are described in Section 4.6.2.

The time reduction per invoice seemed to be caused by the fact that, if an invoice is submitted correctly, all the information required by the PTPB to approve is stored in the CRRAFT system and they seldom have to contact the agencies to request for back-up information. If an invoice is incorrect, the fact that both agencies (i.e. transit and funding agencies) can view and manipulate the data online results in faster adjustments of invoices.

Hypothesis assessment

The data analysis shows that the PTPB staff has been able to process more invoices within a shorter period of time after the implementation of CRRAFT. Based on the interviews with the PTPB staff, this reduction seems to be linked directly with the CRRAFT implementation because the system provides them with consistent invoices that have back up information stored in the system. Hence, the Evaluation Team found that the use of CRRAFT has in fact reduced the time funding agencies spend researching and collecting information to approve invoices.

4.2   The Impact of CRRAFT on Trip Scheduling

This subsection of the report focuses on the extent to which CRRAFT has affected the efficiency of scheduling a trip and the efficiency of operating the trips scheduled with CRRAFT for demand responsive service. Hypotheses five and six are associated with this impact.

4.2.1   Hypothesis 5

Use of the system reduces the overall time required for transit providers to schedule demand response trips

The assessment of this hypothesis was based on the analysis of questions asked to the transit agencies during the surveys. In the transit agency survey, users were asked the question "*To what extent do you think the CRRAFT system affects the time spent scheduling demand-response trips?*" Using a five-point rating scale (ranging from "A lot longer with CRRAFT" to "A lot less time with CRRAFT", where a three indicates "The time required is about the same with and without CRRAFT"), transit agency users were divided on the impact of CRRAFT on the time spent scheduling demand-response trips, but inclined towards an increase in the scheduling time after CRRAFT's implementation.

In Figure 4-10, the survey results show that 70% of the transit agencies (14 of 20 respondents) indicated that scheduling demand-response trips took longer using CRRAFT. Five percent (or one transit agency which provided multiple ratings that averaged 3.5 out of 5) indicated that scheduling demand-response trips was about the same or a little bit less. Twenty-five percent (five out of twenty) of transit agencies indicated that scheduling demand response trips took a little less/ a lot less time.

The transit agencies in the "scheduling demand response trips took longer" group tended to consist of larger transit agencies (in terms of the number of trips provided in 2004). The average number of trips for this group was about 17,900 trips in 2004. In contrast, the transit agencies in the "scheduling demand response trips took less time" group tended to be smaller agencies providing fewer trips than

the "took longer" group. The average number of trips for the "took less time" group was about 7,600 trips in 2004.
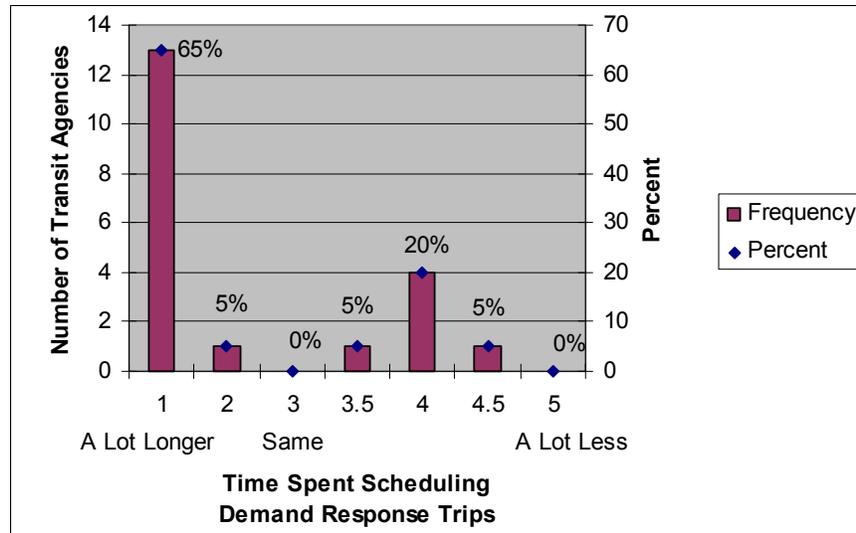
Figure 4-10. Ratings of the Effect of CRRAFT on Time Spent Scheduling Demand Response Trips

The CRRAFT users were also asked to estimate the time required to schedule demand responsive trips. They were asked "*How much time (minutes per day) did it take you to schedule demand responsive trips before you started using the CRRAFT system, and how long does it take you now?*" Average times were computed by the type of funding program a transit agency used with CRRAFT (i.e., 3037, 5311, or both) and it was found that scheduling demand responsive trips was reported to take about twice as long with CRRAFT. The average times (in minutes per day) from the 16 transit agencies that provided responses to both questions are shown in Table 4-3.

Table 4-3. Average Time (in minutes per day) to Schedule Demand Response Trips Before and After CRRAFT

Category	Type of Funding			Average
	3037	**5311**	**Both**	
Before CRRAFT	72	35	176	104
After Using CRRAFT	196	66	315	217

Eleven of the 14 respondents from the "scheduling demand response trips took longer" group also provided estimates of the time required to schedule demand responsive trips. Figure 4-11 shows that although the minutes per day vary by transit agency, in nearly all the cases, time estimates for after CRRAFT were nearly twice as long as before CRRAFT.

All five of the respondents from the "scheduling demand response trips took less time" group also provided estimates of the time required to schedule demand responsive trips. Figure 4-12 shows the estimated minutes per day transit agencies reported saving using CRRAFT. Note, the range for the Minutes Per Day scale in Figure 4-12 is considerably less than in Figure 4-11. This is attributed to the

transit agencies in Figure 4-12 having fewer trips in 2004 (than those agencies included in Figure 4-11) therefore they spent less time per day scheduling demand response trips.
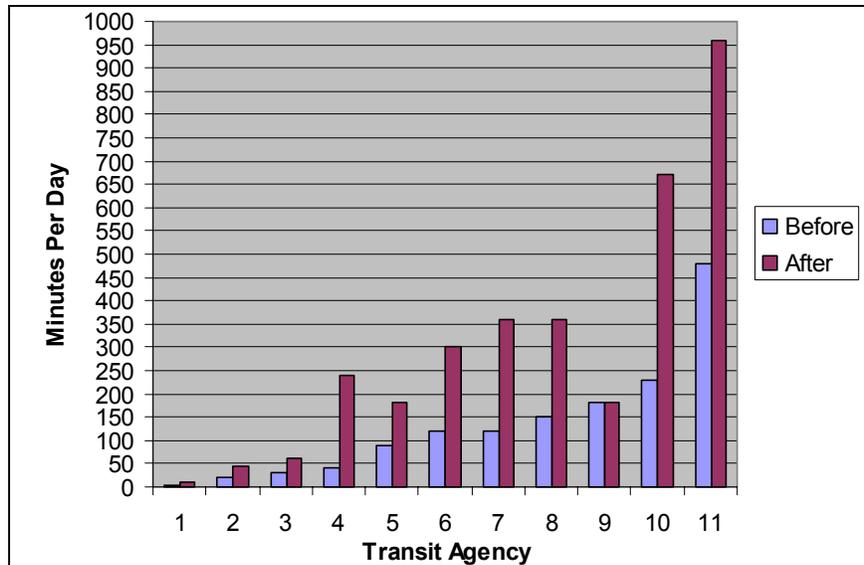
Figure 4-11. Scheduling Time Estimates from "CRRAFT Took Longer" Group
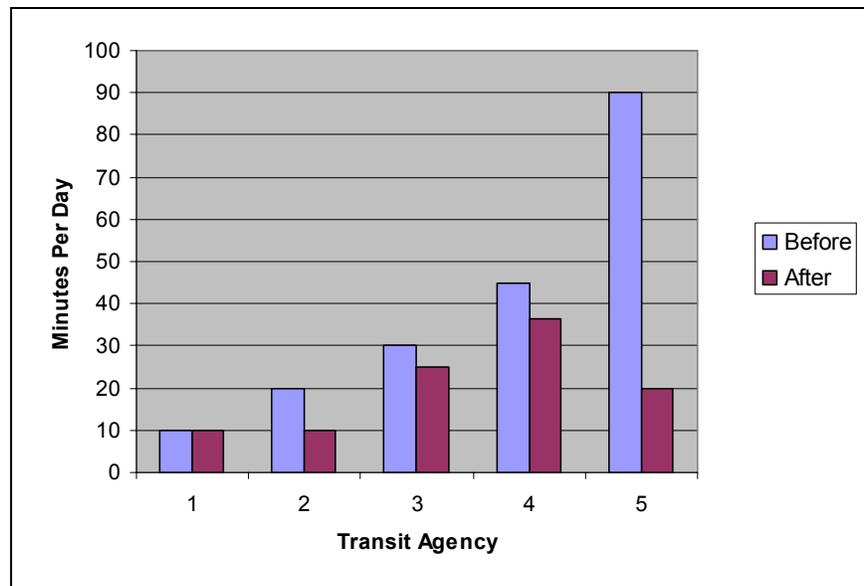
Figure 4-12. Trip Scheduling Time Estimates from "CRRAFT Took Less Time" group

Hypothesis assessment

The analysis of transit agency perceptions shows that for a majority of users (70 percent or 14 of 20) scheduling demand-response trips took longer using CRRAFT. These CRRAFT users, on average,

indicated that the amount of time spent scheduling trips takes approximately twice as long with CRRAFT. Those transit agencies that thought CRRAFT took less time to schedule demand response trips tended to be smaller in that they provided fewer trips. The transit agency interviews supported these findings in that the larger the number of trips a transit agency provides, the greater the burden in entering demand response trips into the CRRAFT scheduler module.

The use of CRRAFT has increased the time to schedule demand response trips for a majority of transit agencies and the impact is particularly evident for Agencies entering schedule data for many trips.

4.2.2   Hypothesis 6

Use of the system results in more efficient schedules for demand response trips

To assess this hypothesis, the Evaluation Team relied on the analysis of standard operating performance metrics data (e.g. passengers per revenue hour) before and after CRRAFT and answers to one question asked of the transit agencies during the surveys and follow up discussions with them.

More efficient schedules would be reflected in performance metrics such as passengers per revenue hour, passengers per revenue mile, passengers per vehicle trip, and ultimately cost per passenger. Due to the data problem with vehicle miles (see Section 3.3.1 - Monthly Invoices for FY02 and FY04) the passengers per revenue mile analysis was not conducted. In addition, a vehicle occupancy analysis (passengers per vehicle trip) was not conducted either because no data on vehicle trips were available—only passenger trips were recorded. Hence, for this analysis we only considered passengers per revenue hour and cost per passenger to determine the impact on schedule efficiency.

The average number of passengers transported per revenue hour operated decreased slightly from FY02 to FY04, from 3.8 to 3.6[6]. However, the cost per passenger decreased from $24 in FY02 to $16 in FY04 for passengers funded under the 3037 program and from $6 in FY02 to $5 in FY04 for passengers funded under the 5311 program. For a more detailed analysis on operating costs, see Section 4.5. It is difficult to draw a conclusion in terms of the efficiency of the schedules based on these results because while the average passengers per hour decreased slightly, the cost per passenger decreased. Also, the cost reduction may have been caused by factors other than a more efficient schedule. To complement this analysis the evaluation team explored the answers of the agencies regarding the efficiency of the schedules.

In the transit agency survey, users were asked the question "*To what extent do you think the CRRAFT system affects the efficiency of the scheduled demand-response trips?.*" Using a five-point rating scale (ranging from "Trips scheduled with CRRAFT are a lot less efficient" to "Trips scheduled with CRRAFT are a lot more efficient"), transit agency users were divided on the efficiency of the trips scheduled with CRRAFT.

The survey results shown in Figure 4-13 shows that about a third of the respondents thought CRRAFT made it less efficient, a third thought CRRAFT made it more efficient, and about a third thought efficiency of trips was about the same.

---

[6] Only 5311 is included. 3037 operations do not record vehicles hours or vehicle miles.

No other discriminating factor could be identified to explain the distribution of these ratings. The association between the efficiency of scheduled trips rating was not found to be related to number of trips, type of service (demand response, fixed, mixed), or type of funding (3037, 5311, or both).

The fact that at the time of our evaluation (December 2004 to May 2005) CRRAFT did not have a schedule module which developed a route plan seems to support the finding that 7 of 19 Agencies thought that efficiency was the same both before and after CRRAFT.

For those users indicating CRRAFT made it less efficient, follow-up interviews, survey comments, and anecdotal information seem to suggest that some users may have been referring to particular aspects of the CRRAFT schedule module, for example, the CRRAFT Daily Driver Log (paper schedule) developed by the dispatcher for use by the drivers. Often the Daily Driver Log used a different format and did not contain the same information that had been previously used by the Agency. As a result the CRRAFT schedule made it more difficult for drivers to find specific information or make adjustments (like adding a trip) to the CRRAFT printed schedule. Several Agencies stated they no longer used the Daily Driver Log and had reverted back to their original method of developing paper schedules.

