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| Connecting People to Employment |
| An Evaluation of Job Access and Reverse Commute (JARC) Program Services Provided in 2009 |
| Commonwealth Environmental Systems, Inc.  TranSystems  Prepared for Federal Transit Administration  Final Report  October 2010 |

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|  |  |
| --- | --- |
| COTR | Contracting Office’s Technical Representative |
| CTAA | Community Transportation Association of America |
| DOT | Department of Transportation |
| FTA | Federal Transit Administration |
| FY | Fiscal Year |
| GPRA | Government Performance Results Act |
| JARC | Job Access and Reverse Commute |
| LED | Local Employment Dynamics |
| LEHD | Longitudinal Employment-Household Dynamics |
| NAICS | North American Industry Classification System |
| MPO | Metropolitan Planning Organization |
| NF | New Freedom |
| OMB | Office of Management and Budget |
| PART | Performance Assessment Rating Tool |
| PPE | Program Performance Evaluation |
| SAFETEA-LU | Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users |
| TEA-21 | Transportation Equity Act for the 21st Century |
| US | United States |
| USDOT | United States Department of Transportation |

AbbreviationsExecutive Summary

The Job Access Reverse Commute (JARC) was developed to address the unique transportation challenges that welfare recipients and low-income individuals face in finding and keeping jobs. It also addresses issues related to accessing jobs located in suburban areas, which are difficult to reach from urban and rural areas.

FTA contracted with Commonwealth Environmental Services, Inc. (CES) and its subcontractor TranSystems to manage data collection and analysis for the FY 2009 JARC / New Freedom (NF) Program Performance Evaluation. Grant recipients submitted reports on JARC- and NF-funded services using a set of online forms. This report presents findings for the JARC program only. Findings for the New Freedom program are presented in a separate report.

## Highlights for FY 2009

A total of 171 grant recipients submitted complete reports for 910 JARC-funded services in FY 2009. Key findings include:

* JARC-supported services provided 27.3 million one-way trips.
* JARC-supported services made 51.8 million jobs accessible, which included 25.3 million low-wage jobs. In addition, 7.7 million jobs were likely reached during the service year.
* Out of the active JARC-funded services, most were trip-based (81%). The remaining projects were split almost evenly between information-based (10%) and capital investment programs (9%).
* Fixed routes accounted for 41% of the JARC services but 70% of all one-way trips.
* With 24% of the reported JARC services, demand response generated only 12% of the trips.
* Most JARC-supported services operated in urbanized areas, but only 44% served large urban centers. About 31% could be found in non-urbanized or rural communities and 25% in small urbanized areas.
* Mobility managers generated more than 175,000 one-way trips and initiated almost 50,000 customer contacts.
* Agencies used JARC funds to acquire more than 80 vehicles and grant recipients provided about 870 automobile loans to individuals. Together, these vehicle-related programs generated more than 270,000 one-way trips.
* The most commonly selected goals were *expanded geographic coverage* (31%), *improved access/connections* (27%), and *extended service hours or days* (24%).

## Program Performance Measures

FTA has established two key performance measures for JARC program:

* One-way trips provided
* Jobs accessed

The majority of JARC-funded programs can report one or both of these measures. However, JARC grants also support programs like one-stop centers and vehicle loan programs that provide indirect benefits. To ensure that these programs are represented in the overall analysis, FTA established a protocol for reporting on JARC and, later, New Freedom services. With the assistance of the JARC / NF Advisory Committee, which includes representatives from transit agencies, metropolitan planning organizations, and state DOTs, the consultant team developed a reporting matrix for capturing relevant information about the range of JARC and NF services.

The matrix asks grant recipients to categorize their programs based on two criteria: project type and primary project goal. Project types fall into three categories:

* **Trip-based services**, which provide transportation directly to individuals.
* **Information-based services**, which provide information about transportation services to individuals but do not provide direct transportation services.
* **Capital investment projects**, which include facilities and infrastructure to support transportation services.

In keeping with Federal reporting requirements, the five primary program goals are:

* Expanded geographic coverage
* Extended service hours or days
* Improved system capacity
* Improved access/connections
* Improved customer knowledge

After selecting a combination of service type and primary goal, grant recipients are directed to select the corresponding matrix cell in the service matrix. Each cell identifies the type of service output data to be provided by the reporting grantee. The output measures typically include the number of one-way trips for trip-based programs, the number of customer contacts for information-based services, and the number of units provided for capital investment projects. In some cases, grantees are asked to report descriptive information.

While the numbers associated with non-trip-based services like mobility managers and vehicle-loan programs are small in relation to one-way trips and jobs accessed, they represent very real mobility benefits at a local level. The matrix approach enables FTA o capture this information and ensure that the benefits of these non-traditional programs are not overshadowed by the measures of one-way trips and jobs accessed.

## Service Profiles

Finally, FTA continued to collect program profiles, or summaries, for each JARC service. While ridership and jobs-accessed statistics allow FTA to provide a national summary of the JARC program, the profiles allow the grantees to convey the benefits of the program at the local level. These qualitative descriptions complement the data collection and provide an additional avenue for understanding the impacts and benefits of both grant programs.

The profiles provide a rich source of detailed information about the JARC program and are provided in their entirety under separate cover. For convenience, they are organized in 10 separate documents based on the FTA regions. In addition, relevant excerpts have been incorporated throughout this summary report. As the program profiles made abundantly clear, the JARC program connects with riders and customers on a human scale.

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# Introduction

The Job Access Reverse Commute (JARC) was developed to address the unique transportation challenges that welfare recipients and low-income individuals face in finding and keeping jobs. It also addresses issues related to accessing jobs located in suburban areas, which are difficult to reach from urban and rural areas.

JARC was established in 1999 under Section 3037 of the Transportation Equity Act for the 21st Century (TEA-21). Initially, Section 3037 required the Federal Transit Administration (FTA) to select JARC projects through a national competition based on criteria defined by statute, and FTA used a competitive process to select projects for funding appropriated in FY 1999 through FY 2002. However, beginning in FY 2000, Congress also began designating specific projects and recipients to receive JARC funding in the conference reports accompanying the annual appropriations acts, and directed FTA to honor those designations. Each year more projects were Congressionally designated until finally, by FY 2003, all JARC project funding was allocated through directives.

Enacted in 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) repealed Section 3037, and JARC was transitioned into a formula-based program under Section 5316 of the new Act. The new formula was intended to provide an equitable funding distribution to states and communities as well as a stable and reliable funding source. States and public bodies are eligible designated recipients, and they may distribute JARC grants to subrecipients through a competitive selection process. Eligible subrecipients are private non-profit organizations, state or local governments, and operators of public transportation services including private operators of public transportation services.

JARC funds are allocated among large urban, small urban, and non-urbanized/rural areas as follows:

* 60% of funds go to designated recipients in large urban areas with populations 200,000 and more,
* 20% of funds go to states for small urban areas under 200,000, and
* 20% of funds go to states for non-urbanized/rural areas.

States may transfer funds between urbanized and non-urbanized area programs

The JARC formula is based on the number of eligible low-income and welfare recipients. SAFETEA-LU authorized a total of $727 million for JARC grants from FY 2005 through FY 2009 (see Table 1-1). Congress has subsequently extended SAFETEA-LU through December 31, 2010.

Table 1‑1  
FTA JARC Funding, 2005 - 2009

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 2005 | 2006 | 2007 | 2008 | 2009 | Total |
| JARC Mass Transit Account | $108 M | $138 M | $144 M | $156 M | $165 M | $711 M |
| JARC General Fund | $16 M | - | - | - | - | $16 M |
| Total | $124 M | $138 M | $144 M | $156 M | $165 M | $727 M |

## 

## JARC Program Performance Evaluation

FTA contracted with Commonwealth Environmental Services, Inc. (CES) and its subcontractor TranSystems, to manage online data collection and analysis for the FY 2009 JARC / New Freedom (NF) Program Performance Evaluation. Individuals from both firms have been key evaluators of the JARC program since 2002 and developed the JARC / NF Program Performance Evaluation system currently being used to evaluate both programs.[[1]](#footnote-1) This volume presents findings for the JARC program only. Findings for the New Freedom program are presented in a separate report.

Under the Government Performance Results Act (GPRA), FTA is required to “establish performance goals to define the level of performance” and to also “establish performance indicators to be used in measuring relevant outputs, service levels, and outcomes” for each of its programs. In addition, FTA is capturing overall program measures to be used with the GPRA and the Performance Assessment Rating Tool process for the US Office of Management and Budget.

FTA has established two key performance measures for JARC program:

* One-way trips provided
* Jobs accessed

The majority of JARC-funded programs can report one or both of these measures. However, JARC grants also support programs like one-stop centers and vehicle loan programs that provide indirect benefits. To ensure that these programs are represented in the overall analysis, FTA established a protocol for reporting on JARC and, later, New Freedom services. With the assistance of the JARC / NF Advisory Committee, which includes representatives from transit agencies, metropolitan planning organizations, and state DOTs, the consultant team developed a reporting matrix for capturing relevant information about the range of JARC and NF services. The matrix asks grant recipients to categorize their programs based on two criteria: project type and primary project goal.

“Keep communicating with employers about the benefits of taking an interest in employee transportation. Find a few local champions and then recognize them for their interest in their employees. If possible, make them a part of your organizational structure.”

Airport Corridor Transportation Association

Port Authority of Allegheny County (PA)

The reporting matrix includes three basic project types:

* **Trip-based services**, which provide transportation directly to individuals.
* **Information-based services**, which provide information about transportation services to individuals but do not provide direct transportation services.
* **Capital investment projects**, which include facilities and infrastructure to support transportation services.

In keeping with Federal reporting requirements, the five primary program goals are:

* **Expanded geographic coverage**, which includes increasing the coverage area for a service (typically for trip-based or capital investment projects).
* **Extended hours or days of service**, which includes adding hours and/or days to existing services (typically for trip-based or capital investment projects).
* **Improved system capacity**, which includes adding resources that result in additional quantities of service (typically for trip-based or capital investment projects).
* **Improved access or improved connections**, which include projects that improve an individual’s ability to travel (typically trip-based services but also some information-based services such as mobility mangers or capital investment projects such as vehicle loan programs).
* **Improved customer knowledge**, which provides additional resources for information-based services especially customer information and training programs.

After selecting a combination of service type and primary goal, grant recipients are directed to select the corresponding matrix cell in the service matrix. Each cell identifies the type of service output data to be provided by the reporting grantee. The output measures typically include the number of one-way trips for trip-based programs, the number of customer contacts for information-based services, and the number of units provided for capital investment projects. In some cases, grantees are asked to provide descriptive information. The JARC service matrix also collects information from grant recipients used to develop the jobs accessed measure, including geographic coverage and route length. A more detailed description of the service reporting matrix is included in Appendix A.

In addition to providing the basic reporting elements required for the JARC evaluation, grant recipients were asked to complete brief profiles describing each service. The profiles include a description of the service, lessons learned, how the local service is evaluated, and major accomplishments of the program. Recipients were also asked to identify the service area (generally city/county and state). The profile information helps to illustrate the breadth and depth of the projects funded by the JARC program and provides particularly useful information about the nature of the information-based and capital investment projects that do not lend themselves to traditional FTA data reporting. Profiles for JARC services are presented in an appendix to this report under separate cover. For convenience, they are organized into 10 stand-alone volumes based on the FTA region of the designated recipient.

## Summary of FY 2009 Analysis

A total of 171 grant recipients submitted complete reports for 910 JARC-funded services in FY 2009. Key findings include:

* JARC-supported services provided 27.3 million one-way trips.
* JARC-supported services made 51.8 million jobs accessible, which included 25.3 million low-wage jobs. In addition, 7.7 million jobs were likely reached during the service year.
* Out of the active JARC-funded services, most were trip-based (81%). The remaining projects were split almost evenly between information-based (10%) and capital investment programs (9%).
* Less than half of all JARC-supported services operated in large urbanized areas (44%). About 31% could be found in non-urbanized or rural communities and 25% in small urbanized areas.

### Year-to-year comparisons

The current data collection effort, conducted in 2010, covered JARC services in operation during Federal FY 2009 (October 1, 2008, through September 30, 2009). When relevant, this analysis will make comparisons with information reported in previous years. When making year-to-year comparisons, it is important to recognize that annual fluctuations in service provision may not necessarily reflect trends in program performance. Instead, several factors may influence these annual changes.

First, as described above, JARC has evolved over time from a national competitive grant program to a congressionally directed grant program to a formula-based grant program with a local selection process. As a result, the grant recipients, and particularly the subrecipients, have changed and will continue to change over time as programs adapt to meet changing local needs. In addition, grant recipients with programs funded through the TEA-21 program (“earmarks”) were asked not to report for the FY 2009 analysis. Instead, FTA chose to focus its data-analysis efforts on the programs supported through Section 5316.

Table 1-2 illustrates the change in the number of grant recipients reporting in FY 2006 through FY 2009. As the table shows, the number of JARC-supported services dropped in FY 2007 and then increased for FY 2008 and again for FY 2009. The change in JARC services demonstrates the transition from earmark to formula, as older services ended and newer ones were introduced. Growth can be expected to level off in future years as the number of recipients stabilizes under the formula-based program.

Table 1‑2  
JARC Services Reported by Fiscal Year

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | JARC Recipients | | JARC Services | | Reporting |
| Fiscal Year | **Number** | **Change** | **Number** | **Change** | **Response Rate** |
| FY 2006 | 155 | - | 645 | **-** | 92% |
| FY 2007 | 121 | -22% | 587 | -9% | 74% |
| FY 2008 | 147 | +21% | 681 | +16% | 74% |
| FY 2009 | 171 | +16% | 910 | +34% | 99% |

Second, the JARC program is designed to support a broad range of services. These include services that provide transportation directly (such as fixed route or user-side subsidies) as well as programs that provide information and investments in capital improvements. As the mix of services changes from year to year, the number of one-way trips and jobs accessed will change accordingly. In the aggregate, it may not be possible to determine whether this kind of change reflects a decline in program performance or simply a new mix of services offered. For example, if the number of capital investment programs increases, the number of one-way trips and/or jobs accessed may well decrease because improvements such as software systems may not translate directly into trips.

