MOD
MOBILITY ON DEMAND

MOD SANDBOX DEMONSTRATIONS INDEPENDENT EVALUATION

RTA OF PIMA COUNTY - ADAPTIVE MOBILITY WITH RELIABILITY AND EFFICIENCY PROJECT EVALUATION PLAN

SHARE A CAR

RUBY Ride

U.S. Department of Transportation

Federal Transit Administration | ITS Joint Program Office

Front Cover Image: RubyRide and RTA/Pima County, August 2018, Photographer: James McGinnis

Notice

1. Report No. FHWA-JPO-18-680	2. Government Accession No.	3. Recipient's Catalog No.	
4. Title and Subtitle Mobility on Demand (MOD) Sandbox Demonstrations Independent Evaluation (IE) - Regional Transportation Authority (RTA) of Pima County Adaptive Mobility with Reliability and Efficiency (AMORE) Project Evaluation Plan		5. Report Date August 2018	
		6. Performing Organization Code	
7. Author(s) Gustave Cordahi, Susan Shaheen, Elliot Martin		8. Performing Organization Report No.	
9. Performing Organization Name and Address Booz Allen Hamilton 8283 Greensboro Drive McLean, VA 22102 Transportation Sustainability Research Center - UC Berkeley 2150 Allston Way #280 Berkeley, CA 94704		10. Work Unit No. (TRAIS)	
		11. Contract or Grant No. DTFH61-12-D-00041	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Federal Transit Administration Office of the Assistant Secretary for Research and Technology, ITS Joint Program Office 1200 New Jersey Avenue, SE Washington, DC 20590		13. Type of Report and Period Covered Final Report	
		14. Sponsoring Agency Code	

15. Supplementary Notes
Steven Mortensen, FTA Task Manager Robert Sheehan, ITS JPO Task Manager

16. Abstract
The Mobility on Demand (MOD) Sandbox Demonstration Program provides a venue through which integrated MOD concepts and solutions – supported through local partnerships – are demonstrated in real-world settings. For each of the 11 MOD Sandbox Demonstration projects, the MOD Sandbox Independent Evaluation includes an analysis of project impacts from performance measures provided by the project partners, as well as an assessment of the business models used. This report constitutes the Evaluation Plan for the Regional Transportation Authority (RTA) of Pima County Adaptive Mobility with Reliability and Efficiency (AMORE) Sandbox project. It includes the following chapters: project overview; evaluation approach and process; evaluation schedule and management; and data collection & analysis plan.

17. Keywords Mobility on demand, MOD, sandbox, shared mobility, mobility as a service, independent evaluation, transit		18. Distribution Statement	
19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages 105	22. Price

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

Table of Contents

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **iv**

List of Tables

List of Figures

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | v

Project Overview

This chapter gives a brief introduction to the Regional Transportation Authority (RTA) of Pima County Adaptive Mobility with Reliability and Efficiency (AMORE) MOD Sandbox Program that will be evaluated through this independent evaluation.

Introduction

The Regional Transportation Authority (RTA), the fiscal manager of the $2.1 billion, 20-year RTA plan, provides public transportation services to all jurisdictions comprising the Tucson metropolitan area. The RTA is managed by Pima Association of Governments (PAG), the region's metropolitan planning organization and provides fixed-route, ADA Compliant and optional paratransit, and general public dial-a-ride service. The daily operations of all services are managed through a contract with Total Transit, a private transportation company. RTA services function primarily as geographic extensions and service hour expansions to the region's primary transit system, Sun Tran, managed by the City of Tucson. The Sun Shuttle system provides extended coverage to outlying areas, while RTA funded weekday evening and weekend service hour expansions provide regional transit users with augmented off-peak transportation options.

Project Scope

The Adaptive Mobility with Reliability and Efficiency (AMORE) project's vision is to enhance mobility access to work and various needs of life for citizens needing or wishing to reduce car dependency, by integrating the best attributes of multiple emerging mobility services and technologies.