For users indicating that CRRAFT made it more efficient, it may be the case that efficiency was improved for Agencies that provide fewer trips, as four of these six Agencies provided a relatively small number of trips (average of 4,312 trips in 2004 versus 19,325 trips for those indicating CRRAFT made it less efficient).
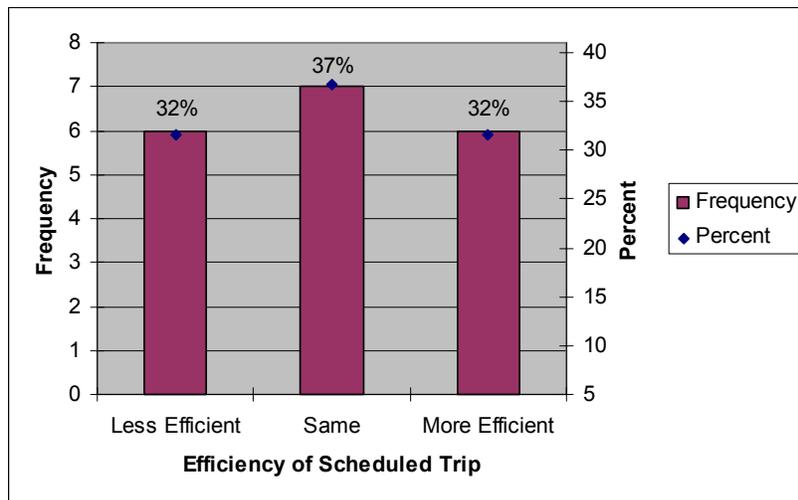
Figure 4-13. Ratings of Demand Responsive Trip Scheduling Efficiency With CRRAFT

Hypothesis assessment

At the time of our evaluation (December 2004 to May 2005) CRRAFT did not have a schedule module which developed a route plan. Consequently, it is not unexpected that transit agencies had mixed perceptions of the efficiency of CRRAFT scheduled trips. Based on the interviews, it seems reasonable to assume that, without a scheduler that develops a route plan, CRRAFT most likely did not have much of an effect on the efficiency of scheduled trips. This conclusion appears to be supported by

the quantitative analysis of performance metrics, which shows a slight decrease in the average number of passengers per hour and a reduction on the cost per passenger.

The Evaluation Team concludes that for most users, CRRAFT did not have a positive impact on scheduling demand-responsive trips. The operating efficiency of the scheduled service may have improved only for a few smaller transit agencies.

4.3   The Impact of CRRAFT on Trip Authorization (Hypothesis 7)

Hypothesis 7 - Use of the system reduces the number of unauthorized trips

The assessment of this hypothesis was based on the analysis of the answers to questions asked to the transit agencies and NMDOT during the surveys and interviews.

NMDOT users were asked to provide an estimate of the number of unauthorized trips both for before and after CRRAFT. They were asked the question:

> *"How many unauthorized trips per month do you think were made by transportation providers before and after CRRAFT?*
>
> *Before CRRAFT, the number of unauthorized trips was ___ trips per month*
>
> *After CRRAFT, the number of unauthorized trips was ___ trips per month"*

CRRAFT users at NMDOT stated that without a detailed audit there was no way to determine the number of unauthorized trips. However, NMDOT estimated that Before CRRAFT was used approximately 40% of the trips per month were misclassified, and now with CRRAFT, misclassified trips were down to about 5% per month.

A similar question was asked to transit agencies: "*To what extent do you think the CRRAFT system affects the number of unauthorized trips that are taken?."* Using a five-point rating scale (ranging from "Unauthorized trips occur a lot more often with CRRAFT" to "Unauthorized trips occur a lot less often with CRRAFT" where a three indicates "CRRAFT has little effect on the number of unauthorized trips"), transit agency users varied in their opinions on the impact of CRRAFT on the number of unauthorized trips. The survey results shown in Figure 4-14 shows that although responses ranged from "A lot more often" to "A lot less often", about 40 percent of respondents indicated that CRRAFT has little or no effect on the number of unauthorized trips.

In addition to the survey and as stated in the Evaluation Plan, the HSD-ISD Management Evaluation was also reviewed to help determine the number of unauthorized trips. This Management Evaluation was conducted in June 2002 including an audit of nine transit providers. The section on quarterly fiscal reporting included documentation of discrepancies between what providers billed NMSHTD and what they were reimbursed. These discrepancies were explained in a letter from the NMSHTD PTPB to the HSD in June 21, 2002. Based on those explanations, the Evaluation Team concluded that the agencies involved were rightfully reimbursed, thus there were no unauthorized trips during that period.
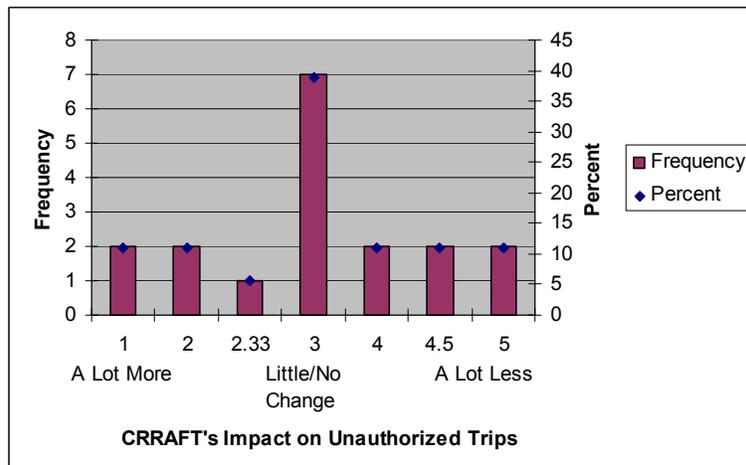
Figure 4-14. Ratings of the Effect of CRRAFT on Number of Unauthorized Trips

Hypothesis assessment

Transit agencies had a wide range of opinions on the effect of CRRAFT on the number of unauthorized trips—25% thought that there were more unauthorized trips, 40% thought that CRRAFT had little or no impact on the number of unauthorized trips, and 35% thought that the number of unauthorized trips was less after CRRAFT's implementation. In addition, NMDOT users felt that without a more detailed audit it was impossible to determine the number of unauthorized trips before or after CRRAFT implementation. Therefore, we conclude that CRRAFT did not have a clear and decisive impact on the number of unauthorized trips.

4.4   The Impact of CRRAFT on Vehicle Maintenance (Hypothesis 8)

Hypothesis 8 - Use of the system reduces number of in-service mechanical breakdowns

In the transit agency survey, users were asked the question "*To what extent do you think the CRRAFT system affects the number of in-service vehicle mechanical breakdowns?*" Using a five-point rating scale (ranging from "CRRAFT results in a lot more vehicle breakdowns" to "CRRAFT results in a lot fewer vehicle breakdowns"), the majority (85%) of transit agency users indicated that CRRAFT had no effect on the number of vehicle breakdowns. These survey results are depicted in Figure 4-15.
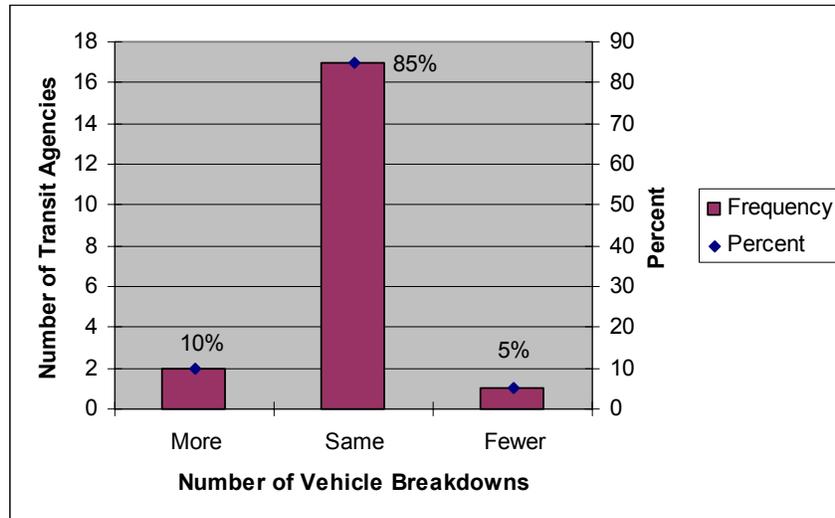
Figure 4-15. Ratings of CRRAFT Impact on Vehicle Breakdowns

Hypothesis assessment

The majority of transit agencies indicated that CRRAFT has no effect on the number of vehicle breakdowns. Therefore, we conclude that CRRAFT did not have an impact on the number of in-service vehicle breakdowns.

4.5   The Impact of CRRAFT on Operating Efficiency and Costs (Hypothesis 9)

This subsection of the report discusses the effect CRRAFT has had on transit providers' operating efficiency and operating cost. It focuses on potential changes in productivity (number of passengers per revenue mile or revenue hour) and cost effectiveness (operating cost per revenue mile or revenue hour). Hypothesis 9 is associated with this impact.

Hypothesis 9 - Use of the system reduces the operating cost of transit services.

To assess this hypothesis, The Evaluation Team relied on the analysis of the operating costs and characteristics obtained from the FY02 and FY04 invoices, the answer to one question asked to the transit agencies during the surveys, and follow-up discussions with them.

In the transit agency survey, users were asked the question "*To what extent do you think the CRRAFT system affects the total operating cost of transit services?*" Using a five-point rating scale (ranging from "CRRAFT results in a lot higher operating costs" to "CRRAFT results in a lot lower operating costs"), and a sixth choice "I Don't Know", five of the 24 transit agency users indicated that they did not know how CRRAFT affected total operating cost of transit services.

In Figure 4-16, 47% (9 of 19) transit agencies indicated that they thought CRRAFT resulted in higher operating costs. On the other hand, 16% (3 of 19) transit agencies indicated that CRRAFT resulted in lower operating costs. The remaining 37% (7 of 19) indicated that CRRAFT has no significant effect on operating costs.
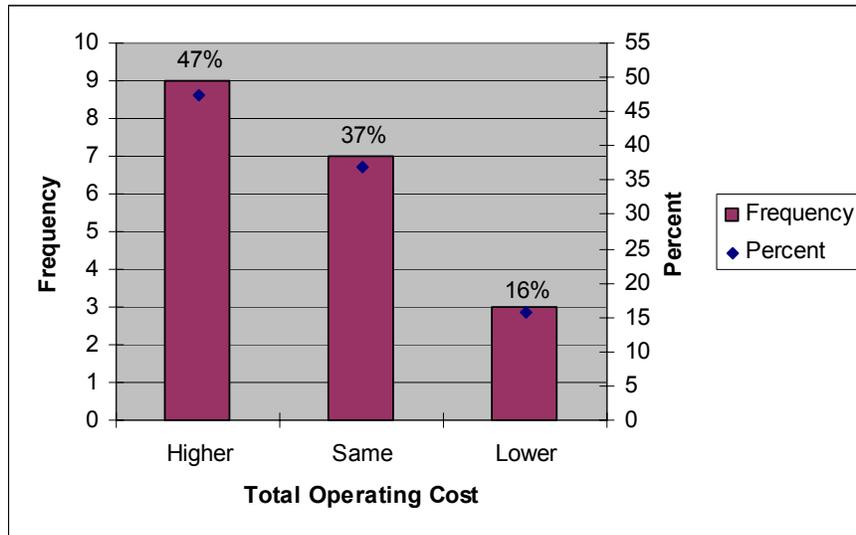
Figure 4-16. Ratings of CRRAFT Impact on Operating Cost

Additional analyses were conducted to investigate whether there was an association among the ratings of CRRAFT's impact on operating cost and the number of trips, type of service (i.e., demand responsive, fixed route, or mixed), and type of funding (3037, 5311, or both) provided by transit agencies. The number of trips and type of service showed a trend for transit agencies providing demand response service. Figure 4-17 shows the CRRAFT impact on operating cost ratings as a function of the number of trips in 2004 for agencies providing demand response service. The trend line indicates that the greater the number of trips, the more an Agency was inclined to rate that CRRAFT results in higher operating costs (R=-0.30).

Due to the small sample sizes, no other associations between Total Operating Cost rating and type of service (demand responsive, fixed route, or mixed) and funding (Section 3037, 5311, or both) could be identified to explain the distribution of these ratings.
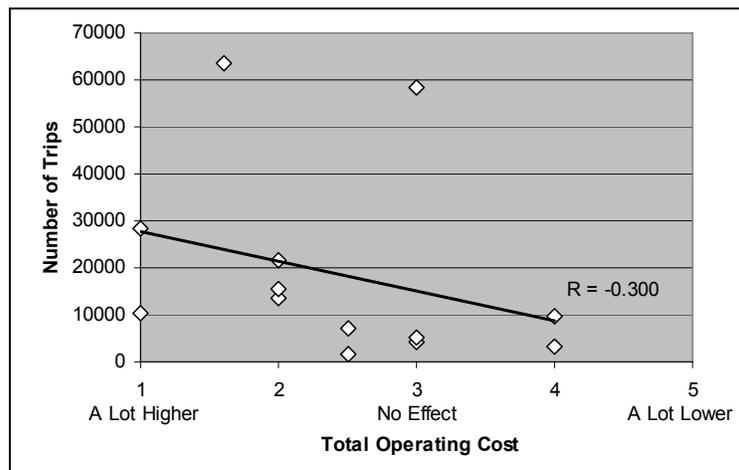
Figure 4-17. Ratings of CRRAFT Impact on Operating Cost by Number of Trips for Demand Response Transit Agencies

In addition to the answer to the survey question to capture the perspectives of transit agencies, the Evaluation Team analyzed the actual operating costs and operating characteristics of the providers. The FY02 data were obtained from the invoices kept on file at the PTPB. The FY04 data were obtained from CRRAFT in December 2004. Operating costs include:

- Salaries and benefits of supervisors, drivers, dispatchers, and mechanics;
- Vehicle maintenance expenses such as fuel, oil, tires, painting, and replacement parts;
- Shop maintenance and supplies;
- Cell phones;
- Licenses and fees; and
- Staff training.