Another element affecting comparisons is the difference in survey response rates from year to year. As Table 1-2 showed, the response rate ranged from 74% for the FY 2007 / FY 2008 analysis to 99% for the FY 2009 cycle.

Comparing jobs accessed from year to year is especially difficult. Besides reflecting changes in the mix of JARC-supported programs, the number and mix of jobs available is tied directly into local economic conditions. In addition, the consultant team has worked to refine the methodology for estimating jobs accessed during the past several reporting cycles. These changes have improved the accuracy of the approach, but they make direct “apples-to-apples” comparisons impossible.

This is why the matrix approach, introduced for FY 2006 and refined for this data cycle, is especially important. The service matrix captures performance information for all JARC services and reflects the range of choices made at the local level.

While acknowledging these considerations, the data collected still presents a picture of the changing face of the JARC program. Therefore, this analysis:

* Compares the mix of programs from year-to-year, including service type. (See Figure 3-3.)
* Compares the mix of grantees and subrecipients from year to year, including type of operating setting. (See Figure 3-6.)
* Compares the primary goals for service provided from year to year. (See Figure 6-1.)
* Incorporates information from the profiles into the analysis to show the diversity of the JARC program, along with lessons learned and elements of success. (See sidebars throughout report and full profiles in Appendix C.)

### Data cleaning and validation

A total of 174 grant recipients reported initially on 931 JARC-supported programs. As a first step in the analysis, the technical team reviewed the records to identify errors, invalid entries, duplicate services, missing data, or other error in data entry.

Common errors and omissions included the following:

* **For all services** -- Reporting on service that was not in operation during FY 2009
* **For trip-based services** – Defining demand response services as flexible routes
* **For fixed-route, flexible, and shuttles** – Reporting annual revenue miles instead of route length
* **For service area** – Indicating “county” or “city” instead of entering the name for the county or city served

When the errors had a clear solution (e.g., an obvious typographical error in the state name), the team made the corrections without further research. In other cases, the team contacted recipients and/or subrecipients by telephone or email to clarify questions and to obtain updated information. The final corrected dataset included 171 grant recipients reporting on 910 JARC-supported services. This analysis is based on the final validated dataset.

### Data presentation

Most of the tables and charts included in this report present data in percentage terms rather than raw numbers. Because the number of services and one-way trips varies by service type, percentages provide a better opportunity to compare programs. In most cases, the percentages are presented in two ways – summed by table row (usually service type) and summed by table column (e.g., size of urbanized area). In general, information in tables is presented in the order used on the data collection forms and in the JARC service matrix. The accompanying charts represent the data in the tables, but are sorted by percentage, rather than program type.

## Document Overview

The remainder of this document provides information about the process and results of the JARC service evaluation for FY 2009. Chapter 2 summarizes the data collection process. Results of the JARC evaluation are presented in Chapters 3-6:

* Chapter 3 presents an overview of JARC services, including the distribution of service types.
* Chapter 4 summarizes ridership on JARC services.
* Chapter 5 includes an estimation of jobs accessed.
* Chapter 6 uses to matrix format to present findings on program goals and outputs.

Finally, Chapter 7 recaps the evaluation findings. Appendix A summarizes the service matrix approach and Appendix B provides an overview of the methodology used to estimated jobs accessed for JARC programs. Appendix C includes the JARC service profiles, which are presented under separate cover as a set of 10 separate documents based on FTA regions.

# Data Collection

Consistent with previous years, JARC grantees were asked to use an online form for reporting on FY 2009 JARC services. To streamline the data collection process, FTA collected reports for the JARC and New Freedom grant programs at the same time using a single portal. This chapter describes the combined data collection activities for the JARC and New Freedom programs.

The team’s focus during the data collection phase was to bolster the percentage of recipients reporting. For FY 2009, 99% of recipients either reported or indicated they had no reporting obligation (up from 74% in the previous cycle). This was accomplished by

* Adding a new procedure to verify recipient contacts and reporting requirements in advance of data collection and
* Following up repeatedly with non-responding recipients.

The team made further changes to the user interface to streamline reporting, particularly for large recipients. Recipients were supported via email, the support website, and by three webinars – up from two in the previous cycle.

This chapter provides additional details on the data collection process.

## Reporting Universe

Similar to prior years, FTA required recipients to report for the FY 2009 reporting cycle if they provided JARC- or New Freedom-funded services at any time between October 1, 2008, and September 30, 2009. Eligibility was based on actual service dates rather than the year the funds were awarded, obligated, or spent.

This year, FTA directed grant recipients not to report on Congressionally designated earmark projects. These services were funded prior to SAFETEA-LU and generally coming to a close. By excluding these projects, FTA could focus the JARC and New Freedom reporting efforts on a consistent universe of designated recipients reporting on programs funded through the formula programs.

### Recipient identification

Through its TEAM system, FTA tracks grant funding status. However, because TEAM is set up to oversee grants rather than services, it does not allow FTA to directly determine which agencies provided JARC- or New Freedom-funded services in any particular period.

To address this challenge, FTA has provided the consultant team with a list of agencies with open JARC or New Freedom grants during reporting year. Consistent with previous years, the team considered this list as a “superset” of the agencies that were required to report and used it as a starting point to locate the grant recipients with active services during the reporting year. The team then contacted each recipient in the superset to determine whether the recipient had a reporting obligation for the fiscal year in question and, if so, to support the recipient through the reporting process. For FY 2009, FTA provided the team with an initial list of 282 reporting candidates.

The team measures reporting performance as the ratio of the number of recipients who have either reported or indicated they had no reporting obligation to the number of recipients in the superset. For FY 2009, this percentage was 99%.

## Recipient Outreach, Tracking, and Follow Up

In past years, it has sometimes been difficult for the project team to reach a responsive contact at an agency. This creates uncertainty about whether a non-responsive agency had services on the street during the reporting year. Agencies may be slow to respond because they know they need not report or because they have other priorities. In a few cases, this has led to agencies discovering that they do have a reporting requirement, close to the end of the reporting period, when it is difficult to gather the needed data and provide it to the reporting system.

To improve contact with recipients and support responsiveness, the team instituted a separate effort to determine reporting obligations in advance of the data collection period. Beginning in mid-February 2010, the team, with FTA assistance, contacted all agencies on the superset list, requesting their response to an online screening survey that would (a) help them to determine whether their agency was required to report for FY 2009, and (b) let them revise their point of contact information.

Ultimately, 95% of the 282 agencies on the superset list provided responses to the survey, either directly, via the web interface, or via phone or email follow-up from a team member. Most of these responses were received, as intended, before the beginning of the reporting period.

The official reporting period began on March 15, 2010, and ended on May 15, 2010. The reporting calendar included the following milestones:

* From the middle of February through the middle of March, the team focused on inviting and reminding recipients in the superset to complete the screening survey.
* The reporting site opened to recipients for testing early in March 2010. The site was opened to all recipients and their subrecipients on March 15. General reporting closed on May 15. However, recipients who requested additional time to report were provided with access through June 3.
* After May 15, the team worked intensively via email and telephone with recipients who had not yet reported to ensure that they would report. The last submission was received on June 3, and the reporting system was locked to public access on June 4.

### FTA liaison

In conjunction with project staff at FTA headquarters, the evaluation team worked with the FTA regional offices to coordinate communication with the recipients. The team prepared several emails for FTA to send to recipients with information about the reporting schedule and data requirements.

When recipients did not respond to the screening survey or to invitations to report, team members followed up. Initial contact was via email; telephone follow-up was required in about 55 cases. The team was not able to establish contact with 10% of the non-responsive grant recipients and asked FTA to follow up with them, either directly from headquarters or via the appropriate regional office.

### Outreach

The team sent out 1,780 email reminders to specific recipients during the reporting process, to encourage reporting and to ask individual recipients if they needed additional assistance or time to complete their reporting requirements. (See Figure 2-1.)

FTA also announced reporting requirements and schedule via the New Freedom and JARC program pages on the FTA website and via its GovDelivery list of JARC and New Freedom contacts.

### Tracking

The team used real-time access to the reporting database, in combination with a flexible reporting capability, to identify candidates for follow-up. These included non-reporters as well as recipients who had provided data but had not completed their submissions. This information was used to generate customized reminders and offers of assistance to select recipients.

### Data responses

As a result of the screening survey, diligent follow-up, and assistance from FTA headquarters, the team was able to improve the overall response rate from 74% in the previous reporting cycle (FY 2007 – FY 2008) to 99% in this reporting cycle. See Table 2-1.

Table 2‑1  
Reporting Response Rate

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | FY 2009 | | FY 2007 - FY 2008 | |
| Status | **#** | **%** | **#** | **%** |
| Report submitted | 189 | 67% | 158 | 54% |
| Not required to report | 90 | 32% | 59 | 20% |
| Unknown | 3 | 1% | 75 | 26% |
| Total | 282 | 100% | 293 | 100% |

Figure ‑  
Email Outreach

## Technical Assistance

The team provided support to the recipients during the reporting process via a website, webinars, and email and telephone contact.

### Support site

As in previous years, the support effort relied on the FTA JARC & New Freedom Reporting Support Center website (<http://ftajarcnf.cesnn.com/>).

For this reporting cycle, the team substantially reorganized the site, including the graphics and interface. From February 1 through May 31, the support site handled 2,653 visits, consisting of 7,858 page views, from 1,150 visitors, as recorded by Google Analytics. The home page, the page providing webinar information, and the page providing links to sample forms were most popular, accounting for 50% of all page views. Some grantees also submitted questions to the support team via the site’s commenting feature, although most individuals preferred to use email or telephone to request support.

### Webinars

In this reporting cycle, the team continued the practice of enhancing and expanding the effort to support recipients via webinars. Two webinars were scheduled initially, and a third was added to meet demand.

The webinars reached a total of 289 locations, each comprising one or more individuals, presented 37 slides, and handled questions submitted via chat interface and telephone. See Table 2-2.

Table 2‑2  
Webinar Participation

|  |  |
| --- | --- |
| Date | Web/Phone Connections |
| March 16 | 86 |
| April 7 | 131 |
| April 29 | 72 |

All webinars included participation from FTA staff and the evaluation team. The first two webinars were hosted at FTA headquarters in Washington, D.C., and the third used a backup hosting site.

### Email and telephone contact

Lauren Miller, the team’s lead for technical assistance, responded to 353 email threads from February 1 through June 5. She also assisted recipients and subrecipients via telephone during the reporting process. Evaluation team members Susan Bregman and Rosemary Gerty also provided support to recipients and subrecipients during the reporting period. As part of the quality assurance process described in Chapter 1, Ms. Bregman, the team’s lead for data analysis, contacted about three dozen recipients after the reporting period closed to clarify questions about specific data elements in their service reports.

## Overview of Online Technology and Changes

The data collection system was originally developed for the JARC program in FY 2003 and has been substantially refined in subsequent years. It was modified to include the New Freedom program starting with FY 2007.

### Web infrastructure

The JARC/New Freedom data collection and analysis effort is managed through two public-facing websites and four private websites supporting development and testing.

Recipients and subrecipients enter, review, and submit JARC and New Freedom service information through the data collection website – <http://ftajarcnf-report.cesnn.com>. This site serves as the front-end for the official reporting database, “jnf\_fy09a”. Users also have access to the support website – <http://ftajarcnf.cesnn.com> – as described above.

Behind the scenes, the team maintains four additional websites:

1. The development version of the reporting system;
2. The preview version of the reporting system;
3. The development blog, used to narrate changes and issues in the team’s websites and databases; and
4. A formal software version control system, which provides granular tracking and control of code changes and serves as the conduit for code moving from development to preview to production.

The development and preview websites are backed by databases separate from the formal reporting database.

### Technical changes

For the FY 2009 reporting cycle, the team made substantial changes in the reporting website to support recipients at large agencies, to streamline the interface, and to provide recipient and subrecipient users with a clear indication of each next step in completing their reporting requirements.

#### Support for large agencies

The team improved the reporting experience for recipients at large agencies in three ways:

1. All recipients who had submitted JARC or New Freedom reports during the FY 2008 reporting cycle had online access to that earlier report.
2. Large recipients were able to import the relevant portions of the FY2008 reporting into their FY 2009 forms upon request.
3. Subrecipients were provided with an automated capability to notify their recipient when they had completed their reporting.

#### Other changes

The user interface was revised to make it easier for users to identify the next step to complete in the reporting process, to select JARC or New Freedom service forms for reporting as appropriate, to focus on the forms for a single subrecipient, and to reduce clutter.

# Overview of JARC Services

This chapter reports on the characteristics of JARC grantees and their services for FY 2009. Subsequent chapters cover JARC performance measures, including one-way trips, jobs accessed, and outputs for non-trip-based services.

The information is based on data collected from the 171 JARC grant recipients that submitted complete and validated reports for FY 2009; these grantees reported on 910 services.

## Service Types

Grantees reported a total of 910 active JARC-funded services for FY 2009. Grant recipients were asked to classify services in one of three ways:

* **Trip-based services**, which provide transportation directly to individuals. These include fixed routes, flexible routes, shuttles, demand response, and user-side subsidy programs (e.g., vouchers, ridesharing, and guaranteed ride home).
* **Information-based services**, which provide information about transportation services to individuals but do not provide direct transportation services. These include mobility managers/brokerages, trip or itinerary planning, Internet-based travel information, informational materials, and one-on-one training.
* **Capital investment programs**, including facilities and infrastructure to support transportation services. These include vehicle based programs (such as those making automobiles available to individuals or organizations), facility or amenity improvements, and technology to support transportation services.

User-side subsidies include vouchers, ridesharing, and guaranteed-ride home programs, where the program covers the cost of a specific trip. They do not include fare vouchers, which were not eligible for JARC funding.

Although FTA funds mobility managers as an eligible capital expense, they are categorized here as information-based services for reporting purposes.

Out of the active JARC-funded services, the vast majority were trip-based, at approximately 81%. The remaining 19% of programs were split almost equally between information-based and capital investment programs. (See Figure 3-1.) As Table 3-1 and Figure 3-2 show, the most commonly reported programs were fixed route and demand response. Together, these traditional transit services accounted for almost two out of three JARC-funded programs.