The project pilot site is the greater Rita Ranch area, which is currently served by a traditional fixed-route transit system. The challenge facing the RTA in delivering this service is the common transit operator's dilemma– financially constrained limited capacity, coverage and flexibility that leads to insufficient demand which further limits the transit operator's ability to innovate, increase ridership and adequately meet the residents' accessibility and mobility needs. Further, in recent years, Transportation Network Companies (TNCs) have been steadily gaining in popularity.

The AMORE project pilots and evaluates augmenting Rita Ranch's current transit-only service with an integrated multimodal, community circulation-based mobility service that can be accessed, paid for and managed through a single platform. The key strategies are:

(1) Establish a financially sustainable mobility ecosystem that is comprised of a credits/points system in which credits can be subscribed, purchased, earned, and transferred among families and friends via a range of activities to meet an individual's mobility needs. The credits can be purchased for a number of trips at an associated point "allowance". Credits are redeemable via the Metropia DUO app, and can be used on any service within the Metropia app. The modes that will be included in the app initially will be driving (via a personal vehicle), carpooling (via Metropia

DUO), transit-hailing (via RubyRide), and public transit (via fixed-route services included in the app). Subsequent versions of the app may include the additional mode of e-bikes (via an electric bikeshare service) and additional options within the transit-hailing mode (via Uber and Lyft).

(2) Introduce a subscription-based transit-hailing service (RubyRide) as a viable and affordable option for commuting or first-/last-mile service for transit operations and achieve a higher utilization and occupancy (e.g. reduced VMT at a lower cost than other TNC services).

(3) Seamlessly integrate community-based social-carpooling (via the mobile technology, Metropia DUO) with the above subscription-based Ruby Ride and existing transit services in order to make the total system capacity dynamic, adaptive and capable of meeting the peak-hour demand surge.

Key Partners

The Regional Transportation Authority (RTA) is partnering with Metropia DUO and RubyRide.

Project Timeline

The main project milestones are captured in the timeline below. Please note that the evaluation timeline is provided in a later chapter of this report.

1. **June 2017**– Cooperative Agreement Execution Date
2. **June - August 2018** – Demonstration Start (soft launch)
3. **September - December 2018** – Demonstration Start (official launch)
4. **June 2019** – Demonstration Completion.

The RTA team will collect data relevant to this MOD Sandbox Demonstration (as outlined in this Evaluation Plan) between June 2018 and June 2019, and will share the data with the IE team for conducting the evaluation. There is a soft launch as well as an official launch for the app that may correspond to the release of different versions of the app as deemed necessary by the project team. If there are changes made to the app between launches, or any other changes to the app that take place during the project evaluation period, the project team will fully disclose to the IE team what changes are made and when. This will allow the IE team to consider the app iterations within their evaluation. The IE team will ask questions in the Before and After surveys pertaining to any changes made to understand the impact of changes on users. Furthermore, the IE team will conduct separate sets of analyses for each app iteration (when relevant) in order to not confound effects and to understand the impact of changes on results. More details on the data collection planning are provided in Chapters 3 and 4 of this report.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

2 | RTA of Pima County AMORE Project Evaluation Plan

Evaluation Approach and Process

For each of the 11 MOD Sandbox Projects, the IE team developed an evaluation framework in coordination with each project team – the framework is a project-specific logic model that contains the following entries:

5. **MOD Sandbox Project** – Denotes the specific MOD Sandbox project.

6. **Project Goals** – Denotes each of the project goals for the specific MOD Sandbox project. The project goals capture what each MOD Sandbox project is trying to achieve.

7. **Evaluation Hypothesis** – Denotes each of the evaluation hypotheses for the specific MOD Sandbox project. The evaluation hypotheses flow from the project-specific goals.

8. **Performance Metric** – Denotes the performance metrics used to measure impact in line with the evaluation hypotheses for the specific MOD Sandbox project.

9. **Data Types, Elements, and Sources** – Denotes the Data Types, Elements, and the Data Sources used for the identified performance metrics.

10. **Method of Evaluation** – Denotes the quantitative and qualitative evaluation methods used.

This Chapter details the evaluation approach and process, as finalized in the evaluation logic model for the AMORE MOD Sandbox project. This includes listing project goals, evaluation hypotheses, performance metrics, data types and elements, data sources, and methods of evaluation.