Figure 4-18 shows the total operating costs invoiced by the providers during FY02 and FY04, ordered by the number of trips of the providers in FY04.
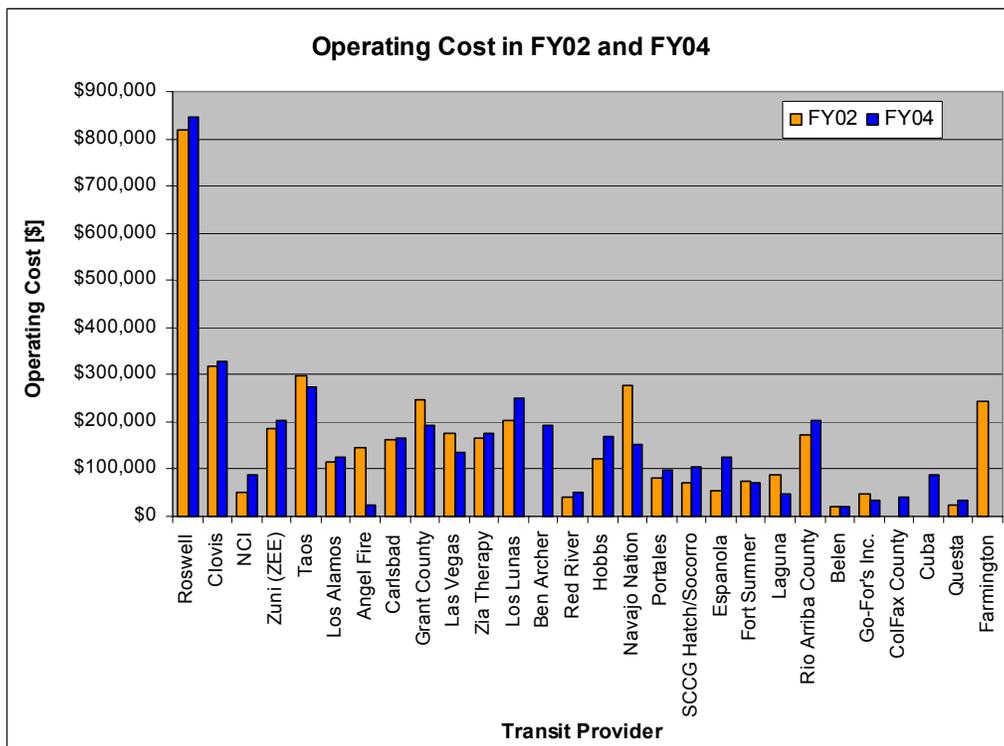
Note: Transit providers in descending order by number of trips

Figure 4-18. Operating Costs

The previous figure does not reflect a particular pattern regarding the difference in operating costs from FY02 to FY04. Twenty-four of the 28 providers had operations during both years. Sixteen of those 24 providers saw an increase in their operating costs, and the remaining eight reduced their operating costs. The total operating cost for all agencies in FY02, including 3037 and 5311, was $4.20 million and in FY04 was $4.24 million. The changes in operating costs may be explained by the use of CRRAFT or other factors including changes in ridership and changes in their operating performance.

Figure 4-19 shows the percentage change in operating cost and in ridership from FY02 to FY04 for the 24 agencies operating during both years. Three general cases are observed:

- An increase/decrease in operating costs with a corresponding and similar increase/decrease in ridership (e.g. Roswell, Clovis, Taos, Angel Fire, Carlsbad, Grant County, Las Vegas, Red River, Hobbs, Navajo Nation, and Laguna).

- An increase/decrease in operating costs with a corresponding increase/decrease in ridership but of a different order of magnitude[7] (e.g. NCI, Zia Therapy, Los Lunas, SCCG Hatch/Socorro, Go Fors, and Questa)

- An increase/decrease in operating costs with an opposite decrease/increase in ridership (e.g. Zuni, Los Alamos, Portales, Espanola, Fort Sumner, Rio Arriba County, and Belen).

The last two cases, which include the majority of the providers, suggest that changes in other aspects of the service may be driving the changes in ridership and operating costs. For example, increased congestion in the service area may result in an increase in operating costs and reduction in ridership due to a less reliable and slower service. During follow-up discussions, some providers were asked about the extreme changes in service characteristics between FY02 and FY04. Errors in the CRRAFT database were most commonly mentioned as the causes for the extreme figures in FY04.
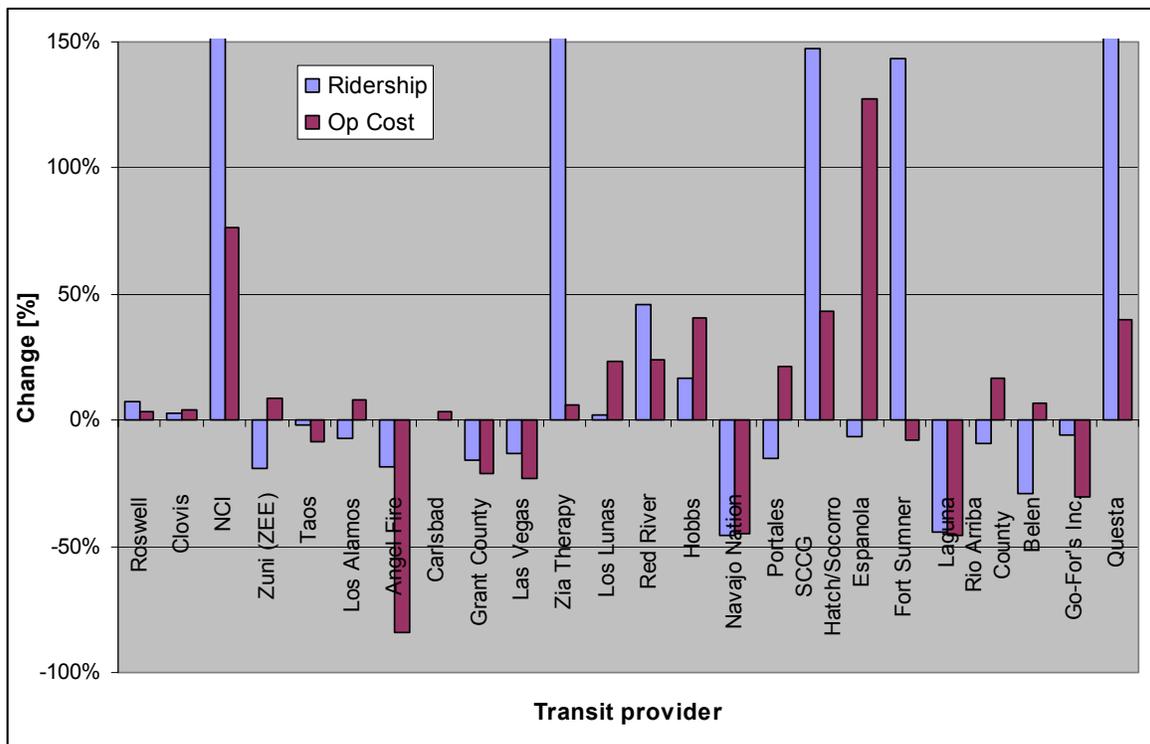
Note: a. Ridership change values for NCI: 5773%, Zia Therapy: 253%, Questa: 400%.
          b. Transit providers in descending order by number of trips

Figure 4-19. Change in Operating Cost and Ridership between FY02 and FY04

---

[7] The percent changes were different by at least one digit.

The relationship between operating costs and ridership can also be seen in terms of the operating cost per trip in FY02 and FY04, which is shown in Figure 4-20. Note that there does not seem to be a relationship between operating costs, ridership, and their changes between FY02 and FY04. In addition, neither seems to be correlated with the size of the transit provider. Hence, other "forces" may have driven the changes observed in these characteristics between FY02 and FY04.
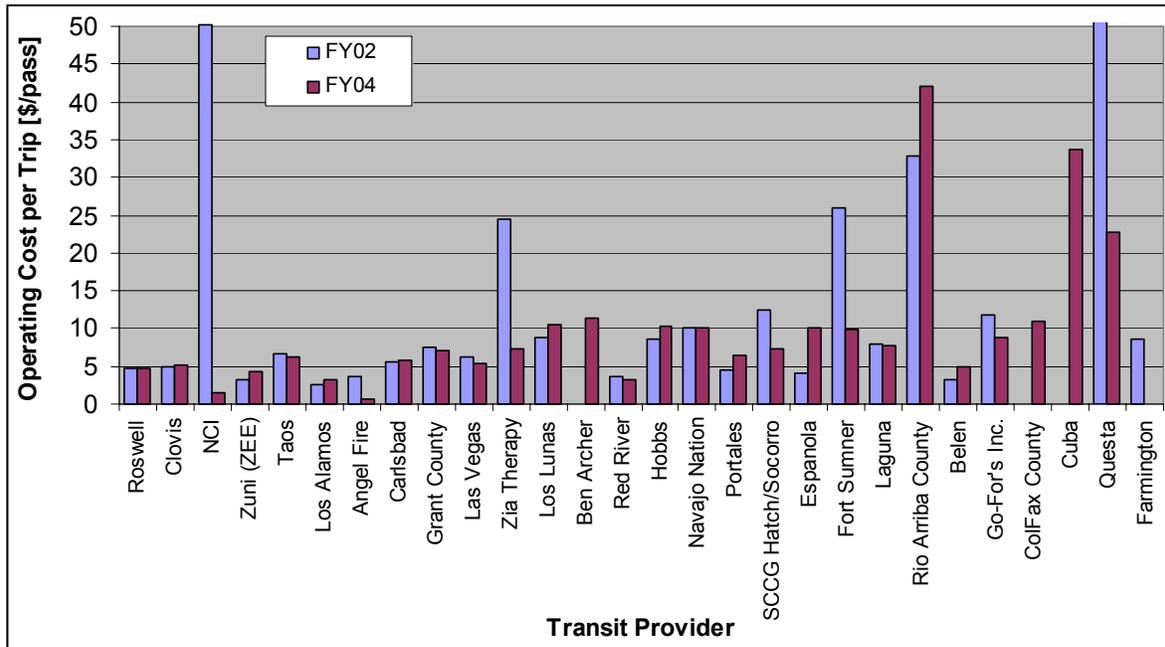
Note: a. FY02 Operating cost per trip for NCI: $50.2, Questa: $81.
          b. Transit providers in descending order by number of trips

Figure 4-20. Operating Cost per trip in FY02 and FY04

The changes in operating costs may also be explained by changes in operating characteristics such as higher vehicle miles and vehicle hours. However, the quality of the data for vehicle miles for FY04 was poor, as explained in Section 3.3.1, thus only vehicle hours were analyzed. Figure 4-21 shows the change in operating cost between FY02 and FY04 and the change in vehicle hours between the same years. Although a slightly better correlation can be observed between these two metrics than between cost and ridership, there are still some occurrences (i.e. Roswell, Clovis, Los Lunas, Portales) in which an increase in one metric is coupled by a decrease in the other or vice versa. These results further support the theory that other "forces" or a combination of the previously discussed may have driven the changes observed in operating cost between FY02 and FY04, and it is difficult to relate those changes to CRRAFT alone.
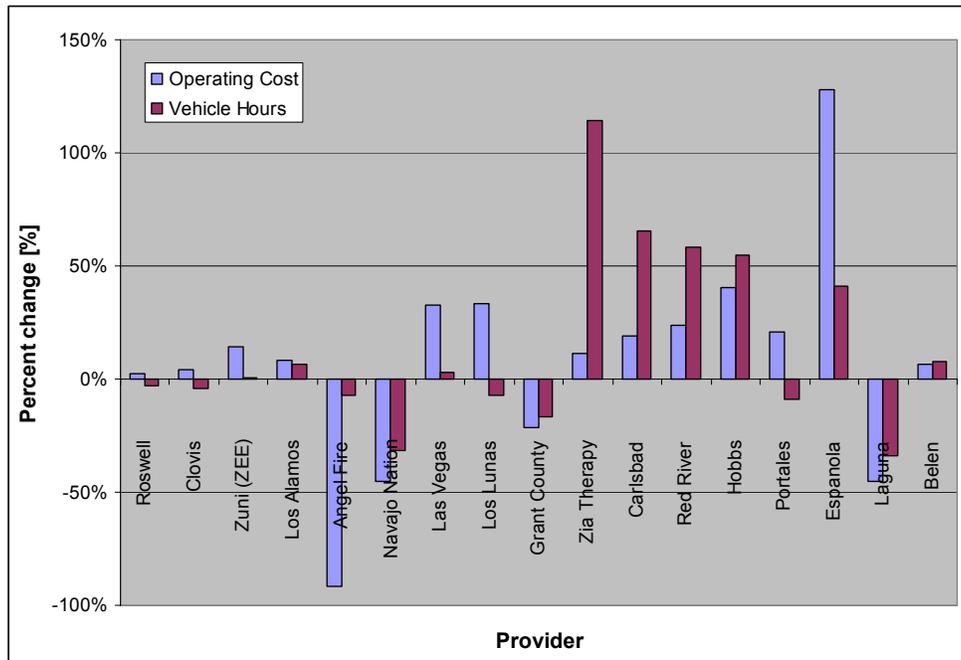
Note: Transit providers in descending order by number of trips

Figure 4-21. Change in Operating Cost and Vehicle Hours between FY02 and FY04

Hypothesis assessment

The survey results indicated that transit agencies providing a larger number of demand response trips were more likely to think that CRRAFT results in higher operating costs. Viewed in conjunction with the earlier findings on the impact of CRRAFT on the time spent scheduling demand response trips, it seems likely that those transit agencies spending more time scheduling demand response trips also have higher operational costs.

The data analysis did not provide conclusive results about the relationship of CRRAFT with changes in operating cost alone or operating cost per trip.