Table 3‑1  
JARC Services by Type

|  |  |  |
| --- | --- | --- |
| Service Type | # | % |
| Trip-Based Services | 737 | 81% |
| Fixed route | 370 | 41% |
| Flexible routing | 58 | 6% |
| Shuttle/Feeder | 42 | 5% |
| Demand response | 218 | 24% |
| Vanpool | 21 | 2% |
| User-side subsidy | 28 | 3% |
| Information-Based Services | 89 | 10% |
| Mobility manager | 44 | 5% |
| One-stop center | 12 | 1% |
| Trip/itinerary planning | 2 | 0% |
| One-on-one transit training | 7 | 1% |
| Internet-based information | 4 | 0% |
| Materials and marketing | 15 | 2% |
| Transportation resource training | 5 | 1% |
| Capital Investment Projects | 84 | 9% |
| Vehicle for individual | 30 | **3%** |
| Vehicle for agency | 40 | **4%** |
| Vanpool vehicles | 2 | **0%** |
| Car-sharing | 2 | **0%** |
| ITS investments | 7 | **1%** |
| Other capital projects | 3 | **1%** |
| Total | 910 | **100%** |



Figure ‑  
JARC Services by Type

The JARC program supports a broad array of services tailored to the needs of individual communities. While traditional transit services comprise the majority of JARC-funded services, the share of information-based and capital investment programs increased in FY 2009. As Table 3-1 showed, services in these categories accounted for 19% of all programs in FY 2009. This marks an increase over previous years; for FY 2006 through FY 2008, the share of information-based services and capital investments stayed steady at around 15%. (See Figure 3-3.)

Only five categories of JARC-supported services achieved at least a 5% share:

* Fixed route (N=370)
* Demand response (N=218)
* Flexible routing (N=58)
* Mobility manager (N=44)
* Shuttle/Feeder (N=42)

Together, these five types of JARC services accounted for 81% of the total services.



Figure ‑  
JARC Services by Type   
(Program Detail)



Figure ‑  
JARC Services by Type  
FY 2006 – FY 2009

## Agency Type

As described earlier, several types of agencies are eligible to receive JARC funds. JARC **recipients** receive funding from FTA through the Section 5316 formula program or, previously, through the competitive selection or earmark process. Generally recipients are state departments of transportation, transit operators, or metropolitan planning organizations. Recipients distribute JARC funds to **subrecipients**, typically through a competitive selection process. Eligible subrecipient organizations include state or local governments, public transit operators, or nonprofits. For example, a state department of transportation may distribute JARC funds to a rural transit operator for a demand response service or a transit operator may award JARC funds to a community-based nonprofit to operate a one-stop center.

Recipients receive funds directly from FTA and subrecipients receive funds indirectly via recipients.

For FY 2009, 171 recipients, or grantees, reported on JARC-supported services. As Table 3-2 shows, just over half of reporting recipients were transit agencies. Another 26% were state DOTs.

Table 3‑2  
Recipients by Agency Type

|  |  |  |
| --- | --- | --- |
| Agency Type | # | % |
| Transit agency | 91 | 53% |
| State DOT | 44 | 26% |
| MPO | 19 | 11% |
| Other | 17 | 10% |
| Total | 171 | 100% |

For FY 2009, 594 separate subrecipients reported JARC services. As Table 3-3 indicates, two out of three subrecipients were either public transit operators (34%) or nonprofits (31%). DOTs at the city or county level made up the next largest group; in some communities DOTs are also the transit operator.

Some subrecipients provided multiple services and a few received funds from multiple recipients. Separate from the FTA definitions, for the purposes of data reporting and analysis, a recipient was also classified as a subrecipient if that recipient agency used JARC funds to operate a project itself.

Table 3‑3  
Subrecipients by Agency Type

|  |  |  |
| --- | --- | --- |
| Agency type | # | % |
| Public transit operator | 202 | 34% |
| Nonprofit | 183 | 31% |
| City DOT | 59 | 10% |
| County DOT | 45 | 8% |
| Other | 37 | 6% |
| Other county | 36 | 6% |
| State agency | 12 | 2% |
| Private transit operator | 12 | 2% |
| Other city | 8 | 1% |
| Total | 594 | 100% |

## Size of Urbanized Area

Fewer than half of all JARC-supported services (44%) operated in large urbanized areas (population over 200,000) in FY 2009. About 25% were located in small-urban localities (population 50,000-199,000) and 31% in non-urbanized or rural areas (population less than 50,000). Note that grantees reported on the size of the service area for each individual program, not for the grantee agency itself. For example, a state DOT that submitted a report for multiple services was asked to characterize the operating setting for each service separately. When a service covered multiple jurisdictions, such as an express route connecting rural residents with city jobs, grantees were asked to select the setting that best characterized the service.

Fixed route and shuttle/feeder services were especially likely to operate in large urban areas (59% and 64%, respectively), as might be expected. Demand response and flexible routes were more common in non-urbanized locations (50% and 41%), where they were a better match for low-density land-use and employment patterns, along with programs that acquired vehicles for agencies (60%) and individuals (43%). Mobility manager programs could be found almost equally in all settings: large urban (34%), small urban (30%), and rural (36%). Vanpool services showed a similar pattern – 33% in large urban areas, 29% in small urban, and 38% in rural – although it is difficult to extrapolate from only 21 programs. Still, the even distribution pattern for mobility manager and vanpool programs suggests that these program types can be adapted to multiple operating environments. (This distribution is summarized in Table 3-4 and illustrated in Figure 3-4.)

A comparison of the geographic settings shows that fixed route services made up the greatest share of programs in large urbanized areas (55%), but accounted for only 20% of the rural programs. Demand response, in contrast, comprised 38% of the non-urban programs but only 16% of the large urban services. Again, these findings are not surprising and indicate that JARC recipients are taking advantage of the program’s flexibility to match service configuration with the operating environment. (See Table 3-5 and Figure 3-5.)

The distribution of services in FY 2009 continued a shift away from large urbanized areas and toward less populated communities. As discussed above, 44% of JARC services operated in large urbanized areas in FY 2009, marking a decrease from previous years. Some 51% of JARC programs were in large urbanized areas in FY 2007 and 48% in FY 2008. This may reflect the impacts of the formula program, which allocates a fixed percentage of JARC funding for communities in small urban and non-urbanized areas. Figure 3-6 illustrates the trend, showing the percentage of JARC services by size of urbanized area for FY 2006 through FY 2009.

Table 3‑4  
JARC Services by Type and Size of Urbanized Area   
(Percentage by Row)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service Type | # | Large Urban | Small Urban | Non Urban | Total |
| Trip-Based Services | 737 | 46% | 25% | 29% | 100% |
| Fixed route | 370 | 59% | 25% | 15% | 100% |
| Flexible routing | 58 | 24% | 34% | 41% | 100% |
| Shuttle/Feeder | 42 | 64% | 12% | 24% | 100% |
| Demand response | 218 | 28% | 22% | 50% | 100% |
| Vanpool service | 21 | 33% | 29% | 38% | 100% |
| User-side subsidy | 28 | 39% | 36% | 25% | 100% |
| Information-Based Services | 89 | 40% | 30% | 29% | 100% |
| Mobility manager | 44 | 34% | 30% | 36% | 100% |
| One-stop center | 12 | 42% | 33% | 25% | 100% |
| Itinerary planning | 2 | 100% | 0% | 0% | 100% |
| One-on-one transit training | 7 | 71% | 29% | 0% | 100% |
| Internet-based information | 4 | 50% | 25% | 25% | 100% |
| Materials and marketing | 15 | 27% | 33% | 40% | 100% |
| Transportation resource training | 5 | 60% | 40% | 0% | 100% |
| Capital Investment Projects | 84 | 29% | 21% | 50% | 100% |
| Vehicle for individual | 30 | 33% | 23% | 43% | 100% |
| Vehicle for agency | 40 | 15% | 25% | 60% | 100% |
| Vanpool vehicles | 2 | 50% | 50% | 0% | 100% |
| Car-sharing | 2 | 50% | 0% | 50% | 100% |
| ITS investments | 7 | 43% | 0% | 57% | 100% |
| Other capital projects | 3 | 100% | 0% | 0% | 100% |
| Total | 910 | 44% | 25% | 31% | 100% |



Figure ‑  
JARC Services by Type and Size of Urbanized Area   
(Percentage by Row)

Table 3‑5  
JARC Services by Type and Size of Urbanized Area   
(Percentage by Column)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service Type | # | Large Urban | Small Urban | Non Urban | Total |
| Trip-Based Services | 737 | 85% | 80% | 76% | 81% |
| Fixed route | 370 | 55% | 41% | 20% | 41% |
| Flexible routing | 58 | 3% | 9% | 9% | 6% |
| Shuttle/Feeder | 42 | 7% | 2% | 4% | 5% |
| Demand response | 218 | 15% | 21% | 38% | 24% |
| Vanpool service | 21 | 2% | 3% | 3% | 2% |
| User-side subsidy | 28 | 3% | 4% | 2% | 3% |
| Information-Based Services | 89 | 9% | 12% | 9% | 10% |
| Mobility manager | 44 | 4% | 6% | 6% | 5% |
| One-stop center | 12 | 1% | 2% | 1% | 1% |
| Itinerary planning | 2 | 0% | 0% | 0% | 0% |
| One-on-one transit training | 7 | 1% | 1% | 0% | 1% |
| Internet-based information | 4 | 0% | 0% | 0% | 0% |
| Materials and marketing | 15 | 1% | 2% | 2% | 2% |
| Transportation resource training | 5 | 1% | 1% | 0% | 1% |
| Capital Investment Projects | 84 | 6% | 8% | 15% | 9% |
| Vehicle for individual | 30 | 3% | 3% | 5% | 3% |
| Vehicle for agency | 40 | 2% | 4% | 9% | 4% |
| Vanpool vehicles | 2 | 0% | 0% | 0% | 0% |
| Car-sharing | 2 | 0% | 0% | 0% | 0% |
| ITS investments | 7 | 1% | 0% | 1% | 1% |
| Other capital projects | 3 | 1% | 0% | 0% | 0% |
| Total | 910 | 100% | 100% | 100% | 100% |



Figure ‑  
JARC Services by Type and Size of Urbanized Area   
(Percentage by Column)

Figure ‑  
JARC Services by Size of Urbanized Area  
FY 2006 – FY 2009

## Geographic Coverage

JARC grant recipients were asked to indicate the geographical boundaries of their service area. Overall, more than half of JARC services served counties (37%) or cities and towns (25%). About 18% were regional and 14% served multiple jurisdictions. Only a few programs (6%) served other types of jurisdictions, including neighborhoods. (See Table 3-6 and Figure 3-7.)

Key findings included:

* Fixed-route services were primarily located in municipalities (37%) and counties (28%).
* Demand response programs were most likely to serve counties (53%).
* Mobility managers also focused on providing county-level service (52%).

Looking at jurisdictional differences, fixed route was the most common service type in cities and towns (59%). For county-level services, demand response (34%) and fixed route (28%) were most commonly seen. (See Table 3-7 and Figure 3-8.)

But knowing that a program served a county only tells part of the story. For example, Cook County (IL), which includes Chicago, offers a very different operating environment than Choctaw County (OK). To examine the geographic distribution of JARC services in more detail, the analysis compared jurisdictions and area size.

As Table 3-8 shows, county-based services are evenly split between large urbanized areas (15% of all services) and non-urbanized areas (14%). Municipal services, not surprisingly, are most likely to be located in large urbanized (11%) and small urbanized (10%) areas. All other services were distributed fairly evenly among urbanized areas and jurisdictions; no others exceeded 10% of the total number of reported JARC-supported services.

Table 3‑6  
JARC Services by Type and Jurisdiction   
(Percentage by Row)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Service Type | # | County | Municipal | Region | Multiple | Other | Total |
| Trip-Based Services | 737 | 37% | 28% | 16% | 12% | 6% | 100% |
| Fixed route | 370 | 26% | 37% | 21% | 11% | 6% | 100% |
| Flexible routing | 58 | 45% | 22% | 3% | 19% | 11% | 100% |
| Shuttle/Feeder | 42 | 48% | 26% | 10% | 12% | 4% | 100% |
| Demand response | 218 | 52% | 17% | 11% | 14% | 5% | 100% |
| Vanpool service | 21 | 38% | 10% | 19% | 29% | 5% | 100% |
| User-side subsidy | 28 | 32% | 36% | 25% | 0% | 8% | 100% |
| Information-Based Services | 89 | 44% | 12% | 26% | 17% | 1% | 100% |
| Mobility manager | 44 | 52% | 5% | 27% | 16% | 0% | 100% |
| One-stop center | 12 | 42% | 17% | 17% | 25% | 0% | 100% |
| Itinerary planning | 2 | 100% | 0% | 0% | 0% | 0% | 100% |
| One-on-one transit training | 7 | 14% | 43% | 14% | 29% | 0% | 100% |
| Internet-based information | 4 | 0% | 25% | 50% | 25% | 0% | 100% |
| Materials and marketing | 15 | 40% | 13% | 33% | 7% | 7% | 100% |
| Transportation resource training | 5 | 40% | 20% | 20% | 20% | 0% | 100% |
| Capital Investment Projects | 84 | 32% | 11% | 26% | 26% | 5% | 100% |
| Vehicle for individual | 30 | 33% | 3% | 23% | 37% | 3% | 100% |
| Vehicle for agency | 40 | 30% | 20% | 23% | 23% | 5% | 100% |
| Vanpool vehicles | 2 | 50% | 0% | 50% | 0% | 0% | 100% |
| Car-sharing | 2 | 50% | 0% | 50% | 0% | 0% | 100% |
| ITS investments | 7 | 43% | 0% | 29% | 29% | 0% | 100% |
| Other capital projects | 3 | 0% | 0% | 67% | 0% | 33% | 100% |
| Total | 910 | 37% | 25% | 18% | 14% | 6% | 100% |



Figure ‑  
JARC Services by Type and Jurisdiction   
(Percentage by Row)