Project Goals

The Project Goals denote what RTA is aiming to achieve through the MOD Sandbox demonstration. These project goals include the following:

1. Increase diversity of use of mobility options.

2. Increase public transportation ridership within the greater Rita Ranch area.

3. Increase in mobility for older adults and those with no access to vehicles.

4. Increase in carpooling by parents when driving minors as a result of AMORE.

5. Reduce personal car dependency for travel.

6. Reduce overall VMT (by segment/use case: older adults, school trips, commuters).

7. Increase affordable options for MaaS/MOD services.

8. Increase carpooling.

9. Improve access to mobility options through integration of Metropia DUO, RubyRide, and Transit into the Metropia App.

10. Complies with ADA equivalent level of service requirements.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **3**

11. Produce lessons learned through Stakeholder interviews.

The Project Goals set the foundation for the Evaluation Hypotheses.

Evaluation Hypotheses

The Evaluation Hypotheses flow from the project-specific goals, and denote what should happen if each Project Goal is met. These Evaluation Hypotheses include the following:

1. The average number of modes that travelers use increases as a result of an increase in the diversity of mobility options.

2. Public transportation ridership, including service offerings that are part of program, will increase due to AMORE.

3. Older adults and those with no access to a vehicle find that AMORE provides affordable mobility options for work or social activities that they would otherwise forgo or defer.

4. Parents carpool more when driving minors as a result of AMORE.

5. Users of AMORE will reduce their use of personal automobiles.

6. VMT will fall among users of AMORE (by use case/segment: older adults, school trips, commuters).

7. AMORE provides MaaS/MOD services that lower per-trip cost to operator and provide additional affordable options for consumers.

8. AMORE project increases carpooling among Tucson residents.

9. The integration of these mobility options into Metropia increases the use of RubyRide and Metropia.

10. First and last mile service to passengers with disabilities is equivalent to that provided to passengers without disabilities.

11. The process of deploying the project will produce lessons learned and recommendations for future research and deployment.

The success of each Evaluation Hypothesis is measured by the Performance Metrics below.

Performance Metrics

The performance metrics are used to measure impact in line with the evaluation hypotheses for the AMORE MOD Sandbox Project's Independent Evaluation. These performance metrics include the following:

- Reported mode share of users in Before and After surveys, average number of modes per user booked through Metropia App

- Reported mode share of public transit in Before and After surveys, count of unlinked trips for relevant public transit facilities/routes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

4 RTA of Pima County AMORE Project Evaluation Plan

- Reported ratings of mobility and accessibility in Before and After surveys among older adults and those without vehicles

- Reported use of carpooling to transport minors in Before and After surveys among parents

- Reported mode share of driving in Before and After surveys

- Reported VMT in Before and After surveys, measured VMT in activity data (both broken down by older adults, commuters, and school trips)

- Difference in average cost per trip and average cost per passenger-mile between AMORE and comparable transit and SOV trips

- Reported mode share of carpooling in Before and After surveys, number of carpooling trips booked through Metropia App

- Reported mode share of RubyRide and use of Metropia App in Before and After survyes, number of RubyRide trips booked through Metropia App, Metropia App usage statisitics such as number of active users, rentention rates, etc.

- Measured response times, travel times, and fares comparing WAV and non-WAV trips within AMORE and outside of it, ratio of WAV trip requests to number of trips provided with WAV, ratio of non-WAV trip requests to non-WAV trips provided.

The performance metrics will draw from a set of data sources that are specific to the project.

Data Types, Elements, and Sources

The following data types and elements are used for computing the performance metrics that are defined for this evaluation:

1. Survey Data (AMORE users – Before-and-After design and Recent Trip)
   Before-After Survey:
   - Individual travel patterns
   - The impact that the AMORE project has had on travel behavior
   - Impacts on vehicle ownership
   - Mode split
   - Impacts of credits and incentives on changing travel behavior
   - Recent public transit trip attributes and alternative modes of travel
   - Use of AMORE for carpooling with parents and children
   - Perceptions of changes in mobility and accessibility
   - Perception of first-mile and last-mile access, wait times, and travel times
   - Demographics and socioeconomics
   - Disability status
   - Home and work location