4.6   The Costs and Benefits of CRRAFT

This subsection summarizes the results of perceived costs and benefits of using the CRRAFT system. As archived cost data were unavailable, the emphasis is on the opinions of the transit providers and funding agencies on whether the CRRAFT benefits outweigh its costs. The following results are based on the surveys and interviews of CRRAFT users at NMDOT, NMHSD and the transit agencies. Hypotheses 10 and 11 are associated with this impact.

4.6.1   Hypothesis 10

Use of a Web-based system has minimized the time and cost of deployment, technical support, and maintenance

The intent of Hypothesis 10 was to investigate the efficacy of implementing CRRAFT as a web-based application. However, because the ATRI report on relative costs is not available, the analysis could not be performed as originally intended and the analysis of CRRAFT's time and cost of deployment, technical support, and maintenance was not performed. Nevertheless, through the interviews and follow-up discussions with users at NMDOT and the transit agencies, the Evaluation Team did obtain some insight into the advantages and disadvantages of the web-based application. The following is a list of the frequently mentioned positive and negative aspects regarding the web-based nature of CRRAFT based on comments from the survey, interviews, and other anecdotal information.

The positive aspects mentioned are as follows:

- CRRAFT is useful for generating reports, supporting audit activities, and enables easy distribution of funds from various funding agencies.;
- Financial management data can be viewed by both transit agencies and NMDOT when addressing invoice issues; and
- Though not currently possible, online data could be used to develop customized queries and reports.

The negative aspects are as follows:

- Adequate server response time is dependent on the type of internet connection (e.g., dial-up, high-speed) and server load;
    - A busy server can result in very slow response times when entering data;
    - If the internet connection drops out, data may have to be re-entered;
- Multiple modules and user interface issues make realtime entry of trip schedules difficult for many users; and
- Many transit agencies are still using pre-CRRAFT methods to develop schedules and support their own operational requirements.

Hypothesis assessment

Although no cost data were available for this analysis, the surveys, interviews, and discussions with users produced many insights into the positive and negative aspects of CRRAFT. CRRAFT appears to be useful for generating invoices and supporting auditing activities, but has resulted in many transit agencies doing additional work to use CRRAFT in support of NMDOT reporting/invoicing requirements.

4.6.2 Hypothesis 11

Transit providers and funding agencies perceive that the benefits of the system outweigh its costs

To assess this hypothesis, the Evaluation Team asked four questions in the survey to CRRAFT users at NMDOT and the transit agencies. The questions investigated user opinions about the most useful CRRAFT features, what other features users like to see added, which features should be improved or changed, and users overall opinion of CRRAFT. The following describes the results and findings from the user responses.

Most useful CRRAFT features

CRRAFT users were asked the question *"What three features of CRRAFT do you find most useful? (Number the three most useful features 1, 2, and 3 with 1 being the most useful)"* The list of features for NMDOT included:

- Features for tracking ridership

- Features for generating reports

- Supporting audit activities

- Other

The NMDOT ranking of most useful features were (in decreasing order of importance): Features for generating reports, Supporting audit activities, and Features for tracking ridership.

Because CRRAFT provided many features for transit agency users, the list of features was more extensive than for NMDOT users. The list of features for transit agencies included:

- Features for tracking referrals

- Electronic benefits transfer card

- Features for tracking ridership

- Features for tracking client trip usage and authorizing a trip

- Features for generating reports for internal use

- Features for tracking vehicle attributes and maintenance

- Features for submitting monthly reports

- Features for tracking employee training and certifications

- Features for tracking client information and eligibility

- Other

The transit agency ranking of most useful CRRAFT features from the 24 transit agencies is shown in Figure 4-22. Due to inconsistencies in the number of respondents (more than one survey) from some transit agencies and respondent rankings (some respondents indicated three or more features as equally useful), the figure shows the number of transit agencies that voted for each of the features. Tracking Ridership and Submitting Monthly Reports tied in the rankings for most useful feature both receiving 66 percent (or 16 out of 24) of the transit agency votes. A second group of slightly less popular features were: Generating Reports for Internal Use (10 of 24 votes), Tracking Client Information and Eligibility (10 of 24), and Tracking Client Trip Usage and Authorizing a Trip (9 of 24). The CRRAFT features that received the fewest votes were Tracking Employee Training and Certifications (3 of 24

votes), Tracking Vehicle Attributes and Maintenance (3 of 24 votes), and Electronic Benefits Transfer Card (2 of 24 votes). It should be noted that at the time of the survey the ICTransit Smartcard system was still under development and not yet implemented.
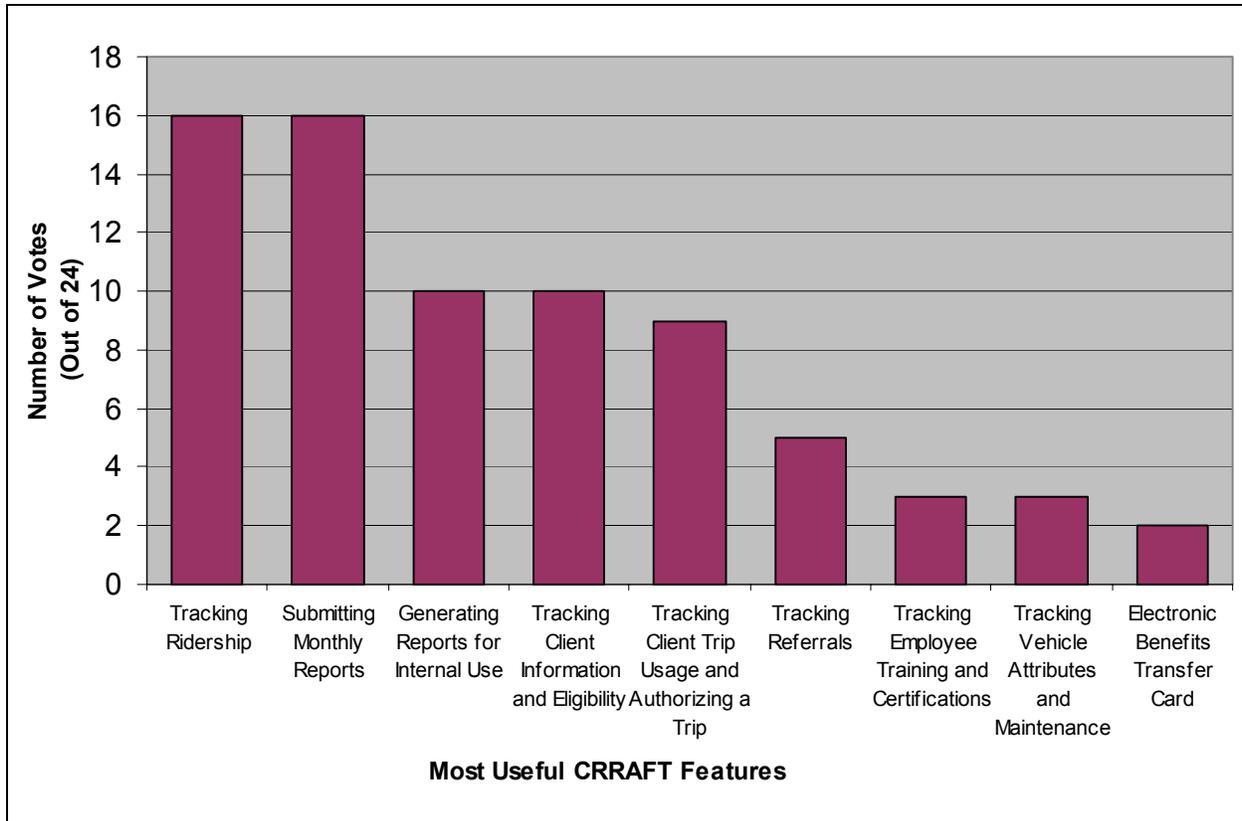
Figure 4-22. Transit Agency Ranking of Most Useful CRRAFT Features

Other features users would like to see added to CRRAFT

CRRAFT users were asked the open-ended question "*What other features would you most like to see added to CRRAFT?*" The question provided an opportunity for respondents to describe, in as much detail as they desired, those features which would improve CRRAFT. Because many of the responses were specific (faster data entry in scheduler) and some were generic ("faster, faster, faster"), the responses were reviewed and grouped by common theme into several topic categories. Figure 4-23 shows the number of times (votes) a feature category was mentioned by the 21 transit agencies providing responses.
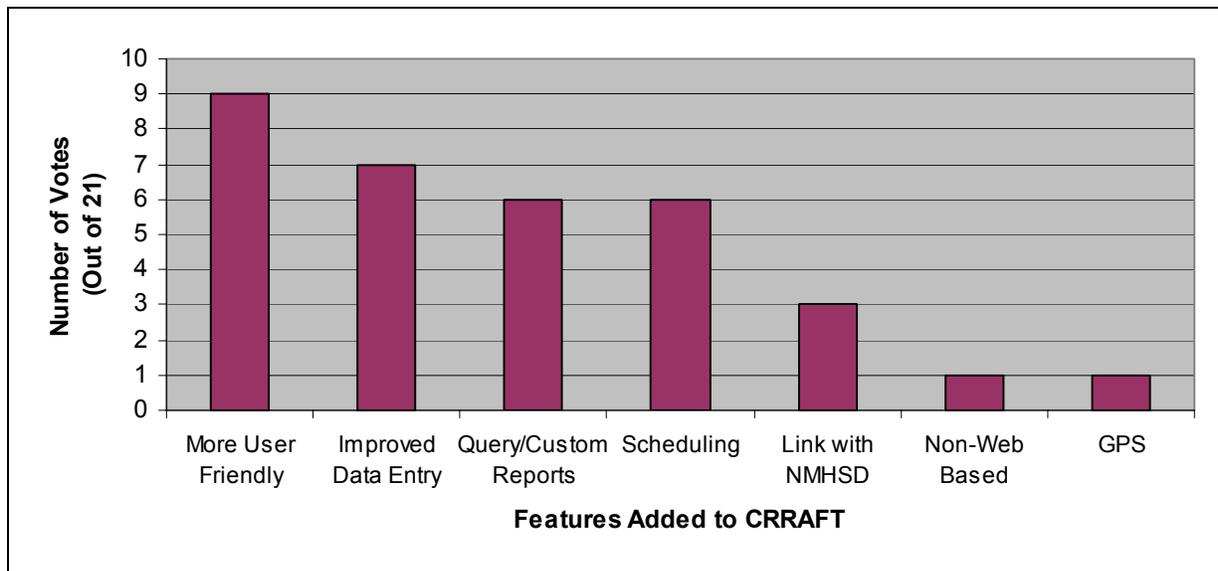
Figure 4-23. Transit Agency Ranking of Most Desired Added Features

The most commonly mentioned features Transit users wanted added to CRRAFT were improvements to the user friendliness of the existing features. In particular, examples of these user friendly features include:

- Ability to work in a spreadsheet format to view and add more data entries without having to generate a report or deal with limits to the number of records that can be entered at one time,

- Faster switching between modules,

- Intuitive memory--Not having to reset/re-enter dates,

- Scrolling lists showing more than 4 accounts,

- View more than 3 entries in revenue report and reimbursement report fields,

- Take the header off to let reports print on one page without adjustment.

The second most commonly mentioned feature, data entry improvements, could be considered a subcategory of user friendliness, was cited in several contexts:

- Faster, less time consuming way to enter data,

- Allow entry of more than eight in scheduler,

- Faster page to page switching.

Allowing queries or the development of custom reports for transit agency and an improved scheduler both tied as the third most frequently mentioned feature categories. Allowing queries and custom reports were combined into one category because they are closely related. This category included allowing queries and custom reports so transit agencies can access and use the information they are

entering into CRRAFT. The information would be used for in-house reports, grant applications, and monitoring operations (view running totals and a break down of all the costs for each ride for each of my drivers, review vehicle maintenance records for each vehicle).

The features added to CRRAFT to improve the scheduler included adding a real-time scheduler to enter data, plan routes, allow faster scheduling and ability to see schedules at a glance. In addition, users mentioned the scheduler should be made user friendly and efficient so CRRAFT scheduling is not done after the fact. (Recall, that larger transit agencies tended to have a greater burden in manually entering the schedule information for demand Response trips.)

When asked this same question, NMDOT and NMHSD identified two features consistent with the transit agency responses. NMDOT and NMHSD would like to see features added to CRRAFT that would provide additional reports and direct access queries for information in support of generating their respective in-house reporting needs. NMDOT mentioned having a feature which would allow on demand reports and reports for other funding programs such as Section 5310 funding for Disabled and Elderly programs. NMHSD also desired more advanced query capabilities of the number of non-duplicated riders, average mileage, and vehicle mileage by transit provider and county or counties to support inquiries from supervisors, legislators, and DOT requestors.

CRRAFT features that users would like to see improved or changed

The survey for both the funding agencies (NMDOT and NMHSD) and the transit agencies asked the open-ended question "*Are there any features of CRRAFT that you would like to see improved or changed? Please explain.*" The question provided an opportunity for users to describe CRRAFT features which they would like to see improved or changed. The open-ended responses were grouped into topic categories by common theme and the "votes" were counted. Figure 4-24 shows the number of times (votes) a feature category was mentioned by the 20 transit agencies providing responses.