Table 3‑7  
JARC Services by Type and Jurisdiction   
(Percentage by Column)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Service Type | # | County | Muni | Region | Multi | Other | Total |
| Trip-Based Services | 737 | 80% | 91% | 72% | 71% | 90% | 81% |
| Fixed route | 370 | 28% | 59% | 48% | 30% | 44% | 41% |
| Flexible routing | 58 | 8% | 6% | 1% | 9% | 12% | 6% |
| Shuttle/Feeder | 42 | 6% | 5% | 2% | 4% | 4% | 5% |
| Demand response | 218 | 34% | 17% | 14% | 23% | 24% | 24% |
| Vanpool service | 21 | 2% | 1% | 2% | 5% | 2% | 2% |
| User-side subsidy | 28 | 3% | 4% | 4% | 0% | 4% | 3% |
| Information-Based Services | 89 | 12% | 5% | 14% | 12% | 2% | 10% |
| Mobility manager | 44 | 7% | 1% | 7% | 5% | 0% | 5% |
| One-stop center | 12 | 1% | 1% | 1% | 2% | 0% | 1% |
| Itinerary planning | 2 | 1% | 0% | 0% | 0% | 0% | 0% |
| One-on-one transit training | 7 | 0% | 1% | 1% | 2% | 0% | 1% |
| Internet-based information | 4 | 0% | 0% | 1% | 1% | 0% | 0% |
| Materials and marketing | 15 | 2% | 1% | 3% | 1% | 2% | 2% |
| Transportation resource training | 5 | 1% | 0% | 1% | 1% | 0% | 1% |
| Capital Investment Projects | 84 | 8% | 4% | 14% | 17% | 8% | 9% |
| Vehicle for individual | 30 | 3% | 0% | 4% | 9% | 2% | 3% |
| Vehicle for agency | 40 | 4% | 3% | 5% | 7% | 4% | 4% |
| Vanpool vehicles | 2 | 0% | 0% | 1% | 0% | 0% | 0% |
| Car-sharing | 2 | 0% | 0% | 1% | 0% | 0% | 0% |
| ITS investments | 7 | 1% | 0% | 1% | 2% | 0% | 1% |
| Other capital projects | 3 | 0% | 0% | 2% | 0% | 2% | 1% |
| Total | 910 | 100% | 100% | 100% | 100% | 100% | 100% |



Figure ‑  
JARC Services by Type and Jurisdiction   
(Percentage by Column)

Table 3‑8  
JARC Services by Jurisdiction and Size of Urbanized Area

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Service Type | Large Urban | Small Urban | Non-Urban | Total |
| County | 15% | 7% | 14% | 37% |
| Municipal | 11% | 10% | 4% | 25% |
| Regional | 9% | 3% | 6% | 21% |
| Multiple | 5% | 3% | 6% | 14% |
| Other | 3% | 2% | 1% | 5% |
| Total | 44% | 25% | 31% | 100% |

# One-Way Trips

As in previous years, JARC grant recipients were asked to report annual one-way trips. Almost all grantees with trip-based services were able to provide this information (94%).

For FY 2009, it is estimated that JARC-supported services provided 27.3 million one-way trips, a 16% increase over FY 2008.

As might be expected, most one-way trips were recorded on fixed route services. Two factors account for this. First, fixed route was the single largest JARC service type reported for FY 2009. Second, fixed route services often use larger vehicles than other types of JARC-supported services and traverse more densely developed corridors. In FY 2009, fixed routes accounted for 70% of reported trips, followed by demand response (12%) and flexible routes (8%). No other services accounted for more than 3% of the total trips reported. Table 4-1 and Figure 4-1 show this distribution.

“Because of this service, more than 100 people are going to work each day and supporting themselves instead of relying on welfare and unemployment in a poor economy.”

Bucks County TMA

Southeastern Pennsylvania Transportation Authority

Some grantees with information-based services or capital-investment programs reported on one-way trips as well, including mobility managers and agencies that acquired vehicles for passenger service. While some mobility managers primarily provided customer information, some also provided direct transportation services as well. When mobility managers provided service, they were asked to report the number of one-way trips served in addition to the number of customer contacts. Similarly, grantees with auto-based programs were asked to indicate the number of vehicles provided along with the number of one-way trips served (if available). When a type of service was assumed not to generate trips (such as marketing materials or itinerary planning), grant recipients were not asked to report trips. Finally, some recipients used JARC funds to purchase one or more vehicles that they placed into service. In some cases, grantees reported the number of trips provided on the new vehicles as both a trip-based service and a capital improvement. To avoid double counting, the analysis attributed trips to the service (e.g., fixed route or demand response) and not to the capital investment.

Table 4‑1  
One-Way Trips by Service Type

|  |  |  |  |
| --- | --- | --- | --- |
| Service Type | # | One-Way Trips | % |
| Trip-Based Services | 737 | 26,804,087 | 98% |
| Fixed route | 370 | 19,163,282 | 70% |
| Flexible routing | 58 | 2,262,983 | 8% |
| Shuttle/Feeder | 42 | 879,176 | 3% |
| Demand response | 218 | 3,349,970 | 12% |
| Vanpool service | 21 | 394,226 | 1% |
| User-side subsidy | 28 | 754,450 | 3% |
| Information-Based Services | 89 | 176,795 | 1% |
| Mobility manager | 44 | 176,795 | 1% |
| One-stop center | 12 | N/A | - |
| Itinerary planning | 2 | N/A | - |
| One-on-one transit training | 7 | N/A | - |
| Internet-based information | 4 | N/A | - |
| Materials and marketing | 15 | N/A | - |
| Transportation resource training | 5 | N/A | - |
| Capital Investment Projects | 84 | 308,118 | 1% |
| Vehicle for individual | 30 | 83,351 | 0% |
| Vehicle for agency | 40 | 191,549 | 1% |
| Vanpool vehicles | 2 | 32,203 | 0% |
| Car-sharing | 2 | 1,015 | 0% |
| ITS investments | 7 | N/A | - |
| Other capital projects | 3 | N/A | - |
| Total | 910 | 27,289,000 | 100% |



Figure ‑  
One-Way Trips by Service Type   
(Thousands of Trips)

## Size of Urbanized Area

Clear differences were apparent among geographic settings. For one-way trips on fixed route services, more than three out of four (78%) were reported in large urbanized areas, 15% in small urban areas, and 9% in rural communities. Since fixed route services tend to operate in high-density communities, this finding comes as no surprise. Demand response shows a very different pattern: Just under half (49%) were in rural areas, and the rest of the trips were split between large urbanized (30%) and small urban (22%) areas. Information-based services, which generated trips for mobility manager programs only, were heavily skewed toward small urban (58% of one-way trips) and rural areas (38%). See Table 4-2 and Figure 4-2.

“Through our Work N Wheels car loan program we were able to help a young, rural mother who was working second shift obtain a vehicle loan so she was no longer walking two miles home from work at 3 AM.”

ADVOCAP

Wisconsin Department of Transportation

In large urbanized areas, fixed route services captured 78% of one-way trips. Flexible routing accounted for 8% and demand response 5%. In small urban areas, fixed route still comprised the majority of one-way trips (61%), but demand response (16%) and flex routes (15%) had larger market shares. The story changes in rural / non-urbanized areas, where demand response carried almost half the trips (45%) and the fixed route share dropped to 40% -- about half of the fixed route market share in large urbanized areas. See Table 4-3 and Figure 4-3.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service Type | # | Large Urban | Small Urban | Non-Urban | Total |
| Trip-Based Services | 26,804,087 | 71% | 16% | 13% | 100% |
| Fixed route | 19,163,282 | 78% | 15% | 8% | 100% |
| Flexible routing | 2,262,983 | 64% | 31% | 5% | 100% |
| Shuttle/Feeder | 879,176 | 79% | 9% | 11% | 100% |
| Demand response | 3,349,970 | 30% | 22% | 49% | 100% |
| Vanpool service | 394,226 | 70% | 3% | 26% | 100% |
| User-side subsidy | 754,450 | 80% | 12% | 9% | 100% |
| Information-Based Services | 176,795 | 4% | 58% | 38% | 100% |
| Capital Investment Projects | 308,118 | 41% | 31% | 28% | 100% |
| Total | 27,289,000 | 70% | 17% | 13% | 100% |

Table 4‑2  
One-Way Trips by Service Type and Size of Urbanized Area   
(Percentage by Row)



Figure ‑  
One-Way Trips by Service Type and Size of Urbanized Area   
(Percentage by Row)

Table 4‑3  
One-Way Trips by Service Type and Size of Urbanized Area   
(Percentage by Column)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service Type | # | Large Urban | Small Urban | Non-Urban | Total |
| Trip-Based Services | 26,804,087 | 99% | 96% | 96% | 98% |
| Fixed route | 19,163,282 | 78% | 61% | 40% | 70% |
| Flexible routing | 2,262,983 | 8% | 15% | 3% | 8% |
| Shuttle/Feeder | 879,176 | 4% | 2% | 3% | 3% |
| Demand response | 3,349,970 | 5% | 16% | 45% | 12% |
| Vanpool service | 394,226 | 1% | 0% | 3% | 1% |
| User-side subsidy | 754,450 | 3% | 2% | 2% | 3% |
| Information-Based Services | 176,795 | 0% | 2% | 2% | 1% |
| Capital Investment Projects | 308,118 | 1% | 2% | 2% | 1% |
| Total | 27,289,000 | 100% | 100% | 100% | 100% |



Figure ‑  
One-Way Trips by Service Type and Size of Urbanized Area   
(Percentage by Column)

## Compare Trips and Services

The analysis compared the number of trips by service type with the number of programs, focusing on trip-based services. As Table 4-4 and Figure 4-4 illustrate, there is a clear divergence between the number of programs and the number of trips. Specifically:

* Overall, trip-based services comprised 81% of the services but (by definition) 98% of the one-way trips.

“A side benefit of this service has been a tremendous increase in the use of our regular transit service by the general public. Our ridership has nearly doubled in the past year.”

Kenmare Wheels & Meals

North Dakota DOT

* Fixed routes accounted for 41% of the JARC services but 70% of all one-way trips.
* With 24% of the reported JARC services, demand response generated only 12% of the trips.

This pattern likely reflects several factors. First, as described earlier in this chapter, fixed routes are more likely to use larger vehicles than other types of JARC-supported services and to traverse more densely developed corridors. Demand response services tend to use vans and mini-buses, which carry fewer passengers than full-size buses, and they are more likely to operate in low-density rural communities. In addition, for purposes of this analysis, when a grant recipient used JARC funds to purchase a vehicle and place that vehicle in service, the resulting trips were assigned to the service rather than to the capital investment. Therefore, this further reduced the number of trips reported for capital projects in this analysis.

Table 4‑4  
Comparison of Services and One-Way Trips   
(Percentage by Column)

|  |  |  |
| --- | --- | --- |
| Service Type | Services | One-Way Trips |
| Trip-Based Services | 81% | 98% |
| Fixed route | 41% | 70% |
| Flexible routing | 6% | 8% |
| Shuttle/Feeder | 5% | 3% |
| Demand response | 24% | 12% |
| Vanpool service | 2% | 1% |
| User-side subsidy | 3% | 3% |
| Information-Based Services | 10% | 1% |
| Mobility manager | 5% | 1% |
| One-stop center | 1% | 0% |
| Itinerary planning | 0% | 0% |
| One-on-one transit training | 1% | 0% |
| Internet-based information | 0% | 0% |
| Materials and marketing | 2% | 0% |
| Transportation resource training | 1% | 0% |
| Capital Investment Projects | 9% | 1% |
| Vehicle for individual | 3% | 0% |
| Vehicle for agency | 4% | 1% |
| Vanpool vehicles | 0% | 0% |
| Car-sharing | 0% | 0% |
| ITS investments | 1% | 0% |
| Other capital projects | 0% | 0% |
| Total | 100% | 100% |



Figure ‑  
Comparison of Services and One-Way Trips   
(Percentage by Column)

# Jobs Accessed

As indicated in Chapter 1, FTA has established two key performance measures for JARC program:

* One-way trips provided
* Jobs accessed

One-way trips, summarized in the previous chapter, are a standard transportation measure that most service providers capture routinely. The number of jobs accessed, on the other hand, is not a conventional measure of transit performance. Because most transportation organizations do not have ready access to employment data, especially information about jobs, JARC recipients were not asked to report jobs accessed directly. Instead, FTA asked the JARC Evaluation Team to develop an approach for collecting information about jobs accessed.

The team initially developed a methodology for estimating jobs accessed for the FY 2006 data analysis and refined the approach for subsequent. Rather than asking JARC recipients to report the number of jobs accessed, the team asked grantees to provide information about service coverage and then used external data sources to develop estimates of jobs accessed.

This approach yielded three estimates of jobs accessed which, taken together, provide an overview of the success of JARC services in helping people reach jobs:

* *Jobs made accessible* – The total number of jobs available within the service coverage area for JARC-supported services, independent of service level or vehicle capacity.
* *Low-wage jobs made accessible* – The total number of low-wage or entry-level jobs available within the service coverage area for JARC-supported services, independent service level or vehicle capacity.
* *Jobs likely reached* – The number of jobs that riders likely reached via JARC-supported services during the reporting year, taking into account service levels and vehicle capacity.

For FY 2009, JARC-supported services made 51.8 million jobs accessible, which included 25.3 million low-wage jobs. In addition, 7.7 million jobs were likely reached during the service year.

The elements of the methodology are described briefly below; Appendix B provides more detail.

## Jobs Estimation Methodology

Because of the different characteristics of demand response and fixed route transportation, a combination of approaches was used to develop these estimates.

* For demand response jobs made accessible, jobs in the overall service area were counted using external data sources.
* For fixed route jobs made accessible, a factor was developed to estimate jobs per linear route mile using external data sources.
* Jobs were classified as low-wage if they paid less than $31,800 per year or $15.29 per hour. Estimates were based on national averages for median wages using standard industrial classifications.
* For jobs likely reached, reported one-way trips were adjusted to reflect work trips using standard industry definitions.

Using these multiple approaches, the evaluation team developed estimates of jobs accessed for JARC trip-based services.