   Recent Trip Survey:
   - Mode that would have been used in the absence of the AMORE application
   - Trip purpose, time of departure, and/or the influence of the credit

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 5

2. Metropia [User] Travel Activity Data
    - De-identified user ID
    - Trip ID
    - Timestamp of request
    - Timestamp of booking (users can book for now or later)
    - Date and time stamp of pick up
    - Date and time stamp of drop off
    - Origin (as stated by user)
    - Destination (as stated by user)
    - Trip cost to passenger (subject to change between multiple iterations of the project)
    - Unit of currency (dollars, Metropia digital rewards, etc.)
    - Trip cost to agency or incentive provider (may be $0)
    - Incentive earned (if any)
    - Time from passenger request to vehicle arrival at trip origin (response or wait time)
    - Mode requested (e.g., driving, DUO, RR transit-hailing, fixed-route transit, etc.)
    - Trip executed (yes/no)
    - Vehicle ID (for DUO or RubyRide)
    - Passenger with a disability requiring wheelchair accessible vehicle (WAV) (yes/no)
    - WAV sufficient to provide service (yes/no/NA)

3. Vehicle attributes and activity data from RubyRide and Metropia DUO

    RubyRide and DUO Vehicle Attributes
    - Vehicle ID
    - Vehicle make
    - Vehicle model
    - Vehicle year
    - WAV vehicle (yes/no/NA)

    RubyRide and DUO Vehicle Activity Data
    - Vehicle ID
    - Trip ID
    - Miles traveled to passenger pickup (fetch distance)
    - Trip miles (fare distance)
    - Cumulative vehicle miles traveled with operator at pickup (Ruby Ride only)
    - Cumulative vehicle miles traveled with operator at drop-off (Ruby Ride only)
    - Open miles (Unassigned distance) preceding Trip ID (RubyRide only)
    - Cost to operator

4. Usage data of RubyRide and Metropia (*Data on usage of RubyRide and Metropia prior to the launch of the AMORE project)*
    - RubyRide: trips per month
    - Metropia: measure of engagements per month

    Example data structure:

    - Operator
    - Month/year
    - Count of trips/engagements (e.g., incentives taken with Metropia)

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

6 RTA of Pima County AMORE Project Evaluation Plan

- Count of website or app events (possible additional measures below)
  - Queries to the system,
  - Number of downloads,
  - The daily retention rate,
  - The total number of trips completed, and
  - The total number of dollars spent within the application
- Unique user count active during the month
- Cumulative user count

5. Paratransit providers: travel activity data
   - De-identified user ID
   - Trip ID
   - Timestamp of request
   - Timestamp of booking (users can book for now or later)
   - Date and time stamp of pick up
   - Date and time stamp of drop off
   - Origin (as stated by user)
   - Destination (as stated by user)
   - Trip cost to passenger (subject to change between multiple iterations of the project)
   - Trip cost to agency or incentive provider (may be $0)
   - Time from passenger request to vehicle arrival at trip origin (response or wait time)
   - Vehicle ID or type
   - Passenger with a disability requiring wheelchair accessible vehicle (WAV) (yes/no)
   - WAV sufficient to provide service (yes/no/NA)

6. Public Transit ridership data
   - Unlinked trips, or daily count of users on each facility or route that will be influenced by the project
   - Count data for facility transfers (transfer counts)
   - Daily OD counts to and from these stations

7. Stakeholder Interviews
   - Lessons learned.

Please note that there is no one-to-one matching between the performance measures and the data types and elements. The mapping between performance measures and data types and elements is demonstrated in the evaluation logic model provided later in this chapter.