As was found in the previous question, the most popular features cited were improvements related to data entry and improvements to the user friendliness, each of which were mentioned by about 40 percent (8 out of 20) of the transit agencies. Better queries and reports and less time scheduling were mentioned by about 25 percent (5 out of 20) of the transit agencies. Less drop-offs and Smartcard/Palm Pilot were mentioned by about 20 percent (4 out of 20) of the transit agencies.
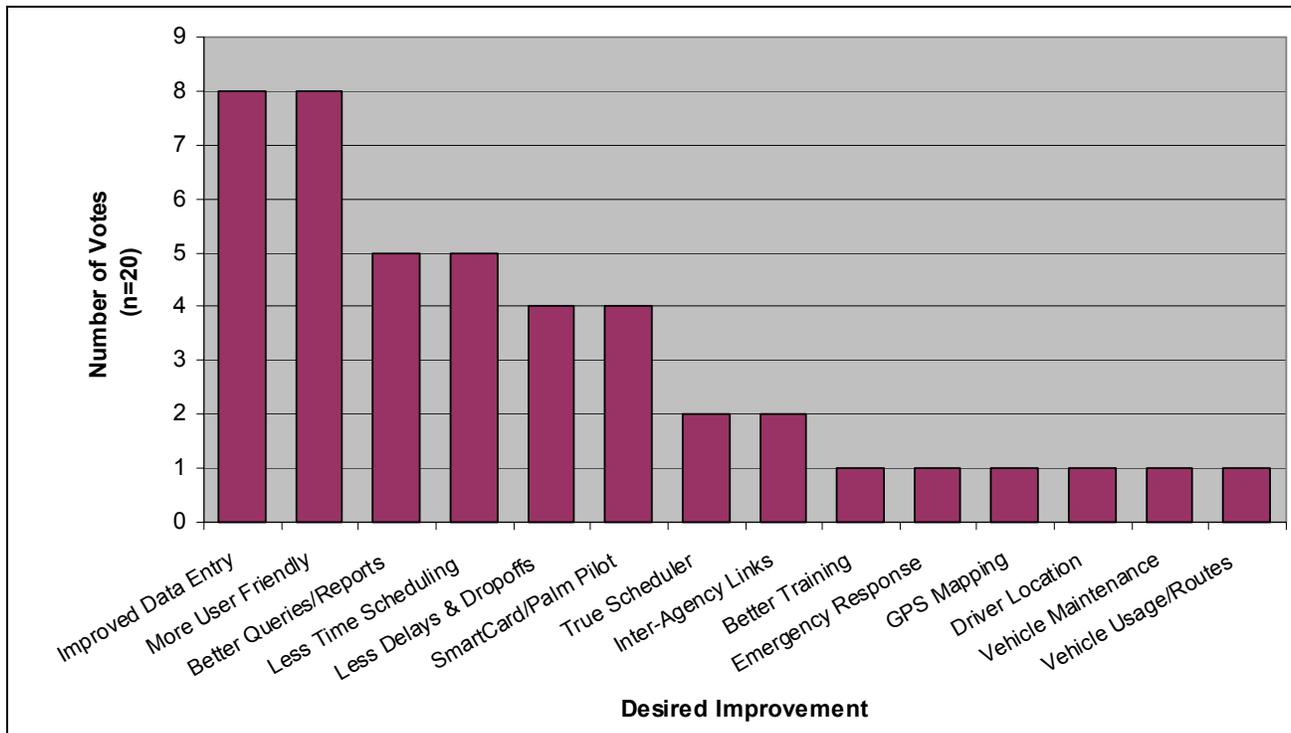
Figure 4-24. Transit Agency Ranking of Most Desired Improvements

Examples of comments include:

- Make it easier for data entry, it is currently very time consuming,

- On the master log for the daily scheduled trips, I would like to have it where you can update information on a client's trip as a whole instead of going in and updating one ride at a time (i.e., update multiple records when need to change a related data item),

- If data is entered incorrectly, it is difficult to go back and find the error unless a report is printed,

- Would like to review/revise reports before submitting,

- Features to produce spreadsheets to compare specific data,

- No mechanism to check for double counts,

- Ability to integrate other packages for scheduling.

When NMDOT was asked if there were *any features of CRRAFT that they'd like to see improved or changed,* improving the scheduler module and the ability to work with capital invoices was mentioned. NMDOT is aware that having an improved scheduler is a desirable feature for the transit agencies. However, NMDOT and ATRI are faced with both budget constraints and limited staff which appear to be significant challenges to improving the scheduler module. In addition, the emphasis (at the time of these evaluation activities) was to complete the development and installation of the ICTransit

Smartcard system. Although not likely to solve the data entry burden when scheduling trips, the Smartcard system may reduce some of the data entry burden experienced by the transit agencies during the reconciliation of scheduled versus actual trips. Nevertheless, NMDOT is aware of transit agency concerns regarding the user friendliness of the CRRAFT scheduler module and is investigating possible opportunities to improve CRRAFT. The one item reiterated by NMHSD was the addition of more advanced query capabilities to support inquiries from supervisors, legislators, and DOT.

Overall opinion of CRRAFT

The survey for both the funding agencies (NMDOT and NMHSD) and the transit agencies asked the question "*What is your overall opinion of CRRAFT?"* A five-point rating scale was used, ranging from "CRRAFT has been very unsuccessful-the costs far outweigh the benefits" to "CRRAFT has been very successful-the benefits far outweigh the costs," and where a three indicates "CRRAFT has been neither particularly unsuccessful or successful."

NMDOT users were somewhat mixed on their overall opinion of the success of CRRAFT. On one hand, CRRAFT was rated as neither particularly successful or unsuccessful because it was felt that, although it is being used, the system is not yet a finished product and it does not meet the operational needs of the transit agencies[8].

On the other hand, CRRAFT was also viewed as being progressively successful. NMDOT users acknowledged that problems have existed since the deployment but things seem to be getting better as individual issues get resolved, users have become better acquainted with the system and have gained experience using CRRAFT.

NMHSD does not directly use the CRRAFT system but is able to request information that is entered and stored by the system. Consequently, NMHSD's perspective is that CRRAFT has been successful and they are overall happy with the CRRAFT system.

Transit agency users were nearly evenly split on their overall opinion of the success of CRRAFT. Figure 4-25 presents the distribution of transit agency ratings. About 44% (10 of 23) of respondents indicated that overall CRRAFT has been unsuccessful or very unsuccessful, and that the costs outweigh the benefits. On the other hand, about 48% (11 of 23) of the transit agencies indicated that overall, CRRAFT has been successful or very successful and that the benefits outweigh the costs. About 8% (or 2 of 23) thought CRRAFT was neither particularly successful or unsuccessful.

---

[8] At the time of the survey and interview, the Smartcard feature was not yet operational and several transit agencies desired improvements to the data entry, queries/reports features, and Scheduler module.
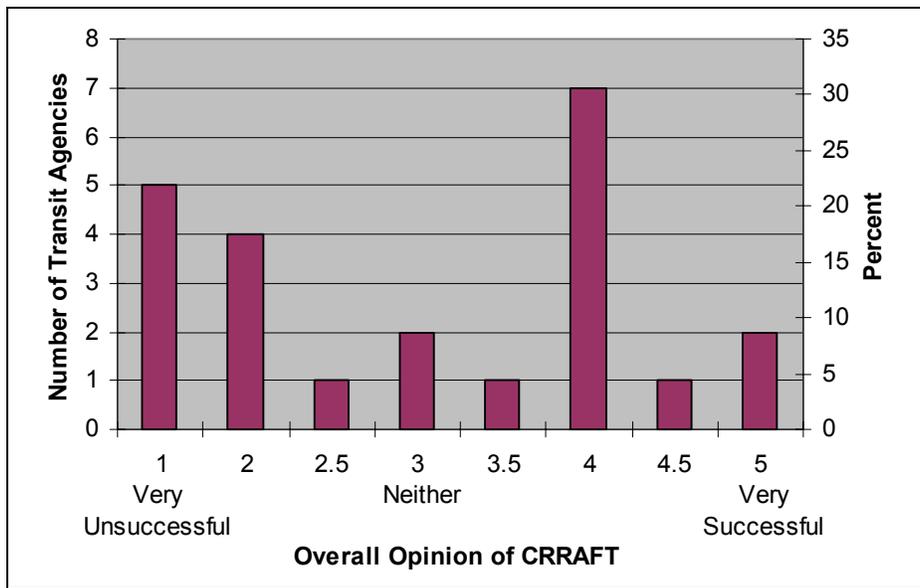
Figure 4-25. Ratings of Overall Opinion of CRRAFT

Additional associations between ratings of CRRAFT's impact on operating cost and the number of trips, type of service (i.e., demand responsive, fixed route, or both), and type of funding (3037, 5311, or both) were investigated. The CRRAFT Overall Opinion rating appears to be associated with the number of trips, especially in the case of transit agencies providing demand response-type routes. Figure 4-26 shows the relationship of Overall Opinion rating as a function of the number of trips. The correlation of these two variables (R=-0.331) indicates that transit agencies that said that CRRAFT has been unsuccessful and that the costs outweigh the benefits, tended to have a larger number of trips than Agencies that indicated CRRAFT has been successful and that the benefits outweigh the costs. The relationship between overall opinion and number of trips was most apparent with transit agencies providing demand response service. Figure 4-27 shows the association of these factors and the corresponding correlation (R=-0.437). Due to the small sample sizes, no other associations between overall opinion ratings and the type of funding (Section 3037, 5311, or both) could be identified to explain the distribution of these ratings.
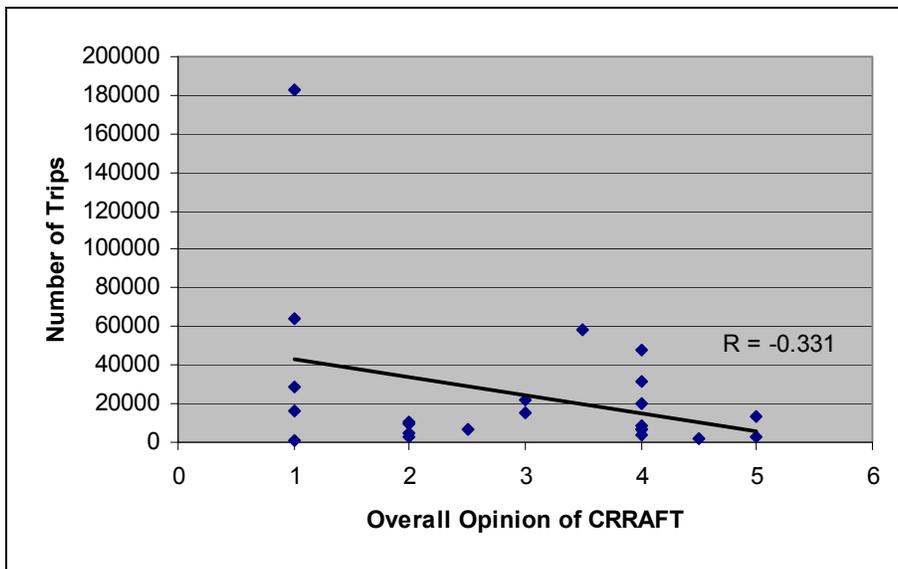
Figure 4-26. Number of Trips as a Function of Overall Opinion Ratings of CRRAFT
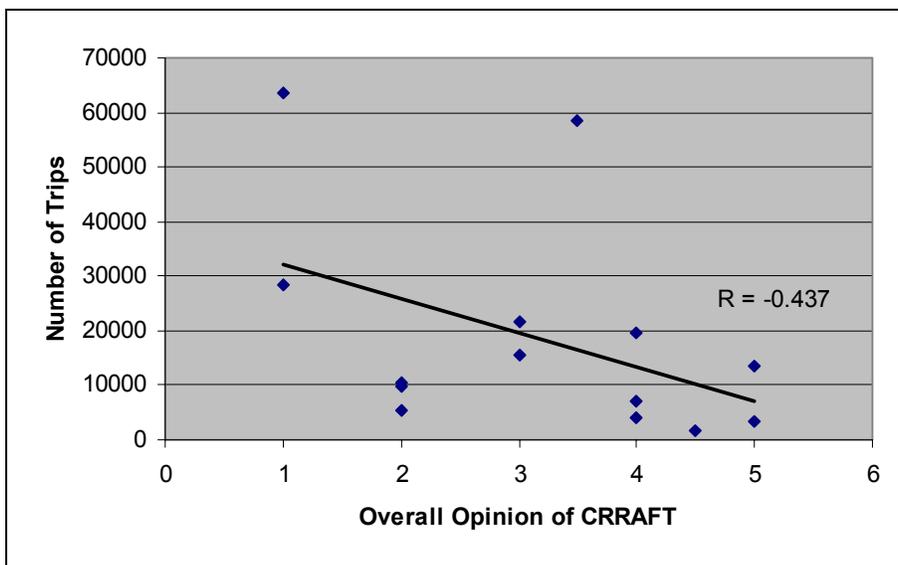
Figure 4-27. Demand Response Number of Trips as a Function of Overall Opinion Ratings of CRRAFT

Hypothesis assessment

NMDOT and NMHSD are generally pleased with the benefits of CRRAFT and generally agree that the benefits outweigh the costs. The transit agencies have mixed views. While larger agencies, particularly those providing demand response service, were more likely to indicate that CRRAFT has been unsuccessful and that the costs outweigh the benefits, smaller agencies were more likely to indicate that CRRAFT has been successful and that the benefits outweigh the costs.

4.7   The Impact of CRRAFT on Communication and Coordination (Hypothesis 12)

This subsection focuses on the extent to which CRRAFT has improved communication and coordination between agencies, particularly communication between transit providers and funding agencies. This subsection addresses Hypothesis 12 in the Evaluation Plan.

Hypothesis 12 - Use of a single system improves communication between diverse agencies

To assess this hypothesis, the Evaluation Team relied on answers to survey questions to CRRAFT users at NMDOT and to transit agencies.