“Our services improve the quality of life for the people of northeast Tennessee. It provides the opportunity for each person to have a sense of self-worth and well being, accept responsibility for self, and have the capacity to be productive and independent citizens.”

First Tennessee Human Resource Agency

Tennessee DOT

### Fixed-route services

To estimate the number of jobs made accessible by fixed-route services, the team developed a jobs density factor that measured the average number of jobs located within one-quarter mile of the route in each direction. The FY 2009 analysis used the following jobs density factors:

* For all jobs, 3,553 jobs per square mile or 1,777 jobs per linear route mile.
* For low-wage jobs, 1,670 jobs per square mile, or 835 jobs per linear route mile.

Grantees reporting fixed routes, flexible routes, or shuttle/feeder services were asked to report unique route miles for each service. Unique route miles were defined as the length of the route in miles, from start to finish without duplication. After totaling the mileage reported for all routes in these categories, the team applied the jobs density factor to estimate total jobs made accessible and low-wage jobs made accessible.

### Demand response services

To measure jobs accessed by demand response services, the team calculated total jobs in the service area. For each demand response service, grantees were asked to identify the county or counties served and to indicate how much of the county the service covered. Using an automated process, the evaluation team extracted jobs information from a Census database for each county with demand response service. Totals for all jobs and low-wage jobs were extracted. The team then adjusted the findings based on percentage of coverage and eliminated duplicates (where multiple services operated within the same county). Summing the records yielded an estimate of all jobs and low-wage jobs made accessible by demand response services.

### Jobs likely reached

The approach described above provides an estimate of the number of jobs that JARC programs made accessible based on the geographic coverage of the route or service. This approach is consistent with FTA’s policy decision to measure the performance of most trip-based JARC programs according to the total number of jobs and low-wage jobs in the service region – in other words, the jobs that a customer could in principle reach using the service. This measure highlights the capability of JARC services to make jobs in a particular service region accessible to low-income earners.

But while a service might be expected to reach *any* job in its service area, under normal circumstances, no transit service could be expected to provide transportation to *every* job in its service region simultaneously. Therefore, the team developed an estimate of jobs likely reached to reflect service availability and capacity constraints. The methodology uses the following steps and assumptions:

* Take total one-way trips as reported by recipients for trip-based services with a defined service area (defined as fixed route, demand response, flexible routes, and shuttles).
* Divide the number of one-way trips by two to represent individuals.
* Estimate the percentage of people making commute trips, which will serve as a proxy for jobs accessed. According to the American Public Transportation Association, 59.2% of transit trips are commuting trips (traveling between home and work)[[2]](#footnote-2). For ease of calculation, this example uses 60%.

Appendix B shows the detailed calculations.

## Targeted Jobs

Recipients had the option to indicate the number of jobs that their JARC-supported services targeted. The question was originally intended for grantees with specialized services, such as routes that served a particular factory or night-owl services that accessed the night shift at a shipping facility. For FY 2009, recipients provided information about targeted jobs for about 48% of the trip-based programs, up from 30% in the previous data collection cycle. Table 5-1 shows the distribution of targeted jobs by service type and the percentage of services in each category for which information on targeted jobs was reported.

Table 5‑1  
Targeted Jobs by Service Type

|  |  |  |
| --- | --- | --- |
| Service Type | Targeted Jobs | % Reporting |
| Fixed route | 3,174,610 | 49% |
| Flexible routing | 101,456 | 43% |
| Shuttle/feeder | 932,669 | 52% |
| Demand response | 417,857 | 50% |
| User-side subsidy | 37,767 | 46% |
| Vanpool service | 101,963 | 38% |
| Total Trip-Based Services | 4,766,322 | 48% |

As the table shows, recipients reported targeted jobs for roughly half of the trip-based services. Because it is impossible to know if the services for which targeted trips were reported were representative of the universe of trip-based services, the information cannot be expanded to represent all trip-based services. However, it can be considered an alternative approach to estimating *jobs likely reached* based on local knowledge.

## Jobs Accessed in FY 2009

This analysis of jobs made accessible and jobs likely reached yielded the following estimates for FY 2009:

* 51.8 million jobs made accessible
* 25.3 million low-wage jobs made accessible.
* 7.7 million jobs likely reached

As Table 5-2 shows, fixed route services connected passengers with half the jobs made accessible in FY 2009 and demand response services provided access to 41%. The estimate of jobs likely reached, which incorporates assumptions about service levels and vehicle capacity, shows a different distribution. The analysis of jobs likely reached suggests that fixed route services provided access to 75% of all jobs reached in FY 2009 and the demand response served 13%. Since fixed route services are more typically found in densely populated urban areas, while demand response services are more common in rural areas, these differences are plausible.

The findings reflect the data reported by grantees and do not incorporate any expansion factors or other efforts to interpret missing records.

Table 5‑2  
Jobs Accessed Estimate

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | All Jobs  Made Accessible | | Low-Wage Jobs  Made Accessible | | Jobs Likely Reached | |
| Service type | **#** | **%** | **#** | **%** | **#** | **%** |
| Fixed route | 26,004,688 | 50% | 12,222,862 | 48% | 5,748,984 | 75% |
| Flex route | 1,984,351 | 4% | 932,695 | 4% | 678,895 | 9% |
| Shuttle feeder | 2,757,128 | 5% | 1,295,920 | 5% | 263,753 | 3% |
| Demand response | 21,028,242 | 41% | 10,805,912 | 43% | 1,004,991 | 13% |
| Total jobs | 51,774,408 | 100% | 25,257,389 | 100% | 7,696,623 | 100% |

# Primary Goals

As described in Chapter 1, the JARC service matrix was developed to provide a user-friendly way to summarize JARC-funded services based on service type and primary goal. The matrix allows FTA to extend its analysis beyond one-way trips and jobs accessed by also capturing program performance outputs from non-traditional services.

## Program Goals

Recipients were asked to indicate the primary goal for each JARC-supported service. Although many programs have multiple goals, for the purposes of this analysis, recipients were asked to select only one goal. The five goals are:

* Expanded geographic coverage

“The program has met with resounding success for the past nine years. Students continually express gratitude for the TriMet van, describing how the increased mobility helps them make the best use of their time to grow professionally and educationally and acquire employment training that directly focuses on job acquisition. ”

Mt. Hood Community College

Tri-County Metropolitan Transportation District of Oregon

* Extended service hours or days
* Improved system capacity
* Improved access/connections
* Improved customer knowledge

When developing the matrix, FTA made certain assumptions about the relationship between service types and project goals, and not every combination was considered reasonable. For example, grantees reporting on mobility manager programs were only allowed to select *improved access / connections* as a goal; the other choices were not available. Cells that were not available for data entry are grayed out on the matrix tables in this chapter. . The following three tables show JARC-supported services in relation to the five goals. Table 6-1 shows the number of services, Table 6-2 shows the percentage of by service type, and Table 6-3 shows the percentage by goal.

For FY 2009, the most commonly selected goals were *expanded geographic coverage* (31%), *improved access/connections* (27%), and *extended service hours or days* (24%). Other major findings include:

* Fixed route services were equally likely to provide *expanded geographic coverage* (42%) and *extended service hours or days* (38%).
* Demand response programs were distributed fairly evenly across three goals: *expanded geographic coverage* (29%), *extended service hours or day* (29%), and *improved access/connections* (24%).
* Vehicle for agency was the most commonly reported program in the capital investment category, and two thirds (68%) reported a primary goal of *improved system capacity*.
* About 55% of services with a primary goal of *expanded geographic coverage* were fixed route and 23% were demand response.
* Almost two-thirds (63%) of services with a primary goal of *extended service hours or days* were fixed route and 29% were demand response.
* The mix of programs with a primary goal of *improved system capacity* included demand response (32%), vehicle for agency (23%), and fixed route (22%).
* Programs providing *improved access/connections* included fixed route (21%), demand response (21%), mobility manager (18%), and vehicles for individuals (12%). Note that this was the only goal available for mobility manager services.
* Virtually all of the programs with a primary goal of *improved customer knowledge* were defined as information-based services (98%). This was the only goal available to most of the services in this category.

Figure 6-1 shows the trend in program goals from FY 2007 through FY 2009. The distribution of goals remained fairly consistent over the years, but there was a small increase in the percentage reporting *improved system capacity* and a corresponding decrease in the percentage reporting *extended service hours or days*. This shift likely reflects the increase in information-based services and decrease in trip-based services during this period. The goal extended service hours or days was commonly associated with trip-based services, especially fixed route and demand response programs, so the decrease in services in these categories would likely show up in the distribution of goals. Similarly, only one goal was associated with mobility managers – *improved system capacity* – so this change is consistent with the expanded representation of information-based programs in FY 2009.



Figure ‑  
JARC Services by Primary Goal  
FY 2007 – FY 2009

## Program Outputs

The JARC service matrix was designed to enable FTA to capture information about the range of benefits that JARC-funded services provide – benefits that extend beyond the traditional measure of one-way trips. Grant recipients were asked to report on the outputs of their JARC-funded services. These measures were developed by FTA, in consultation with the Project Advisory Committee, and included the following:

* **One-way trips** – All trip-based services were asked to report one-way trips, as well as programs like mobility manager and vehicle purchase programs that generated trips.
* **Customer contacts** – Mobility managers, along with other information-based programs that worked with individuals on a one-on-one basis, reported customer contacts.
* **Customers served** – This measure applied to web-based programs and was designed to reflect site visitors or similar analytic measures of Internet activity.
* **People trained** – Programs that provide training, either to individuals or to groups, were asked to estimate the number of individuals who received training.
* **Materials distributed** – Programs that developed marketing brochures or similar products were asked to provide a brief description of their materials.
* **Vehicles added** – This measure applied to programs that acquired vehicles for agencies or individuals.

For programs that were less easy to categorize, like ITS-related hardware or software improvements, recipients provided a brief description of the program or investment.

For FY 2009, several grantees reported on feasibility studies or similar projects where the outcome was a report, rather than a service. When these programs were deemed separate from the required coordinated planning process, they were included under “Materials and Marketing.” The evaluation team selected this category as a temporary solution and will consider adding a new service category for FY 2010 reporting.

Table 6-4 shows the distribution of program outputs by service type and primary goals. Highlights are presented in the following sections.

### Trip-based services

As reported in Chapter 4, JARC-supported trip-based services generated 27.3 million one-way trips in FY 2009. Table 6-4 shows the breakdown by service type and goal:

* One-way trips from fixed-route services dominated the reporting and were most likely to be associated with programs providing *extended service hours or days* (6.8 million one-way trips), *expanded geographic coverage* (6.2 million), and *improved access / connections* (4.4 million).
* Flexible routes and demand response services were most likely to provide *expanded geographic coverage*, with 1.8 million and 1.2 million trips, respectively.
* User-side subsidies and voucher programs were especially likely to provide *improved access / connections*, generating more than 660,000 trips in this category.

### Information-based services

This category included a broad mix of programs, from mobility managers to Internet-based information. Some of the major findings:

* Mobility managers generated over 175,000 one-way trips and initiated almost 50,000 customer contacts.
* One-stop centers reported more than 40,000 customer contacts.
* More than 3,000 people received one-on-one transit training and about 11,000 took part in group travel resource training.

### Capital investment programs

This category included programs providing transit vehicles for agencies, vehicles for vanpool programs, autos for individuals, and car-sharing services. Highlights included:

* Agencies added more than 80 vehicles, which, in turn, generated more than 190,000 one-way trips. Most of the vehicles were added in programs designed to *improve system capacity*.
* Grant recipients provided about 870 car loans to individuals, which generated more than 80,000 one-way trips.
* ITS-related improvements included GPS units, mobile data terminals, and general communications upgrades.
* Other capital improvements included bicycle distribution and station improvements.

Grant recipients that used JARC funding to purchase agency vehicles had two options for reporting one-way trips. Some categorized the trip information as part of the capital project; others reported the service component separately, for example as a demand-response or fixed route service. Accordingly, the trip numbers associated with capital vehicle purchases understate the impacts of those investments.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Primary Goal | | | | |
| Service Type | (A) Expanded geographic coverage | (B) Extended hours/days of service | (C) Improved system capacity | (D) Improved access/  connections | (E) Improved customer knowledge |
| I. Trip-Based | 270 | 215 | 81 | 171 |  |
| 1. Fixed route | 154 | 139 | 25 | 52 |  |
| 1. Flexible routing | 26 | 12 | 7 | 13 |  |
| 1. Shuttle/Feeders | 23 | 1 | 2 | 16 |  |
| 1. Demand response | 65 | 63 | 37 | 53 |  |
| 1. Vanpool service |  |  | 5 | 16 |  |
| 1. User-side subsidy | 2 | 0 | 5 | 21 |  |
| II. Information-Based |  |  |  | 44 | 45 |
| 1. Mobility manager |  |  |  | 44 |  |
| 1. One-stop center |  |  |  |  | 12 |
| 1. Itinerary planning |  |  |  |  | 2 |
| 1. One-on-one transit training |  |  |  |  | 7 |
| 1. Internet-based info |  |  |  |  | 4 |
| 1. Materials and marketing |  |  |  |  | 15 |
| 1. Transportation resource training |  |  |  |  | 5 |
| III. Capital Investment | 9 | 5 | 34 | 35 | 1 |
| 1. Vehicle for individual |  |  |  | 30 |  |
| 1. Vehicle for agency | 8 | 5 | 27 |  |  |
| 1. Vanpool vehicles |  |  | 0 | 2 |  |
| 1. Car-sharing | 1 |  | 1 |  |  |
| 1. ITS investments |  |  | 5 | 1 | 1 |
| 1. Other capital projects | N/A | N/A | 1 | 2 | N/A |
| Total | 279 | 220 | 115 | 250 | 46 |

Table 6‑1  
JARC Service Matrix – Distribution of Services by Primary Goal   
(Number of services)

Note that grayed-out cells were not available for data entry.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Primary Goal | | | | |
| Service Type | (A) Expanded geographic coverage | (B) Extended hours/days of service | (C) Improved system capacity | (D) Improved access/  connections | (E) Improved customer knowledge |
| I. Trip-Based | 37% | 29% | 11% | 23% |  |
| Fixed route | 42% | 38% | 7% | 14% |  |
| Flexible routing | 45% | 21% | 12% | 45% |  |
| Shuttle/Feeders | 55% | 2% | 5% | 55% |  |
| Demand response | 30% | 29% | 17% | 30% |  |
| Vanpool service |  |  | 24% | 76% |  |
| User-side subsidy | 7% | 0 | 18% | 75% |  |
| II. Information-Based |  |  |  | 49% | 51% |
| Mobility manager |  |  |  | 100% |  |
| One-stop center |  |  |  |  | 100% |
| Itinerary planning |  |  |  |  | 100% |
| One-on-one transit training |  |  |  |  | 100% |
| Internet-based info |  |  |  |  | 100% |
| Materials and marketing |  |  |  |  | 100% |
| Transportation resource training |  |  |  |  | 100% |
| III. Capital Investment | 11% | 6% | 40% | 42% | 1% |
| Vehicle for individual |  |  |  | 100% |  |
| Vehicle for agency | 20% | 13% | 68% |  |  |
| Vanpool vehicles |  |  | 0% | 100% |  |
| Car-sharing | 50% |  | 50% |  |  |
| ITS investments |  |  | 71% | 14% | 14% |
| Other capital projects | 0% | 0% | 33% | 67% | 0% |
| Total | 31% | 24% | 13% | 27% | 5% |

Table 6‑2  
JARC Service Matrix – Distribution of Services by Primary Goal   
(Percentage by row)

Note that grayed-out cells were not available for data entry.