Data Sources:

1. RubyRide
2. Metropia DUO
3. Regional Transportation Authority
4. Survey of AMORE Users
5. Paratransit Providers
6. Expert Interviews

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 7

Data Sources Mapping

The following diagram shows the mapping of data sources, data sets, and performance measures that will be used in the independent evaluation of the AMORE MOD Sandbox Demonstration. As shown, the datasets include both quantitative and qualitative data, and will be submitted to the USDOT Public Data Hub.
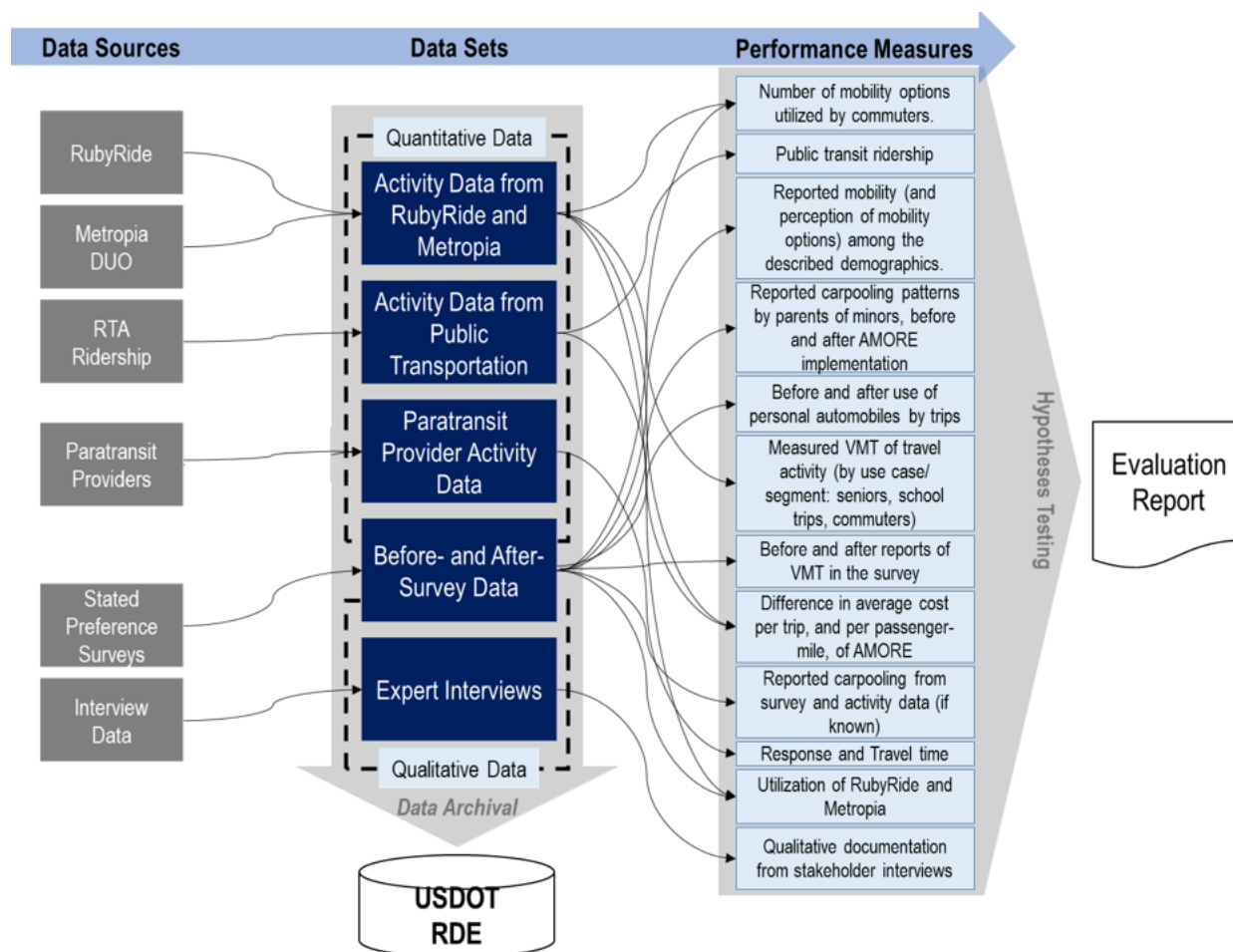
Source: Booz Allen Hamilton, August 2018

Figure 1. Mapping of Data Sources, Data Sets, and Performance Measures

Methods of Evaluation

The quantitative and qualitative evaluation methods used in the AMORE IE include the following:

- Activity data analysis
- Survey analysis

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

8 RTA of Pima County AMORE Project Evaluation Plan

- Ridership data analysis
- Analysis of cost and activity data
- Summary of expert interviews

Further details about the analysis methods by Evaluation Hypothesis are provided in Chapter 4.