In the NMDOT survey, two questions were asked to investigate the level of communication and coordination. In the communication question, NMDOT users were asked "*To what extent do you think the CRRAFT system has affected the level of communication between your agency and the transit service providers?"* A five-point rating scale was used (ranging from "CRRAFT results in a lot worse communication" to "CRRAFT results in a lot better communication"), and where three indicates "CRRAFT has no significant effect on the extent of communication."

NMDOT users indicated that CRRAFT resulted in better communication. Although not all communication has been good, use of the system has allowed NMDOT to more easily work to correct invoice problems. For example, if NMDOT finds a problem in an invoice, they can call the transit agency and both parties can look at the CRRAFT invoice to discuss the problem. Consequently, this cooperative, interactive approach can reduce the time lag in correcting some invoice problems.

In the coordination question, NMDOT users were asked "*To what extent do you think the CRRAFT system has affected the level of coordination between human service transportation providers?"* A five-point rating scale was used ranging from "CRRAFT results in a lot worse coordination" to "CRRAFT results in a lot better coordination," and where a three indicates "CRRAFT has no significant effect on the level of coordination."

CRRAFT users at NMDOT indicated that CRRAFT resulted in a lot better coordination. In NMDOT's opinion working with the transit agencies in the design, build, and implementation of CRRAFT, coordination has improved in conjunction with the better communication. NMDOT also feels they now have a better idea of what the transportation providers want and desire in a system.

In the transit agency survey, two questions were asked to investigate interagency communication and coordination. In the communication question, users were asked "*To what extent do you think the CRRAFT system has affected the level of communication between your agency and other agencies, such as PTPB, HSD-ISD?"* A five-point rating scale was used (ranging from "CRRAFT results in a lot worse communication" to "CRRAFT results in a lot better communication" and where a three indicates "CRRAFT has no significant effect on the extent of communication").

Although 46% (10 of 23) of transit agency users indicated that the level of communication was about the same, 41% (9 of 23) felt that CRRAFT improved the level of interagency communication. The survey results are shown in Figure 4-28.
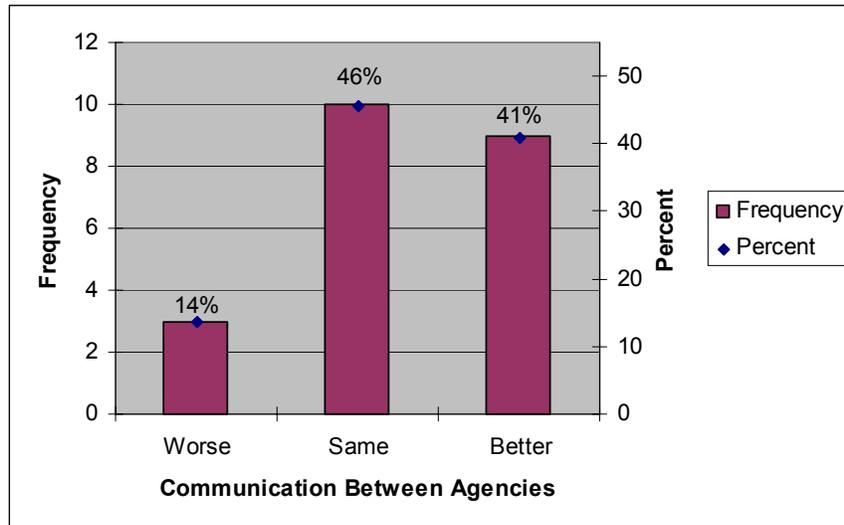
Figure 4-28. Ratings of CRRAFT Impact on the Level of Communication between Agencies

In the coordination question, users were asked "*To what extent do you think the CRRAFT system has affected the level of coordination between your agency and other human service transportation providers?.*" A five-point rating scale was used (ranging from "CRRAFT results in a lot worse coordination" to "CRRAFT results in a lot better coordination" and where a three indicates "CRRAFT has no significant effect on the level of coordination").

Nearly two-thirds of transit agency users (64% or 14 of 22) indicated that the level of coordination was about the same, about one-third (32% or 7 of 22) felt that CRRAFT improved the level of coordination. The survey results are shown in Figure 4-29.
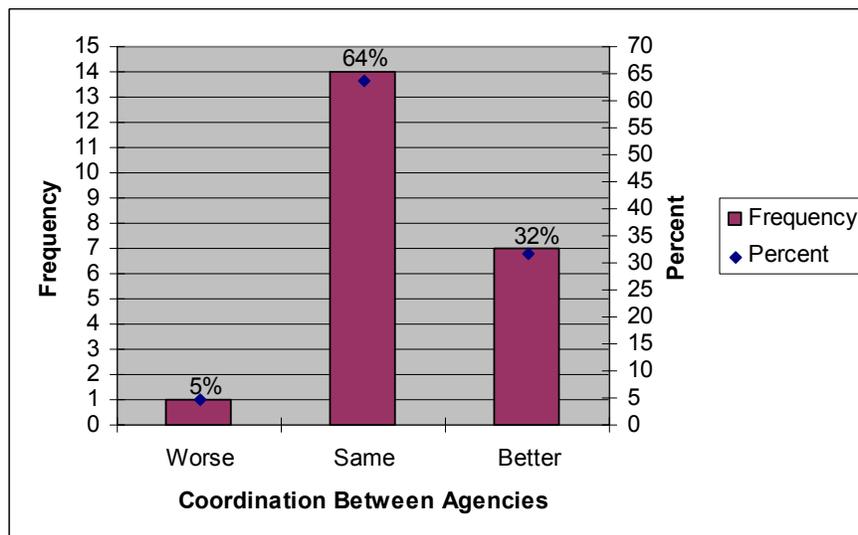
Figure 4-29. Ratings of CRRAFT Impact on Coordination between Agencies

Hypothesis assessment

Surveys and interviews with NMDOT indicated that they view communication and coordination to have improved as a result of CRRAFT. In particular, NMDOT cites better communication and

coordination when working together with transit agencies in correcting problems related to submitted invoices.

A majority of transit agencies indicated that the level of communication was about the same (10 of 23) or better (9 of 23). Nearly two-thirds (14 of 22) indicated that the level of coordination among human service transportation providers was about the same as before CRRAFT.

In conclusion, it appears that for NMDOT, CRRAFT has resulted in better communication and coordination with transit agencies. For transit agencies, communication and coordination remained about the same or better.

5   SUMMARY OF FINDINGS

The previous chapter explained in detail the results of the evaluation activities of the CRRAFT system. Table 5-1 shows the key findings for each of the hypothesis developed during the early stages of this project. Overall, the CRRAFT system seems to have had a more positive impact on the NMDOT's PTPB than on the transit agencies. Also, those agencies with higher ridership and demand-responsive service were found more likely to find it unsuccessful.

Transit agencies generally agreed that the CRRAFT system is useful for tracking ridership and generating invoices/reports for submission to NMDOT. However, the CRRAFT system (which, at the time of this evaluation did not have the IC Transit Smartcard operational) has presented several obstacles to complete acceptance of the system by transit agencies. Although about half of the transit agencies thought that overall CRRAFT was successful, transit agencies that provided a large number of demand responsive trips tended to be dissatisfied with the overall success. Based on our surveys and interviews it appears that much of the dissatisfaction is related to usability issues with the most commonly mentioned issue being the time required to manually enter trips into the scheduler. In addition to improving the scheduler module, other desired features included improvements to allow transit agencies to query their data and develop custom reports.

Table 5-1. Summary of Findings

#	Hypothesis	Finding
1[9]	Use of the system saves transit providers time invoicing and reporting to funding agencies	Not True. On average, the use of CRRAFT has not saved transit providers time invoicing and reporting to the PTPB. In fact, Transit agencies with higher ridership and demand responsive service may have had the opposite experience and are spending more time preparing invoices after the implementation of CRRAFT.
2[9]	Use of the system results in funding agencies having faster access to reports	Not True. On average, the use of CRRAFT has not resulted in funding agencies having faster access to invoices and reports. With the online system however, funding agencies may be able to monitor the numbers that transit agencies are entering into the system along the month.
3[9]	Reports created by the system are accurate and reliable. Use of the system reduces the time funding agencies spend checking and correcting reports and reduces money incorrectly allocated or invoiced	True. The use of CRRAFT has resulted in more accurate invoices and has saved time from funding agencies during the reviewing process. The fact that transit agencies know at all times their remaining balance in each line item seems to have helped reduce the number of incorrect amounts on invoices.
4	Use of the system reduces the time funding agencies spend researching and collecting information	True. The use of CRRAFT has in fact reduced the time funding agencies spend researching and collecting information
5[9]	Use of the system reduces the overall time required for transit providers to schedule demand response trips	Not True. The use of CRRAFT has increased the time to schedule demand response trips for a majority of transit agencies and the impact is particularly evident for Agencies entering schedule data for many trips.

---

[9] Key hypothesis

#	Hypothesis	Finding
6	Use of the system results in more efficient schedules for demand response trips	Mixed. For most users CRRAFT did not have a positive impact on the efficiency of the scheduled route or the development and use of the demand response schedule, but may have improved the efficiency for a few smaller transit agencies.
7	Use of the system reduces the number of unauthorized trips	Mixed. CRRAFT did not have a clear and decisive impact on the number of unauthorized trips.
8	Use of the system reduces the number of in-service breakdowns	Little/ no impact. CRRAFT did not have an impact on the number of in-service vehicle breakdowns.
9	Use of the system reduces the operating cost of transit services	Mixed. For the providers, CRRAFT may result in higher operational costs for larger transit agencies that enter many demand response trips. However, the data analysis did not provide conclusive results about the relationship of CRRAFT with changes in operating cost alone or operating cost per trip.
10	Use of a Web-based system has minimized the time and cost of deployment, support, and maintenance	Mixed. CRRAFT appears to be useful for generating invoices, supporting auditing activities, but has resulted in many transit agencies doing additional work to use CRRAFT in support of NMDOT reporting/invoicing requirements.
11	transit providers and funding agencies perceive that the benefits of the system outweigh its costs	Mixed. NMDOT and NMHSD are generally pleased with the benefits of CRRAFT and generally agree that the benefits outweigh the costs. The transit agencies have mixed views, however larger Agencies, particularly those providing demand response service, were more likely to indicate that CRRAFT has been unsuccessful and that the costs outweigh the benefits.
12	Use of a single system improves communication between diverse agencies	True. For NMDOT, CRRAFT has resulted in better communication and coordination with transit agencies. For transit agencies, communication and coordination remained about the same or better.

Appendix A- Example of Invoice Submission Log

Village of Angel Fire (2001/2002) 5311

Invoice Month	Invoice Amount	Invoice/Preaudit Date (FS)	Pre-Aduit Approval (UPO)	Review (UPS)	1st Level Approval (FS)	BC Signature	3rd Level Approval (UPO)	Date Posted (FS)
Oct	5,964.34	1/16/02 1/6/02	mmm 01/22/02		1/23/02			
Nov	7,117.39	1/16/02 1/16/02	mmm 01/22/02		1/23/02			2/5/02
Dec	6,434.00	1/16/2 1/16/02	mmm 01/22/02		1/23/02			
Jan 02	4,980.92	3/14 BB 3/22	mmm 03/25/02		3/27/08JPR		3/27/02 DMC	4/2 02 BB
Feb 02	12,242.24	3/22 BB 4/10	out		4/18 GPO		4/12/02 B13	4/16/02 B13
Mar 02	4,874.50	4/15 BB 5/14	mmm 05/14/02		5/15/02		5/17/02 B13	4/30/02 B13

Appendix B- Example of FY02 and FY04 Invoices

FTA SECTION 5311 OPERATING ASSISTANCE INVOICE

ORGANIZATION: Village of Angel Fire
ADDRESS: P.O. Box 610
CITY, STATE, ZIP: Santa Fe, New Mexico 87710