Rows add up to 100%.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Primary Goal | | | | |
| Service Type | (A) Expanded geographic coverage | (B) Extended hours/days of service | (C) Improved system capacity | (D) Improved access/  connections | (E) Improved customer knowledge |
| I. Trip-Based | 97% | 98% | 70% | 68% |  |
| Fixed route | 55% | 63% | 22% | 21% |  |
| Flexible routing | 9% | 5% | 6% | 5% |  |
| Shuttle/Feeders | 8% | 0% | 2% | 6% |  |
| Demand response | 23% | 29% | 32% | 21% |  |
| Vanpool service |  |  | 4% | 6% |  |
| User-side subsidy | 1% | 0% | 4% | 8% |  |
| II. Information-Based |  |  |  | 18% | 98% |
| Mobility manager |  |  |  | 18% |  |
| One-stop center |  |  |  |  | 26% |
| Itinerary planning |  |  |  |  | 4% |
| One-on-one transit training |  |  |  |  | 15% |
| Internet-based info |  |  |  |  | 9% |
| Materials and marketing |  |  |  |  | 33% |
| Transportation resource training |  |  |  |  | 11% |
| III. Capital Investment | 3% | 2% | 30% | 14% | 2% |
| Vehicle for individual |  |  |  | 12% |  |
| Vehicle for agency | 3% | 2% | 23% |  |  |
| Vanpool vehicles |  |  | 0% | 1% |  |
| Car-sharing | 0% |  | 1% |  |  |
| ITS investments |  |  | 4% | 0% | 2% |
| Other capital projects | 0% | 0% | 1% | 1% | 0% |
| Total | 100% | 100% | 100% | 100% | 100% |

Table 6‑3  
JARC Service Matrix – Distribution of Services by Primary Goal   
(Percentage by column)

Note that grayed-out cells were not available for data entry.

Columns add up to 100%.

Table 6‑4  
JARC Service Matrix – Service Outputs by Primary Goal

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Primary Goal | | | | |
| Service Type | (A) Expanded geographic coverage | (B) Extended hours/days of service | (C) Improved system capacity | (D) Improved access/  connections | (E) Improved customer knowledge |
| I. Trip-Based |  |  |  |  |  |
| 1. Fixed route | 6,196,407 trips | 6,780,735 trips | 1,736,813 trips | 4,449,327 trips |  |
| 1. Flexible routing | 1,767,993 trips | 388,442 trips | 32,375 trips | 74,173 trips |  |
| 1. Shuttle/Feeders | 483,318 trips | 0 | 6,449 trips | 389,409 trips |  |
| 1. Demand response | 1,167,020 trips | 760,499 trips | 691,661 trips | 730,790 trips |  |
| 1. Vanpool service |  |  | 138,656 trips | 255,570 trips |  |
| 1. User-side subsidy | 52,624 trips | 0 | 40,989 trips | 660,837 trips |  |
| II. Information-Based |  |  |  |  |  |
| 1. Mobility manager |  |  |  | 176,795 trips 49,489 customer contacts |  |
| 1. One-stop center |  |  |  |  | 43,866 customer contacts |
| 1. Itinerary planning |  |  |  |  | 3,559 customer contacts |
| 1. One-on-one transit training |  |  |  |  | 3,028 trained |
| 1. Internet-based info |  |  |  |  | 28,086 served |
| 1. Materials and marketing |  |  |  |  | Various, including brochures, posters, surveys, feasibility studies |
| 1. Transportation resource training |  |  |  |  | 11,074 trained |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Primary Goal | | | | |
| Service Type | (A) Expanded geographic coverage | (B) Extended hours/days of service | (C) Improved system capacity | (D) Improved access/  connections | (E) Improved customer knowledge |
| III. Capital Investment |  |  |  |  |  |
| 1. Vehicle for individual |  |  |  | 83,351 trips 870 vehicle loans |  |
| 1. Vehicle for agency | 22,623 trips 19 vehicles added | 70,978 trips 11 vehicles added | 97,948 trips 52 vehicles added |  |  |
| 1. Vanpool vehicles |  |  | N/A | 32,203 trips 5 vehicles added |  |
| 1. Car-sharing | 1,015 trips 250 vehicles added |  | N/A |  |  |
| 1. ITS investments |  |  | Various upgrades, including GPS units and MDTs | Comm. equipment | I-STOP units |
| 1. Other capital projects | N/A | N/A | Capital planning | Various, including bicycle sharing, ticket vending machines | N/A |
|  |  |  |  |  |  |

Trips are one-way trips.

Note that grayed-out cells were not available for data entry.

# Conclusions

This report includes the results of the data analysis for the FTA JARC program for the FY 2009 reporting period, which corresponds to the federal fiscal year beginning on October 1, 2008, and ending on September 30, 2009. The program goals correspond to federal performance measurements required by regulations.

## JARC Highlights

Grantees reported a total of 910 active JARC-funded services for FY 2009.

* JARC-supported services provided 27.3 million one-way trips.
* For FY 2009, JARC-supported services made 51.8 million jobs accessible, which included 25.3 million low-wage jobs. In addition, 7.7 million jobs were likely reached during the service year.
* Out of the active JARC-funded services, most were trip-based (81%). The remaining projects were split almost evenly between information-based (10%) and capital investment programs (9%).
* Fixed routes accounted for 41% of the JARC services but 70% of all one-way trips.

“JARC has been one of the most rewarding programs I personally have had the privilege of working with during my 24 years of work experience in the transportation program at PACS. We run a dependable and efficient program that makes it possible for people to get to and from work on a regular basis.”

Pennyrile Allied Community Services

Kentucky Transportation Cabinet

* With 24% of the reported JARC services, demand response generated only 12% of the trips.
* Less than half of all JARC-supported services operated in large urbanized areas (44%). About 31% could be found in non-urbanized or rural communities and 25% in small urbanized areas.
* Mobility managers generated more than 175,000 one-way trips and initiated almost 50,000 customer contacts.
* Agencies used JARC funds to acquire more than 80 vehicles and grant recipients provided about 870 automobile loans to individuals. Together, these vehicle-related programs generated more than 270,000 one-way trips.

While the numbers associated with non-trip-based services like mobility managers and vehicle-loan programs are small in relation to one-way trips and jobs accessed, they represent very real mobility benefits at a local level. By using the matrix approach described in this report, FTA can capture this information and ensure that the benefits of these non-traditional programs are not overshadowed by the measures of one-way trips and jobs accessed.

## Program Profiles

Finally, FTA continued to collect program profiles, or summaries, for each JARC service. While ridership and jobs-accessed statistics allow FTA to provide a national summary of the JARC program, the profiles allow the grantees to represent the human side of these transportation programs. These qualitative descriptions complement the data collection and provide an additional avenue for understanding the impacts and benefits of both grant programs.

The profiles provide a rich source of detailed information about the JARC program and are provided in their entirety under separate cover. For convenience, they are organized in 10 separate documents based on the FTA regions. In addition, relevant excerpts have been incorporated throughout this summary report. As the program profiles made abundantly clear, the JARC and New Freedom programs connect with riders and customers on a human scale.

Appendix A  
JARC Service Matrix

The following information describes in more detail how the JARC service matrix was developed and how JARC grant recipients use it for annual Program Performance Evaluation (PPE) reporting purposes.

A JARC service matrix was initially developed through a collaborative effort between the JARC Evaluation Team and the Community Transportation Association of America’s Joblinks Advisory Committee. The matrix was later refined working with the JARC and New Freedom Advisory Committee, formed to assist the evaluation team with refinement of the JARC and later New Freedom reporting process.

The intent of the matrix reporting approach was two-fold:

* Make reporting easier for grant recipients
* Capture performance information about non-traditional programs

First, the service matrix was designed to make it easier for JARC grantees to report on services provided. Once they selected the primary goal and service type, grantees were directed to a data entry form that included only those questions relevant to the service type / goal combination. For example, grantees reporting demand response services were asked to report the number of one-way trips provided, while those providing travel training were asked to indicate the number of individuals trained.

Second, the matrix structure represents the diversity of JARC-funded programs. The numbers associated with non-trip-based services like mobility managers and vehicle-loan programs are small in relation to one-way trips and jobs accessed, but they represent very real mobility benefits at a local level. The matrix approach allows FTA to capture this information and ensure that the benefits of these non-traditional programs are not overshadowed by the measures of one-way trips and jobs accessed.

A copy of the JARC reporting matrix follows. The matrix includes five primary goals (columns A-E) that were identified to be core elements of JARC-funded services. The rows are grouped by the three categories of projects – (I) trip-based services, (II) information-based services, and (III) capital investment projects. Each category includes a list of services or projects that are commonly provided in each category and supported by the JARC program. The cells within the table indicate the primary reporting information to be provided by each type of service, according to the primary goal related to the service. The JARC matrix was first implemented with the FY 2006 reporting period.

Beginning with the FY 2007 / FY 2008 reporting period, with the assistance of the JARC/New Freedom Advisory Committee the JARC matrix reporting approach was expanded to include a companion matrix for the New Freedom program. The NF matrix is similarly organized with the same three categories of projects and the same set of five project goals as the JARC reporting matrix. However, the list of service types was modified to reflect allowable service types for New Freedom funding as outlined in FTA Circular 9045.1 and subsequent guidance.

For PPE reporting purposes, the matrix is used to identify the primary goal for each JARC-funded service operated during the reporting year and to report output and outcome information related to the services provided as required to complete the federal Program Performance Evaluation.

In addition to the measures shown in the table (i.e., # one-way trips, # customer contacts, # units, # vehicles added, and so on), grantees also are asked to provide additional descriptive information about the service area, length of fixed route, and the number of jobs targeted (if known). The evaluation team uses this information in combination with Census data to develop an aggregated national estimate of jobs made accessible by JARC-supported services.

To facilitate completion of the PPE forms, grant recipients were provided specific information via an on-line support site, email and phone support, and webinar training on how to use the reporting tools. Definitions were provided to help guide grantees in their choice of service and goal combinations. For example, trip-based services that are categorized as “flexible routing” include route deviation, point deviation, and other community circulators that may go off route to pick up individuals on a request basis. A “user-side subsidy” refers to individuals whose trip costs are subsidized by JARC funds including taxi vouchers, mileage reimbursements, underwriting the cost of vanpool seats, and so on. In contrast, trips provided through a “demand response” service would involve payment to an agency to subsidize the cost of running the vehicle, and not provide a direct subsidy to the individual user.

“Mobility managers” are an emerging service approach with a variety of responsibilities. For example, in some cases, a mobility manager is a clearinghouse of information about transportation services provided locally. Other mobility managers may schedule trips, but have nothing to do with the responsibility of providing (or paying for a trip). In these two cases, it would be most appropriate to report the number of customer contacts as a performance measure. However, some mobility managers also oversee the actual provision of service either by contracting with a provider or directly operating service themselves. In the latter case, it would be appropriate for the mobility manager service to report both the number of customer contacts enabled by the JARC program, as well as the number of one-way trips provided. It also should be noted that although FTA allows for “mobility managers” to be funded as a capital program, given the nature of the service for JARC reporting purposes they are considered information-based services.

Another example that requires additional explanation is “one-on-one training,” included under the category of information-based services. “One-on-one training” could include teaching an individual on how to use fixed route bus service or providing instruction on how to care for and maintain a vehicle. “Trip/itinerary planning” is another specific form of assistance that provides individual assistance.

Finally, capital investment projects could range from providing vehicles to individuals through low-interest loan programs, providing a vehicle for an agency to transport its customers, or vanpool vehicles if the cost of the vehicle lease is underwritten. In these cases, grantees would be asked to report the number of units (vehicles) provided and if available the number of one-way trips taken by JARC-supported participants. Other capital investments include amenities, such as adding bus shelters to waiting areas or bicycle racks on buses to allow access to a transit system.

JARC Service Matrix

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Primary Goal | | | | |
| Service Type | (A) Expanded geographic coverage | (B) Extended hours/days of service | (C) Improved system capacity | (D) Improved access/  connections | (E) Improved customer knowledge |
| I. Trip-Based |  |  |  |  |  |
| Fixed route | # one-way trips | # one-way trips | # one-way trips | # one-way trips |  |
| Flexible routing | # one-way trips | # one-way trips | # one-way trips | # one-way trips |  |
| Shuttle/Feeders | # one-way trips | # one-way trips | # one-way trips | # one-way trips |  |
| Demand response | # one-way trips | # one-way trips | # one-way trips | # one-way trips |  |
| Vanpool service |  |  | # one-way trips | # one-way trips |  |
| User-side subsidy | # one-way trips | # one-way trips | # one-way trips | # one-way trips |  |
| II. Information-Based |  |  |  |  |  |
| Mobility manager |  |  |  | # one-way trips  #customer contacts |  |
| One-stop center |  |  |  |  | #customer contacts |
| Itinerary planning |  |  |  |  | #customer contacts |
| One-on-one transit training |  |  |  |  | # trained |
| Internet-based info |  |  |  |  | #customer contacts |
| Materials and marketing |  |  |  |  | descriptive |
| Transportation resource training |  |  |  |  | # trained |
| III. Capital Investment |  |  |  |  |  |
| Vehicle for individual |  |  |  | # one-way trips  #vehicles |  |
| Vehicle for agency | # one-way trips  #vehicles | # one-way trips  #vehicles | # one-way trips  #vehicles |  |  |
| Vanpool vehicles |  |  | # one-way trips  #vehicles | # one-way trips  #vehicles |  |
| Car-sharing | # one-way trips  #vehicles |  | # one-way trips  #vehicles |  |  |
| ITS investments |  |  | descriptive | descriptive | descriptive |
| Other capital projects | descriptive | descriptive | descriptive | descriptive | descriptive |

Appendix B  
Jobs-Accessed Methodology

This appendix provides background information on the elements of the methodology used to estimate jobs accessed for JARC services.

## Assumptions

Several assumptions about employment characteristics and travel patterns were made to support this analysis. These assumptions were initially developed for the FY 2006 analysis and refined or updated as necessary.

* We counted every job – whether full-time or part-time – as one job. The distinction between full-time and part-time employment was not considered relevant for the purposes of the JARC evaluation.
* Jobs were classified as low-wage if they paid less than $31,800 per year or $15.29 per hour. This assumption was consistent with the goals of the JARC program, which was developed to provide transportation targeted for people at or below 150% of the federal poverty guidelines. In 2008, these guidelines were set at $21,800 a year for a family/household of four.
* The Longitudinal Employer-Household Dynamics (LEHD) program was the primary source for jobs data. Developed by the US Census, LEHD combines federal and state administrative data on employers and employees with core Census Bureau censuses and surveys.
* Factors were developed for the analysis based on jobs data from 2008. When quarterly data was available, the second quarter of the calendar year was used.

## LEHD Program

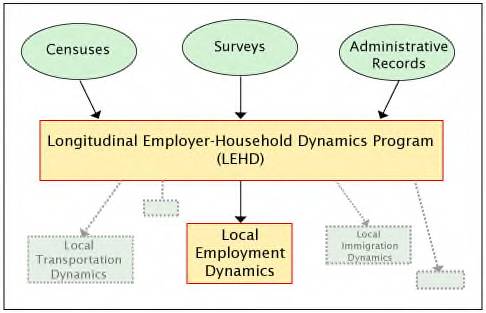
As indicated above, the evaluation team used the data from the LEHD program to estimate jobs data. LEHD was developed by the US Census and combines federal and state administrative data on employers and employees with core Census Bureau censuses and surveys. For some components of the analysis, the team used OnTheMap, which is an on-line interactive application using LEHD data. OnTheMap enables analysts to define a transit service and estimate the jobs available within a defined corridor or service area.

The information in this section is reproduced verbatim from a description provided by the US Census Bureau. This information was originally accessed at the following link, which is no longer active: <http://lehd.dsd.census.gov/led/about-us/FAQ.html#lehd>

### What is LEHD?

LEHD is an innovative program within the US Census Bureau. We use modern statistical and computing techniques to combine federal and state administrative data on employers and employees with core Census Bureau censuses and surveys while protecting the confidentiality of people and firms that provide the data.

### **What is LED?**

Local Employment Dynamics (LED) is a voluntary partnership between state labor market information agencies and the US Census Bureau to develop new information about local labor market conditions at low cost, with no added respondent burden, and with the same confidentiality protections afforded census and survey data. The following graphic illustrates the difference between LEHD and LED.

### **What are the Quarterly Workforce Indicators?**

The Quarterly Workforce Indicators (QWI) are a set of economic indicators -- including employment, job creation, wages, and worker turnover -- that can be queried by different levels of geography -- state, county, metro, and workforce investment area -- as well as by detailed industry, gender, and age of workers. You can query the data directly by using the QWI on-line tool on this site.

### **Why aren't QWI data available for all states?**

QWI data are available for all states that are LED-state partners; however, not every state is currently a LED-state partner. A list of LED state partners can be found [here](http://lehd.dsd.census.gov/led/led/statepartners.html). New partner states with data currently in production will have data available on the website as soon as production is complete.

### **What types of employment are included in the QWI?**

The QWI are built upon wage records in the Unemployment Insurance (UI) system and information from state ES-202 data. The universe of QWI data is UI-covered earnings. UI coverage is broad, covering over 90% of total wage and salary civilian jobs.

When QWI private industry employment numbers are compared with other employment data, exclusions to UI coverage should be taken into account. Federal government employment is not generally included. Exempted employment varies slightly from state to state due to variations in state unemployment laws, but generally also excludes many farmers and agricultural employees, domestic workers, self-employed non-agricultural workers, members of the Armed Services, some state and local government employees as well as certain types of nonprofit employers and religious organizations (which are given a choice of coverage or non-coverage in a number of states).

## Estimating Jobs for Fixed Route Services

To estimate jobs accessed by fixed route services, the JARC Evaluation Team developed a job density factor, which estimated jobs per mile. Grantees reporting fixed routes, flexible routes, or shuttle/feeder services were asked to report unique route miles for each service. Unique route miles were defined as the length of the route in miles, from start to finish without duplication. The team used the factor to estimate the total number of jobs located within one-half mile (measured as one-quarter mile in each direction) of the route. The factor was first developed for the FY 2006 analysis and updated for subsequent data collection efforts.

### FY 2006 analysis

To develop the original factor for FY 2006, the team used ArcView Geographic Information Systems (GIS) software in combination with a proprietary database purchased from Dun & Bradstreet. The team acquired GIS files for JARC-supported routes from selected transit agencies; routes were plotted on a GIS base map and the number of jobs within a quarter-mile buffer was extracted from the Dun & Bradstreet database. Using the weighted average from 96 routes (including a mix of JARC-supported services and general services but only limited geographic coverage), the team developed an estimate of total jobs and low-wage jobs per mile. Low-wage jobs were defined as those jobs paying $14.42 an hour or less; this corresponded to 150% of Federal poverty guidelines or $30,000 per year in 2006, which was the best available data at the time. While this approach yielded usable results, the GIS analysis was extremely labor-intensive, and the team determined that the Dun & Bradstreet dataset was too expensive to acquire for a national-level analysis.

### FY 2007 / FY 2008 analysis

To make this factor more robust for FY 2007 / FY 2008, the team increased the number of JARC-supported routes in the sample and expanded the sample to include additional parts of the country. To update the fixed route job density factor, the JARC/NF evaluation team selected candidate routes from the FY 2006 JARC database.

The team also tested a more cost-effective approach that took advantage of the free job information data available from OnTheMap, an on-line mapping tool from the US Census Bureau. OnTheMap allows analysts to define a geographic area and to extract the number of jobs located within that service area or corridor. Analysts may define the service area in several ways: using standard geography (such as ZIP codes), drawing a line OnTheMap and choosing a buffer (appropriate for fixed route services), by drawing a freeform shape on a map (appropriate for demand response services), or by choosing a center point and a buffer. The application uses LEHD data.

Routes were selected for analysis from the FY 2006 JARC database based on the following factors:

* Geographic diversity
* Representation in LEHD/OnTheMap
* Availability of a route map (to facilitate drawing the route for further analysis)

This selection of routes was considered a “convenience” sample, rather than a random sample.

Once the routes were identified, the following methodology was used to develop the job density factor:

* Draw each route and convert to a GIS shape file using ArcView. (As shape files, the routes could be saved for future adjustments and modifications.)
* Draw a quarter-mile buffer on both sides of each route.
* Calculate the square mileage within the buffer.
* Use OnTheMap to redraw each route with the buffer tool.
* Calculate the number of jobs within the quarter-mile buffer.
* Using square mileage and job estimations, calculate jobs per square mile factor.
* Adjust to jobs per linear mile.

### FY 2009 analysis

For the FY 2009 analysis, the consultant team again updated the job density factor using a more refined methodology. Instead of basing the factor on a convenience sample, as in previous years, the team drew a random sample of fixed routes funded by the JARC program. The first step was to assemble a list of all fixed routes funded by the program. Routes were drawn from the universe of JARC services reported for FY 2007 – FY 2008. In some cases, recipients submitted a single report for similar improvements on multiple routes (e.g., adding Sunday service on three different routes). The team identified these instances based on information in the service profiles or external information, such as a route map, and separated the services into individual routes so that the sample could be drawn without bias toward some grantees. After these route groupings were disaggregated, 432 individual routes were identified. This universe excluded feeders and shuttles because these routes often are designed to serve a single employer or destination rather than a corridor.

The goal for the precision of the job-density estimate was plus/minus 10% at the 95% confidence level. In order to estimate the size of the sample needed to achieve this precision, data from previous years were analyzed to calculate the sample variance. While the routes analyzed in previous years were not selected randomly, it was reasoned that the sample variance of those routes would be a reasonable proxy for the sample variance of a randomly-selected set of routes. As a result of this analysis, it was determined that a sample size of 135 routes would yield the desired precision.

To choose the sample, each individual route was assigned a unique identification code and then these were matched with serial numbers. Using the random number function in Excel, 135 codes were selected. This required generating more than 135 random numbers, since there were some duplicates among the random numbers. In addition, a set of 45 randomly selected “alternates” was chosen in case it was not possible to obtain routing information for one of the selected routes, or if other data problems surfaced. In the end, 25 of these alternates were used.

Once the sample was selected, the following technical approach was used to develop the job density factor for the FY 2009 analysis.

#### Preparing routes for OnTheMap

Route map/written directions were located for each of the sampled routes (as possible) and drawn in GIS. The routes were buffered by 1,320 feet (one quarter mile) and split into individual shape files to be read y for OnTheMap. In parallel analysis, we identified the number of unique route miles for each route.

The measure of unique route miles counts mileage along a bidirectional portion of the route only once. Linear route miles may count this twice (depending how the grantee interprets this). The key is to think about the service area buffer. A bidirectional segment of the route serves the same buffer in both directions, so we can only count those miles once. For a loop route, linear route miles and unique route miles are the same. For a pure "there and back" route that uses just one roadway, then unique route miles would be half of linear route miles.

#### Data processing

The user could draw the route directly into OnTheMap, though it appears that the analysis cannot be repeated easily with the same selection. It is possible to pull the selection area out of the KML or GIS output, but for ease of reuse and for the route length analysis, we decided to draw the routes in GIS. The import process is described in detail below:

We entered the OnTheMap mapping interface and left all settings default on the “Search” and “Base Map” tabs. On the “Analysis” tab under “1. Data Settings” we selected Live or Work: *Workplace Area*; Year: *2008, 2007, 2006*; Job Type: *All* Jobs; Labor Market Segments: *All Workers*. The route buffers were entered into the Analysis tab of the OnTheMap interface. “2. Study Area” under *Selection Tools* we selected *Import From: Shapefile* and loaded all 5 files for a given route. “3. Map Overlay/Report” we filled in the *Report Title* and selected *Work Area Profile Analysis*, left the *Rollups* untouched and *Map Precision* default on Automatic.

Under the “Results” tab we downloaded the XLS file, PDF file, KML file and GIS file. We only planned to use the XLS file in processing but had ability to check out the mapping of the data at a later date with the additional files downloaded.

#### Data post processing

The OnTheMap export file contains the number of jobs by two-digit NAICS code within the selected buffer. The analysis used jobs data from 2008, which was the most recently available when the work was conducted. We summed those figures to calculate total jobs, and applied the percentage of low-wage jobs by NAICS code factors to the numbers to calculate low-wage jobs. These figures were then entered into the spreadsheet listing all of the routes in the sample.

#### Connecticut and Massachusetts

Several routes in the sample traveled through Connecticut or Massachusetts. Because these states do not yet participate in the LEHD, Dun & Bradstreet data were purchased for those towns that were served by JARC routes in the sample. Through the use of GIS, the number of jobs within the buffer of each JARC route was calculated.

The Dun & Bradstreet data did not include NAICS codes but instead categorized employers using Standard Industrial Classification (SIC) codes. The consultant team translated the SIC codes into NAICS codes using a Census conversion table. Then the estimated low-wage jobs per employer were calculated, and these figures were also used in GIS to produce a figure of low-wage jobs within the buffer of each route.

#### Final result

Once all of the jobs figures and low-wage jobs figures were entered into a spreadsheet, the job density for each route buffer was calculated by dividing the jobs figures by the square mileage of each route service area. This is defined as the unique linear mileage of a route multiplied by 0.5, corresponding to a half-mile wide buffer (one quarter mile on each side of the street). Then the average job density and low-wage job densities were calculated (as a straight average of the individual routes). The precision of the sample was calculated by dividing the standard deviation of the sample by the square root of the sample size and multiplying by the t-factor for a 95% confidence level. The results came very close to the 10% desired precision, but did not quite achieve it.

#### Job density factors

Based on this analysis, the following job density factors were developed for the FY 2009 analysis:

* For all jobs, 3,553 jobs per square mile or 1,777 jobs per linear route mile
* For low-wage jobs, 1,670 jobs per square mile, or 835 jobs per linear route mile.

This result differs from the factor used for the FY 2007 – FY 2008 analysis. That factor, based on a convenience sample, was 3,878 jobs per square mile, or 1,939 jobs per linear route mile. The low-wage factor was 2,094 jobs per square mile, or 1,047 jobs per linear route mile. The differences do not necessarily reflect changes in the job market between FY 2007 and FY 2009. Instead, they most likely reflect differences in the sample geography and in the sampling methodology.