INVOICE FOR THE PERIOD: Sep-02

Memorandum of Agreement NO: Fiscal Year 01-02 - NM18-X017/14

RECEIVED VIA EMAIL A 2ND TIME ON 12/17/02
INVOICE NO. 12

Item Description	Requested Budget 0X001	Approved Budget 0X001	Budget Adjustment #1 (7-15-02)	Budget Adjustment #2 (11-20-02)	October	November	December	January	February	March	April	May	June	July	August	September	Year to Date Expenses	Budget Remaining	% Budget Remaining
Fuel	$15,500.00	$15,500.00	$15,500.00	$15,307.52	$530.39	$702.85	$1,768.72	$1,494.66	$1,287.21	$1,301.58	$667.56	$1,125.24	$903.63	$708.73	$670.17	$464.48	$11,505.22	$3,802.30	24.84%
Oil and Lube	$1,050.00	$800.00	$800.00	$800.00	$25.38	$54.18	$37.55	$56.83	$89.28	$38.55	$12.85	$39.06	$10.44	$18.70	$18.70	$0.00	$391.92	$408.08	51.01%
Replacement Parts	$5,150.00	$3,300.00	$3,300.00	$3,300.00	$235.52	$172.97	$130.05	$485.04	$122.38	$239.29	$7.00	$72.76	$82.11	$44.26	$89.77	$273.33	$1,953.93	$1,346.07	40.79%
Tires	$3,600.00	$3,600.00	$3,600.00	$3,600.00	$0.00	$1,290.00	$250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,540.00	$2,060.00	57.22%
Maint Cost	$3,440.00	$3,000.00	$3,000.00	$3,000.00	$7.60	$14.00	$50.20	$23.00	$0.00	$0.00	$0.00	$26.98	$0.00	$0.00	$0.00	$0.00	$121.18	$2,878.82	95.96%
Sa--- Rental	$9,888.00	$9,888.00	$9,888.00	$9,888.00	$508.33	$508.33	$508.33	$508.33	$508.33	$508.33	$508.33	$508.33	$508.33	$508.33	$508.33	$508.33	$6,099.96	$3,788.04	38.31%
Tr	$515.00	$500.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$500.00	100.00%
Tr	$1,250.00	$1,000.00	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00	$115.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$115.00	$385.00	77.00%
Supplies	$1,030.00	$800.00	$1,300.00	$1,492.48	$192.50	$192.50	$234.00	$0.00	$0.00	$15.94	$59.27	$69.83	$64.00	$0.00	$631.64	$32.80	$1,492.48	$0.00	0.00%
Utilities	$1,050.00	$1,050.00	$1,050.00	$1,050.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,050.00	100.00%
Salaries																			
Drivers	$92,700.00	$90,000.00	$90,000.00	$90,000.00	$5,689.16	$6,005.59	$7,131.70	$6,685.75	$14,132.58	$6,801.83	$3,357.89	$5,703.30	$7,738.12	$5,041.50	$5,277.43	$3,292.97	$80,157.82	$9,842.18	10.94%
Dispatcher (other)	$1,250.00	$1,250.00	$1,250.00	$1,250.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,250.00	100.00%
Mechanics	$5,150.00	$5,150.00	$5,150.00	$5,150.00	$160.00	$240.00	$330.00	$430.00	$230.00	$330.00	$70.00	$170.00	$60.00	$50.00	$70.00	$100.00	$2,240.00	$2,910.00	56.50%
Fringe Benefits	$33,495.00	$32,500.00	$32,500.00	$32,500.00	$2,196.64	$2,245.46	$2,474.08	$2,398.52	$5,282.80	$2,341.52	$2,668.97	$2,188.97	$2,456.25	$3,990.16	$1,762.88	$1,035.06	$31,060.71	$1,439.29	4.43%
Uniforms	$1,050.00	$1,000.00	$1,000.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,000.00	100.00%
Cell Phone	$2,575.00	$2,000.00	$2,000.00	$2,000.00	$0.00	$0.00	$83.59	$0.00	$0.00	$283.47	$175.38	$86.46	$67.44	$128.49	$202.04	$157.85	$1,185.72	$814.28	40.71%
Vehicle Interior Maint	$750.00	$750.00	$750.00	$750.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$750.00	100.00%
Painting Vehicles	$750.00	$750.00	$750.00	$750.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$750.00	100.00%
Total	$180,168.00	$172,838.00	$172,838.00	$172,838.00	$9,545.12	$11,425.86	$12,998.22	$12,392.13	$21,727.58	$11,859.51	$16,547.25	$9,990.93	$11,790.32	$10,491.17	$9,230.96	$5,864.87	$137,863.94	$34,974.06	20.24%
Revenues																			
Fares	$31,500.00	$31,500.00	$31,500.00	$31,500.00	$609.00	$2,579.00	$3,733.54	$4,937.35	$3,722.16	$4,663.21	$1,455.75	$1,190.15	$1,218.65	$962.00	$1,065.25	$678.25	$26,814.31	$4,685.69	14.88%
Contracts	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	#DIV/0!
Advertising	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	#DIV/0!
Donations	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	#DIV/0!
Total Fares	$31,500.00	$31,500.00	$31,500.00	$31,500.00	$609.00	$2,579.00	$3,733.54	$4,937.35	$3,722.16	$4,663.21	$1,455.75	$1,190.15	$1,218.65	$962.00	$1,065.25	$678.25	$26,814.31	$4,685.69	14.88%
Net Operating Costs	$148,698.00	$141,338.00	$141,338.00	$141,338.00	$8,936.12	$8,846.86	$9,264.68	$7,454.78	$18,005.42	$7,196.30	$6,091.50	$8,800.78	$10,571.67	$9,529.17	$8,165.71	$5,186.62	$111,049.63	$30,288.37	21.43%
Local Share (50%)	$74,349.00	$70,669.00	$70,669.00	$70,669.00	$4,468.05	$4,423.44	$4,632.34	$3,727.39	$9,002.71	$3,598.15	$3,045.75	$4,400.39	$5,285.84	$4,764.59	$4,082.86	$2,593.31	$55,524.82	$15,144.18	21.43%
Federal Share (50%)	$74,349.00	$70,669.00	$70,669.00	$70,669.00	$4,468.05	$4,423.44	$4,632.34	$3,727.39	$9,002.71	$3,598.15	$3,045.75	$4,400.39	$5,285.83	$4,764.58	$4,082.85	$2,593.31	$55,524.81	$15,144.19	21.43%

					October	November	December	January	February	March	April	May	June	July	August	September
Total Passengers					1009	882	6819	8320	6385	6879	1130	1426	1345	2035	1442	812
Vehicle Hours					640	534	760.65	858	792	834	561	693	610.5	448.8	357.5	344.3
Vehicle Miles					9643	8771	11461	13585	11212	11673	8034	9363	8361	4728	3759	3582
Co Passenger Trip					$11.39	$10.77	$2.24	$1.68	$4.04	$1.96	$10.99	$9.31	$10.68	$8.00	$7.77	$8.72
Co Vehicle Hour					$17.41	$24.90	$20.11	$16.29	$32.55	$16.14	$22.14	$19.17	$23.53	$27.19	$31.34	$20.55
Co Vehicle Mile					$1.19	$1.69	$1.33	$1.03	$2.30	$1.15	$1.55	$1.42	$1.71	$2.58	$2.98	$1.98
Operating Cost per Passenger Trip					$9.46	$12.95	$1.91	$1.49	$3.40	$1.72	$9.33	$7.01	$8.17	$5.16	$6.40	$7.22
Operating Cost per Vehicle Hour					$14.46	$19.24	$17.09	$14.44	$27.43	$14.22	$18.60	$14.42	$19.31	$23.38	$25.82	$17.03
Operating Cost per Vehicle Mile					$0.99	$1.30	$1.13	$0.91	$1.94	$1.02	$1.31	$1.07	$1.41	$2.22	$2.46	$1.64
Passengers per Vehicle Mile					0.105	0.101	0.595	0.613	0.569	0.589	0.141	0.152	0.160	0.430	0.364	0.227
Administrative Costs as % of Total					16.93%	22.76%	15.03%	11.32%	15.71%	11.88%	15.08%	24.76%	17.92%	14.03%	17.61%	17.12%
Fare Recovery Ratio					5.30%	17.43%	24.41%	35.33%	14.44%	34.65%	11.72%	8.96%	8.48%	7.86%	9.51%	9.58%
Operating Recovery Ratio					6.38%	22.57%	28.72%	39.84%	17.13%	39.32%	13.80%	11.91%	10.34%	9.17%	11.54%	11.55%

Client Referral, Ridership & Financial Tracking System - Invoice

Client Referral, Ridership and Financial Tracking System

FTA 3037 Invoice

Generated By : Admin Admin

Date generated: 12/3/2004 (15:13)

Organization	: Village of Angel Fire
Address	: Magic Bus
	PO Box 610
City, State, Zip	: Angel Fire NM 87710

Operating Expenses

Item Description	Requested Budget	Approved Budget	Cumulative Adjustment - 2004	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	Apr-04	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Year to Date Expenses	Budget Remaining
Drivers	$29,000.00	$9,500.00	$0.00	$430.50	$403.75	$552.50	$548.24	$493.00	$465.38	$437.76	$480.26	$497.26	$516.37	$242.88	$380.37	$5,448.27	$4,051.73
Mechanics	$750.00	$300.00	$70.01	$60.00	$60.00	$20.00	$0.00	$0.00	$20.00	$40.00	$0.00	$0.00	$30.00	$30.00	$110.00	$370.00	$0.01
Fringe Benefits	$8,925.00	$3,000.00	$0.00	$37.74	$25.03	$34.25	$33.99	$31.36	$28.85	$27.14	$29.78	$30.83	$32.01	$30.56	$23.59	$365.13	$2,634.87
Building Maintenance	$0.00	$500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$500.00
Operational Rent	$0.00	$3,000.00	($250.00)	$231.00	$231.00	$231.00	$231.00	$231.00	$231.00	$231.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,617.00	$1,133.00
Utilities	$1,750.00	$750.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$42.43	$24.33	$28.19	$132.66	$227.61	$522.39
Shop Supplies	$500.00	$500.00	$0.00	$0.00	$0.00	$0.00	$3.39	$0.00	$0.00	$0.00	$9.25	$7.93	$17.76	$0.00	$0.00	$38.33	$461.67
Training	$500.00	$1,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,000.00
Training/Lazaro & Noel	$0.00	$2,000.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$2,000.00
Travel	$1,000.00	$500.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$500.00
Fuel	$8,000.00	$3,725.00	($451.86)	$217.06	$127.53	$122.45	$220.48	$45.82	$206.99	$0.00	$122.04	$0.00	$68.31	$89.68	$592.03	$1,812.39	$1,458.75
Oil & Lubricants	$500.00	$175.00	$0.00	$7.24	$7.25	$7.25	$0.00	$0.00	$8.83	$7.69	$0.00	$0.00	$8.24	$0.00	$9.58	$56.08	$118.92
Replacement Parts	$500.00	$200.00	$383.85	$36.87	$65.12	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$40.63	$441.22	$583.84	$0.01
Tires	$800.00	$550.00	$250.00	$0.00	$399.96	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$399.96	$799.92	$0.08
Vehicle Maintenance	$500.00	$300.00	$0.00	$3.50	$3.50	$3.50	$0.00	$0.00	$231.34	$3.50	$0.00	$0.00	$5.00	$5.00	$5.00	$260.34	$39.66
Total	$52,725.00	$26,000.00	$0.00	$1,023.91	$1,323.14	$970.95	$1,037.10	$801.18	$1,192.39	$747.09	$641.33	$578.45	$702.02	$466.94	$2,094.41	$11,578.91	$14,421.09
Revenues (if any)																	
3037 Fares	$0.00	$0.00	$0.00	$8.60	$4.10	$10.75	$8.10	$4.65	$9.45	$4.65	$13.30	$19.80	$18.75	$4.90	$8.60	$115.65	
JARC Fares	$0.00	$0.00	$0.00	$8.60	$4.10	$10.75	$8.10	$4.65	$9.45	$4.65	$13.30	$19.80	$18.75	$4.90	$8.60	$115.65	
Net Costs	$52,725.00	$26,000.00	$0.00	$1,015.31	$1,319.04	$960.20	$1,029.00	$796.53	$1,182.94	$742.44	$628.03	$558.65	$683.27	$462.04	$2,085.81	$11,463.26	
Number of Fare Paying Passenger Trips				1674	984	6150	3853	5246	6932	930	920	1197	1707	1029	1011	31633	
Number of TANF Trips				0	0	0	0	0	0	0	0	0	0	0	0	0	

Client Referral, Ridership & Financial Tracking System - Invoice

Page 2 of 2

													Total
Number of WTW Trips	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of <150% Trips	134	82	215	162	93	192	93	266	396	375	98	172	2278
Total Number of Trips	134	82	215	162	93	192	93	266	396	375	98	172	2278
Percentage of TANF Trips	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percentage of WTW Trips	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percentage of <150% Trips	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Amount Paid from HSD	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Amount Paid from DOL	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
FTA Administrative Costs	$1,492.73	$1,305.79	$1,247.41	$1,415.56	$1,555.44	$1,443.04	$1,351.07	$1,484.67	$1,459.63	$1,566.87	$1,563.85	$4,459.48	$20,345.54
FTA Operating Costs	$1,015.31	$1,319.04	$960.20	$1,029.00	$796.53	$1,182.94	$742.44	$628.03	$558.65	$683.27	$462.04	$2,085.81	$11,463.26
Total Amount Paid from FTA	$2,508.04	$2,624.83	$2,207.61	$2,444.56	$2,351.97	$2,625.98	$2,093.51	$2,112.70	$2,018.28	$2,250.14	$2,025.89	$6,545.29	$31,808.80
Total Invoice Amount Paid	$2,508.04	$2,624.83	$2,207.61	$2,444.56	$2,351.97	$2,625.98	$2,093.51	$2,112.70	$2,018.28	$2,250.14	$2,025.89	$6,545.29	$31,808.80
Net Operating Cost per Trip	$7.58	$16.09	$4.47	$6.35	$8.56	$6.16	$7.98	$2.36	$1.41	$1.82	$4.71	$12.13	$79.62

Number of WTW Employees

Number of TANF Employees

FTA 3037 Invoice For the Fiscal Year 2004

Print

Appendix C- Copy of Survey Sent to Transit Providers

CRRAFT Survey

This survey is for the CRRAFT web application you have been using. The survey is being conducted as part of an independent national study of the CRRAFT System. This national study is investigating the extent to which the goals of the CRRAFT System have been met and is documenting what you think is working well with CRRAFT, what needs improvement, and what other functions would be useful additions to CRRAFT.

Your feedback will be an important part of the CRRAFT evaluation.

All responses will be kept strictly confidential, and results will be reported in summary form only. If you have any questions, please contact Bob Sanchez of SAIC at (xxx) xxx-xxxx or Robert.R.Sanchez@saic.com.

The survey should only take about 15 minutes to complete and should be returned to your supervisor who will return it to:

Bob Sanchez.
SAIC

Thank you for your participation.

The survey begins with a series of questions about how CRRAFT has effected your day-to-day operations – has CRRAFT made it easier or harder for you to do your job. The survey ends with the chance for you to give your overall feedback on CRRAFT and to make suggestions for how it could be improved.

1. To what extent do you think the CRRAFT system affects the time you spend preparing the monthly invoices and reports that you must submit? (mark one answer)
   o It takes a *lot longer* with CRRAFT
   o It take a *little bit longer* with CRRAFT
   o The time required is about the same with and without CRRAFT
   o It takes a *little bit less* time with CRRAFT
   o It takes a *lot less* time with CRRAFT
   o I don't know

   [Only Answer 1a if in Question 1 you answered "It takes a little" or "a lot less time"]

1a. About how much time (in hours) does CRRAFT save each month? _____ hours per month

2. To what extent do you think the CRRAFT system affects your ability to submit the monthly invoices and reports by the submission dates? (mark one answer)
   o A *lot less* likely to submit by the submission date with CRRAFT
   o A *little less* likely to submit by the submission date with CRRAFT
   o About the same
   o A *little more* likely to submit by the submission date with CRRAFT
   o A *lot more* likely to submit by the submission date with CRRAFT
   o I don't know

2a. What percentage of the time do you think these reports were submitted by the submission date before and after you started using CRRAFT?
   Before CRRAFT, reports were submitted on time about _____ % of the time
   After CRRAFT, reports were submitted on time about _____ % of the time

3. To what extent do you think the CRRAFT system affects the accuracy of the monthly reports that are submitted? <small>(mark one answer)</small>

  o   A *lot less* accurate with CRRAFT

  o   A *little less* accurate with CRRAFT

  o   About the same

  o   A *little more* accurate with CRRAFT

  o   A *lot more* accurate with CRRAFT

  o   I don't know

3a. What percentage of the time, before and after you started using CRRAFT, did submitted reports require later revisions to correct problems with the reports?
Before CRRAFT, reports required corrections about   _____   % of the time
After CRRAFT, reports required corrections about   _____   % of the time

4. To what extent do you think the CRRAFT system affects the time spent scheduling demand-response trips? <small>(mark one answer)</small>

  o   It takes a *lot longer* with CRRAFT

  o   It take a *little bit longer* with CRRAFT

  o   The time required is about the same with and without CRRAFT

  o   It takes a *little bit less* time with CRRAFT

  o   It takes a *lot less* time with CRRAFT

  o   I don't know

4a. How much time (minutes per day) did it take you to schedule demand responsive trips before you started using the CRRAFT system, and how long does it take you now?
Before CRRAFT, scheduling demand response trips   minutes per day
took us   _____
Now, with CRRAFT, scheduling demand response trips   minutes per day
now takes us   _____

5. To what extent do you think the CRRAFT system affects the efficiency of the scheduled demand-response trips? <small>(mark one answer)</small>

  o   Trips scheduled with CRRAFT are a *lot less* efficient

  o   Trips scheduled with CRRAFT are a *little less* efficient

  o   The efficiency is about the same with and without CRRAFT

  o   Trips scheduled with CRRAFT are a *little more* efficient

  o   Trips scheduled with CRRAFT are a *lot more* efficient

  o   I don't know

6. To what extent do you think the CRRAFT system affects the number of unauthorized trips that are taken? (mark one answer)
    o Unauthorized trips occur a *lot more* often with CRRAFT
    o Unauthorized trips occur a *little more* often with CRRAFT
    o CRRAFT has little effect on the number of unauthorized trips
    o Unauthorized trips occur a *little less* often with CRRAFT
    o Unauthorized trips occur a *lot less* often with CRRAFT
    o I don't know

6a. To what extent were unauthorized trips a problem before CRRAFT? (mark one answer)
    o Unauthorized trips were *no problem* at all before CRRAFT
    o Unauthorized trips were *hardly a problem at all* before CRRAFT
    o Unauthorized trips were a *small problem* before CRRAFT
    o Unauthorized trips were a *significant problem* before CRRAFT
    o Unauthorized trips were a *very significant problem* before CRRAFT
    o I don't know

7. To what extent do you think the CRRAFT system affects the number of in-service vehicle mechanical breakdowns? (mark one answer)
    o CRRAFT results in *a lot more* vehicle breakdowns
    o CRRAFT results in *more* vehicle breakdowns
    o CRRAFT has *no effect* on the number of vehicle breakdowns
    o CRRAFT results in *fewer* vehicle breakdowns
    o CRRAFT results in a *lot fewer* vehicle breakdowns
    o I don't know

8. To what extent do you think the CRRAFT system affects the total operating cost of transit services? (mark one answer)
    o CRRAFT results in *a lot higher* operating costs
    o CRRAFT results in *higher* operating costs
    o CRRAFT *has no significant effect on* operating costs
    o CRRAFT results in *lower* operating costs
    o CRRAFT results in *a lot lower* operating costs
    o I don't know

9. To what extent do you think the CRRAFT system has affected the level of communication between your agency and other agencies, such as PTPB, HSD-ISD? (mark one answer)
    o CRRAFT results in *a lot worse* communication
    o CRRAFT results in *worse* communication
    o CRRAFT has *no significant effect* on the extent of communication
    o CRRAFT results in *better* communication
    o CRRAFT results in *a lot better* communication
    o I don't know

10. To what extent do you think the CRRAFT system has affected the level of coordination between your agency and other human service transportation providers? (mark one answer)
    o CRRAFT results in *a lot worse* coordination
    o CRRAFT results in *worse* coordination
    o CRRAFT has *no significant effect* on the level of coordination
    o CRRAFT results in *better* coordination
    o CRRAFT results in *a lot better* coordination
    o I don't know

11. What is your overall opinion of CRRAFT? (mark one answer)
    o CRRAFT has been *very unsuccessful* – the costs far outweigh the benefits
    o CRRAFT has been *unsuccessful* – the costs outweigh the benefits
    o CRRAFT has been *neither* particularly unsuccessful or successful
    o CRRAFT has been *successful* – the benefits outweigh the costs
    o CRRAFT has been *very successful* – the benefits far outweigh the costs

12. What three features of CRRAFT do you find most useful? (Number the three most useful features 1, 2, and 3 with 1 being the most useful)

Rank   Feature
_____ Features for tracking referrals
_____ The Electronic Benefits Transfer Card
_____ Features for tracking ridership
_____ Features for tracking client trip usage and authorizing a trip
_____ Features for generating reports for internal use
_____ Features for tracking vehicle attributes and maintenance
_____ Features for submitting monthly reports
_____ Features for tracking employee training and certifications
_____ Features for tracking client information and eligibility
_____ Other: _____
_____ Other: _____
_____ Other: _____

13. What other features would you most like to see added to CRRAFT?

_____
_____
_____
_____
_____
_____
_____

14. Are there any features of CRRAFT that you would like to see improved or changed? Please explain.

_____
_____
_____
_____
_____
_____
_____

Thank you for your participation!

Please return this survey to your supervisor

Appendix D- Copy of Interview Guide for Funding Agencies Managers/Staff

Funding Agency Interview

This interview is about the CRRAFT application you recently started using. This interview is being conducted as part of a national study of the CRRAFT System. This national study, which is an independent evaluation, is investigating the extent to which the goals of the CRRAFT System can be met and is documenting the best practices in deploying and operating such systems.

Before beginning the interview, we want to thank you for taking the time to speak with us. It should only take about 15 minutes to complete, and your feedback will be an important part of the CRRAFT evaluation. We are interested in knowing what you think is working well with CRRAFT, what needs improvement, and what other functions would be useful additions to CRRAFT.

The interview begins with a series of questions about how CRRAFT has affected your day-to-day operations – has CRRAFT made it easier or harder for you to do your job. The interview ends with the chance for you to give your overall feedback on CRRAFT and to make suggestions for how it could be improved.

All responses will be kept strictly confidential, and results will be reported in summary form only. If you have any questions, please contact Bob Sanchez of SAIC at (xxx) xxx-xxxx.

1. To what extent do you think the CRRAFT system affects the time you spend reviewing and verifying the monthly invoices and reports that are submitted by transportation providers? (mark one answer)
   - ○ It takes a *lot longer* with CRRAFT
   - ○ It take a *little bit longer* with CRRAFT
   - ○ The time required is about the same with and without CRRAFT
   - ○ It takes a *little bit less* time with CRRAFT
   - ○ It takes a *lot less* time with CRRAFT

   [Ask only if the previous response was takes a little or a lot less time]
1a. About how much time (in hours) does CRRAFT save each month? _____ hours per month

2. To what extent do you think the CRRAFT system affects whether these monthly invoices and reports are submitted by the submission dates? (mark one answer)
   - ○ With CRRAFT, a *lot fewer* reports are submitted by the submission date
   - ○ With CRRAFT, *fewer* reports are submitted by the submission date
   - ○ There has been little change
   - ○ With CRRAFT, *more* reports are submitted by the submission date
   - ○ With CRRAFT, a *lot more* reports are submitted by the submission date

2a. About what percentage of these reports were submitted by the submission date before and after CRRAFT?
Before CRRAFT, reports were submitted on time about _____ % of the time
After CRRAFT, reports were submitted on time about _____ % of the time

3. To what extent do you think the CRRAFT system affects the accuracy of the monthly reports that are submitted? (mark one answer)

o   A *lot less* accurate with CRRAFT

o   A *little less* accurate with CRRAFT

o   About the same

o   A *little more* accurate with CRRAFT

o   A *lot more* accurate with CRRAFT

3a. What percentage of the time, before and after CRRAFT, did submitted reports require later revisions to correct problems with the reports?
Before CRRAFT, reports required corrections about _____ % of the time
After CRRAFT, reports required corrections about _____ % of the time

3b. How much time, before and after CRRAFT, did you spend per month checking and correcting reports?
Before CRRAFT, I spent _____ hours per month
After CRRAFT, I spent _____ hours per month

4. How many unauthorized trips per month do you think were made by transportation providers before and after CRRAFT?
Before CRRAFT, the number of unauthorized trips was _____ trips per month
After CRRAFT, the number of unauthorized trips was _____ trips per month

5. To what extent do you think the CRRAFT system has affected the level of communication between your agency and the transit service providers? (mark one answer)

o   CRRAFT results in *a lot worse* communication

o   CRRAFT results in *worse* communication

o   CRRAFT has *no significant effect* on the extent of communication

o   CRRAFT results in *better* communication

o   CRRAFT results in *a lot better* communication

6. To what extent do you think the CRRAFT system has affected the level of coordination between human service transportation providers? (mark one answer)
   - ○ CRRAFT results in *a lot worse* coordination
   - ○ CRRAFT results in *worse* coordination
   - ○ CRRAFT has *no significant effect* on the level of coordination
   - ○ CRRAFT results in *better* coordination
   - ○ CRRAFT results in *a lot better* coordination

7. What is your overall opinion of CRRAFT? (mark one answer)
   - ○ CRRAFT has been *very unsuccessful* – the costs far outweigh the benefits
   - ○ CRRAFT has been *unsuccessful* – the costs outweigh the benefits
   - ○ CRRAFT has been *neither* particularly successful or unsuccessful
   - ○ CRRAFT has been *successful* – the benefits outweigh the costs
   - ○ CRRAFT has been *very successful* – the benefits far outweigh the costs

8. What three features of CRRAFT do you find most useful? (Number the three most useful features 1, 2, and 3 with 1 being the most useful)

Rank	Feature
	Features for tracking ridership
	Features for generating reports
	Supporting audit activities
	Other:
	Other:
	Other:

9. What other features would you most like to see added to CRRAFT?

_____

_____

_____

_____

_____

_____

_____

10.   Are there any features of CRRAFT that you would like to see improved or changed? Please
      explain.

_____

_____

_____

_____

_____

_____

Thanks again for your participation!

Appendix E- Copy of Interview Guide for Transit Agencies Managers

Transit Provider Manager Interview Guide

This interview is to gather information about your experience with the CRRAFT application and the effect CRRAFT has had on your organization. This interview is being conducted as part of a national study of the CRRAFT System. This national study, which is an independent evaluation, is investigating the extent to which the goals of the CRRAFT System can be met and is documenting the best practices in deploying and operating such systems.

The interview consists of three parts. The first part of the interview is a survey about the effect of the CRRAFT application within your organization. This is the same survey that will be used for all CRRAFT users.

The second part of the interview reviews operational characteristics for FY2002 and FY2004 so that you can give your opinions as to the extent to which CRRAFT was responsible for those changes. In the third part, you will also be asked to identify the people in your organization that use CRRAFT so that we can arrange surveys for those people.

All responses will be kept strictly confidential, and results will be reported in summary form only. If you have any questions, please contact Bob Sanchez of SAIC at (xxx) xxx-xxxx.

Begin the interview with the CRRAFT survey.

After completing the survey, continue with the following.

The following tables summarize the operational and performance characteristics of your organization for FY2002 and FY2004. One of the changes that have occurred during that period is your use of CRRAFT. However, other changes may have occurred. As we review these tables, please describe any opinions you have as to what caused the changes that have occurred. Were these changes probably due to CRRAFT, or probably due to some other factors?

***For each agency, list tables of their FY2002 and FY2004
operational characteristics here and review the changes that
have occurred. Record opinions as to what may have caused
those changes***

The last thing we'd like to do during this interview is identify people in your organization that use
CRRAFT so that we can survey them regarding the effect CRRAFT has had. (We'll use the same
survey that you completed in the first part of this interview.) Please provide us with a list of CRRAFT
users in your organization. Then, we will mail you a set of survey forms, one for each of the users you
identify, so that you can have these users complete the surveys. We will also provide you with a return
envelope so that you can return the surveys when they are completed. Note that, if you prefer, we can
do phone interviews instead.

CRRAFT User	Survey Method	Phone Number