The following table shows the reported mileage and job estimates for fixed route, flexible routes, and shuttle/feeder services for FY 2009.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Route Length (miles) | Square miles | All jobs | Low-wage jobs |
| Fixed route | 14,638 | 7,319 | 26,004,688 | 12,222,862 |
| Flexible routing | 1,117 | 559 | 1,984,351 | 932,695 |
| Shuttle/feeder | 1,552 | 776 | 2,757,128 | 1,295,920 |
| Total | 17,307 | 8,654 | 30,746,166 | 14,451,477 |

Jobs Density Factors and Reported Mileage

## Estimating Jobs for Demand Response Services

To measure jobs accessed by demand response services, FTA made a policy decision to include every job in the service area. To calculate this number, for each demand response service, recipients were asked to identify the county or counties served. Starting with the FY 2007 / FY 2008 data collection effort, grantees were asked to indicate the approximate percentage of the county served from a drop-down list with the following choices:

* 1% - 24%
* 25% - 49%
* 50% - 74%
* 75% - 99%
* 100%

Using an automated process, described in the next section, the evaluation team accessed jobs information from LEHD for each county with demand response service. This analysis yielded a dataset with the following information for each service:

* Counties served
* Total jobs based on FY 2008 data from LEHD
* Low-wage jobs based on the distribution by NAICS two-digit industry code
* Percentage of the county included in the service area

The team adjusted the findings based on the percentage of coverage, using the mid-point of each range, and then eliminated duplicates. We then summed the records, which yielded estimates of all jobs and low-wage jobs made accessible by demand response services for FY 2009. The following table shows these estimates.

The team adjusted the findings based on the percentage of coverage, using the mid-point of each range, and then eliminated duplicates. We then summed the records by year, which yielded the following estimates of all jobs and low-wage jobs made accessible by demand response services for FY 2009.

* 21,028,242 jobs made available by demand response services
* 10,805,912 low-wage jobs made accessible by demand response services

## Automated Process for Accessing County-Based Jobs Information

For FY 2009, the Census LEHD data aspects of the JARC evaluation were substantially the same as for the work performed for FY 2007 – FY 2008.

LEHD provides total employment data by calendar quarter and industry for each covered county. LEHD county-level total employment by industry data are available from a US Census website: <http://lehd.did.census.gov/led/datatools/qwiapp.html>.

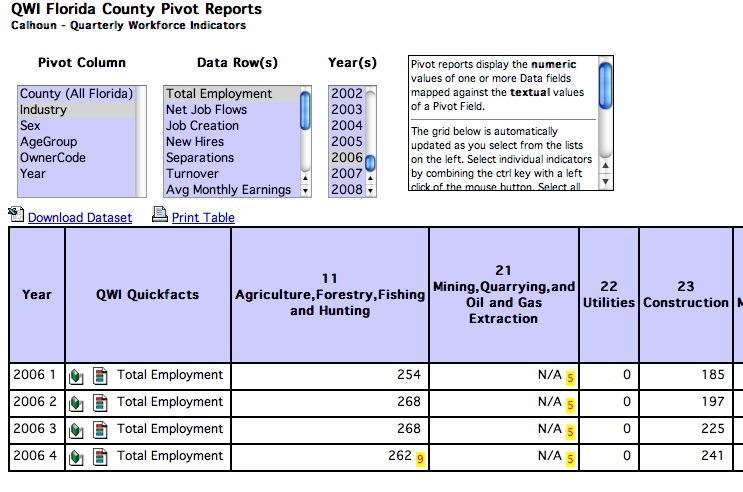
### Automated Census data retrieval overview

CES staff revised the automated data retrieval system to increase the number of “self-checks” and to permit multiple years of data to be retrieved for each US county that was covered in whole or part by JARC demand response services.

We determined that the URL to retrieve a particular county and year of LEHD data could be generated programmatically. For instance: the following URL provides access to *Total Employment* data for Calhoun County (FIPS code *013*) in the state of Florida (abbreviated *fl*) for the year of *2008*.

<http://lehd.did.census.gov/cgi-bin/lehdpivot/lehd/pvt/pivot_county.hsql?xpivot=Industry&xdata=Total_Employment&xyear=2008&head=ZZZZ&xstate=fl&xstyle=lehd&xfixed=Year&xgeofx=xcounty&xcounty=%3D&xsicdiv=%3C%3E&xsex=%3D&xagegroup=%3D&xowner=%3D&xsort=Year%2CQuarter%2CSic_Division&Xvalue=013>

A portion of the web page retrieved is shown below:



Each of these QWI County Pivot report pages contains a link, labeled “Download Dataset”, that provides access to the data in spreadsheet format. A sample URL: <http://lehd.did.census.gov/lehd/cache/lehd/pvt/pivot_county/fl-c/1e-ae-cn-dt-fy-llehd-pi-v013-xe-y2008-xownere.xls>.

### County FIPS codes

County FIPS codes were retrieved in 2009 from the Census website: <http://www.census.gov/geo/www/fips/fips65/data/national.txt> Excerpts of this table are shown below:

|  |  |  |  |
| --- | --- | --- | --- |
| State | FIPS | Code | County |
| AL | 01 | 001 | Autauga |
| AL | 01 | 003 | Baldwin |
| AL | 01 | 005 | Barbour |
| AL | 01 | 007 | Bibb |
| AL | 01 | 009 | Blount |
| AL | 01 | 011 | Bullock |
| AL | 01 | 013 | Butler |

This table can be used to determine, for instance, that the FIPS code for Bullock County in Alabama is 011.

### NA handling in LEHD data

We discovered that in some cases LEHD contained NAs for particular industries and counties for 2006:02, similar to what is shown below for 2005:02 for Utilities and Management for Vernon County in Wisconsin.

|  |  |
| --- | --- |
| QWI Quickfacts | Total Employment |
| 11 Agriculture, Forestry, Fishing and Hunting | 135 |
| 21 Mining | 0 |
| 22 Utilities | N/A |
| 23 Construction | 212 |
| 31-33 Manufacturing | 797 |
| 42 Wholesale Trade | 657 |
| 44-45 Retail Trade | 1,092 |
| 48-49 Transportation and Warehousing | 157 |
| 51 Information | 104 |
| 52 Finance and Insurance | 298 |
| 53 Real Estate and Rental and Leasing | 41 |
| 54 Professional, Scientific, and Technical Services | 128 |
| 55 Management of Companies and Enterprises | N/A |

NAs were treated as 0 for calculated total employment and JARC employment for each county.

### Excluded states

As of July 20, 2009, LEHD did not provide county level total employment data for the following localities:

* Connecticut
* District of Columbia
* Massachusetts
* New Hampshire
* Puerto Rico
* Virgin Islands

At the time LEHD data were retrieved, 2008 Q2 data were not available for North Carolina, so 2007 Q2 were used instead. This affected only the services provided in Iredell County, NC.

### Calculation steps

CES software performed seven steps:

1. Identified, based on recipient inputs, counties that were served by demand response services.
2. Filtered out states not included in LEHD, as provided in Census documentation (see above).
3. Converted county names, as provided by recipients, to three-digit FIPS codes, based on the FIPS code table provided by Census.
4. Generated a URL based on the year and quarter required (e.g. 2006), the state, the FIPS code for the county, and the total employment variable.
5. Extracted the cached spreadsheet URL, and used it to retrieve the data and integrate it into an LEHD county data table.
6. Summed the raw total employment figures for 2006:02 by industry to generate an overall “Total Employment” for the county, and summed the weighted industry figures to generate a low-wage employment figure.
7. Integrated these totals into spreadsheets provided to the analysts.

Using this automated process, 495 spreadsheets were retrieved from the LEHD website.

### Verification and quality control

We reviewed each county name provided by Recipients to ensure that it could be mapped to a valid FIPS code. We performed edits as appropriate on these data. Generally, edits involved either fixing typographical errors (e.g. “Carroll” for “Carol”, or “Prince George’s” for “Prince Georges”), eliding “County” or “Parish” at the end of the term, or separating multiple counties across multiple lines (e.g. one field containing “Wayne, Oakland” into two rows, one for “Oakland” county and one for “Wayne” county).

## Estimating Low-Wage Jobs

A methodology for estimating low-wage jobs was developed to support the approaches for estimating jobs accessed by fixed route and demand response services.

Jobs were classified as low-wage if they paid less than $31,800 per year or $15.29 per hour in 2008. This is equivalent to 150% of the federal poverty guidelines for a family of four in 2008. The evaluation team calculated the percentage of jobs that fell below $31,800 using wage data derived from the Occupational Employment Statistics Survey from the US Bureau of Labor Statistics (BLS). Percentages were estimated for about 20 job categories, as defined in the North American Industry Classification System (NAICS) at the two-digit level. Using data from the second quarter of 2008, estimates were based on national quartile data for each two-digit NAICS code and assumed a straight-line distribution of wages within each quartile.

For example, NAICS code 72 is assigned to jobs in the accommodations and food services industry. Using BLS data from 2008, the team estimated that approximately 89% of the jobs in this category could be categorized as low-wage. This information was aggregated for all industries and used to estimate low-wage jobs accessed by JARC-supported services.

The following table shows the estimated proportion of low-wage jobs in each NAICS category at the two-digit summary level.

|  |  |  |
| --- | --- | --- |
| NAICS | Description | Percentage |
| 11 | Agriculture, Forestry, Fishing and Hunting | 83% |
| 21 | Mining, Quarrying, and Oil and Gas Extraction | 28% |
| 22 | Utilities | 15% |
| 23 | Construction | 36% |
| 31-33 | Manufacturing | 62% |
| 42 | Wholesale trade | 39% |
| 44-45 | Retail trade | 73% |
| 48-49 | Transportation and warehousing | 35% |
| 51 | Information | 28% |
| 52 | Finance and insurance | 33% |
| 53 | Real estate, rental, and leasing | 53% |
| 54 | Professional, scientific, and technical services | 20% |
| 55 | Management of companies and enterprises | 20% |
| 56 | Administrative and support, waste management and remediation | 69% |
| 61 | Educational services | 33% |
| 62 | Health care and social assistance | 50% |
| 71 | Arts, entertainment, and recreations | 70% |
| 72 | Accommodation and food services | 89% |
| 81 | Other services (except public administration) | 60% |
| 92 | Public administration | 27% |
|  | All industries | 48% |

These weights were used to estimate the proportion of total employment in each industry could be considered low-wage jobs for both the fixed-route and demand-response components of the analysis.

## Estimating Jobs Likely Reached

The approaches described above provide an estimate of the number of jobs that JARC services made accessible based on the geographic coverage of fixed route and demand response services. This approach is consistent with FTA’s policy decision to measure the performance of most trip-based JARC programs based on the total number of jobs and low-wage jobs in the service region – in other words, the jobs that a customer could reach using the service on any given day. This measure highlights the capability of JARC services to make jobs in a particular service region accessible to low-income earners.

However, while a service might be expected to reach *any* job in its service area, under normal circumstances, no transit service could be expected to provide transportation to *every* job in its service region simultaneously. For both fixed route and demand response, the measures of jobs accessed described above can be more accurately defined as measures of *potential* accessibility; these measures are independent of transit capacity and instead estimate the maximum number of jobs accessible via JARC-supported services.

To complement this calculation, the team refined the FY 2007 / FY 2008 analysis to incorporate a measure of *jobs likely reached*. Ultimately, FTA and the team determined that the methodology initially introduced was too complex and, for FY 2009, the analysis adopted a more streamlined approach.

The simplified methodology uses the following steps and assumptions:

* Estimate total one-way trips for all fixed route (including flex routes and shuttles) and demand response as reported by designated recipients.
* Divide the number of one-way trips by two to represent individuals.
* Estimate the percentage of people making commute trips, which will serve as a proxy for jobs accessed. According to the American Public Transportation Association, 59.2% of transit trips are commuting trips (traveling between home and work)[[3]](#footnote-3). For ease of calculation, this example uses 60%.

The following table illustrates these calculations.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | One-way trips | Individuals | Jobs accessed | % |
| Fixed route | 19,163,282 | 9,581,641 | 5,748,984 | 75% |
| Flexible routing | 2,262,983 | 1,131,492 | 678,895 | 9% |
| Shuttle/Feeder | 879,176 | 439,588 | 263,753 | 3% |
| Demand response | 3,349,970 | 1,674,985 | 1,004,991 | 13% |
| Total | 25,655,411 | 12,827,706 | 7,696,623 | 100% |

## Jobs Accessed in FY 2009

For FY 2009, JARC-supported services were estimated to provide access to a maximum of 51.7 million jobs, of which 25.3 million were categorized as low-wage. It is further estimated that JARC services could provide access to approximately 7.7 million jobs based on vehicle capacity constraints.

As the following table shows, the unconstrained analysis indicates that fixed route services connected passengers with half the jobs accessed in FY 2009 and demand response services reached 41%. The constrained analysis paints a different picture, however. Reflecting the capacity difference between fixed route services and other types of JARC-supported services, the analysis of likely access suggests that fixed route services provided access to 75% of all jobs reached in FY 2009 and the demand response share fell to 13%.

Jobs Accessed Estimate

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | All jobs | | Low-wage jobs | | Jobs Likely Reached | |
| Service type | # | % | # | % | # | % |
| Fixed route | 26,004,688 | 50% | 12,222,862 | 48% | 5,748,984 | 75% |
| Flex route | 1,984,351 | 4% | 932,695 | 4% | 678,895 | 9% |
| Shuttle feeder | 2,757,128 | 5% | 1,295,920 | 5% | 263,753 | 3% |
| Demand response | 21,028,242 | 41% | 10,805,912 | 43% | 1,004,991 | 13% |
| Total jobs | 51,774,408 | 100% | 25,257,389 | 100% | 7,696,623 | 100% |

The findings reflect the data reported by grantees and do not incorporate any expansion factors or other efforts to interpret missing records.

Appendix C  
JARC Service Profiles

Under separate cover.

1. Reports from CES and TranSystems on JARC /NF services in operation during FY 2007 / FY 2008 and FY 2006 (JARC only) can be found on the JARC program page of the FTA website at http://www.fta.dot.gov/funding/grants/grants\_financing\_9292.html. [↑](#footnote-ref-1)
2. *2009 Public Transportation Fact Book*Accessed at: http://www.apta.com/gap/policyresearch/Documents/APTA\_2009\_Fact\_Book.pdf [↑](#footnote-ref-2)
3. *2009 Public Transportation Fact Book*Accessed at: http://www.apta.com/gap/policyresearch/Documents/APTA\_2009\_Fact\_Book.pdf [↑](#footnote-ref-3)