Evaluation Logic Model

Table 1 below represents an extract from the final AMORE evaluation logic model. Building on the project goals, the logic model lists evaluation hypotheses, performance metrics, and data elements and sources for the AMORE project.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 9

Table 1. Evaluation Hypotheses, Performance Metrics, and Data Types and Sources for the AMORE Sandbox Project

Evaluation Hypothesis	Performance Metric	Data Types	Data Sources
1. The average number of modes that travelers use increases	Number of mobility options utilized by commuters.	• [User] Travel Activity Data • Survey Data	• Metropia • Survey of AMORE Users
2. Public transportation ridership, including service offerings that are part of program, will increase due to AMORE	Public transit ridership	• Public Transit ridership data • Survey Data	• Regional Transportation Authority • Survey of AMORE Users
3. Older adults and those with no access to a vehicle find that AMORE provides affordable mobility options for work or social activities that they would otherwise forgo or defer	Reported mobility (and perception of mobility options) among the described demographics.	• Survey Data	• Survey of AMORE Users
4. Parents carpool more when driving minors as a result of AMORE	Reported carpooling patterns by parents of minors, before and after AMORE implementation	• Survey Data	• Survey of AMORE Users
5. Users of AMORE will reduce their use of personal automobiles	Before and after use of personal automobiles by trips	• Survey Data	• Survey of AMORE Users
6. VMT will fall among users of AMORE (by use case/segment: older adults, school trips, commuters)	Measured VMT of travel activity (by use case/segment: older adults, school trips, commuters) Before and after reports of VMT in the survey	• Vehicle attributes and activity data • [User] Travel Activity Data • Survey Data	• RubyRide • Metropia • Survey of AMORE Users
7. AMORE provides MaaS/MOD services that lower per-trip cost to operator and provide additional affordable options for consumers	Difference in average cost per trip, and per passenger-mile, of AMORE and comparable transit and SOV trips	• [User] Travel Activity Data • Activity Data from Ruby Ride	• Metropia • RubyRide

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

10 | RTA of Pima County AMORE Project Evaluation Plan

Evaluation Hypothesis	Performance Metric	Data Types	Data Sources
8. AMORE project increases carpooling among Tucson residents	Reported carpooling from survey and activity data (if known)	• [User] Travel Activity Data • Survey Data	• Metropia • Survey of AMORE Users
9. The integration of these mobility options into Metropia increases the use of RubyRide and Metropia	Utilization of RubyRide and Metropia	• [User] Travel Activity Data • Usage data • Survey Data	• RubyRide • Metropia • Survey of AMORE Users
10. First and last mile service to passengers with disabilities is equivalent to that provided to passengers without disabilities	Response time Travel time Fare Wheelchair Accessible Vehicles (WAV) trip requests Trips provided with WAV	• [User] Travel Activity Data • Paratransit Provider Activity Data	• RubyRide • Metropia • Paratransit Providers
11. The process of deploying the project will produce lessons learned and recommendations for future research and deployment	Qualitative documentation from stakeholder interviews	• Stakeholder Interview Data	• Interviewees from project partners

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 11

Documentation and Reporting

The IE Team will develop an evaluation report for this MOD Sandbox demonstration project. The report will include a summary of major findings of the project in an Executive Summary section, followed by multiple sections providing details of the demonstration, evaluation hypotheses, data collected, analysis performed, findings, and results. The results will be reported through a mix of exhibits including tables, graphs, and charts.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

12 RTA of Pima County AMORE Project Evaluation Plan

Evaluation Schedule and Management

This chapter provides details on the evaluation project schedule and other details on the management of the evaluation project.

Evaluation Schedule

Figure 2 shows the IE schedule from the beginning of the quantitative and qualitative data collection that spans throughout the demonstration period and leads to the analysis, whose results are included in the site-specific evaluation report. Note that interim data spot checks and sample analyses will be performed during the demonstration period to proactively mitigate data-related risks.
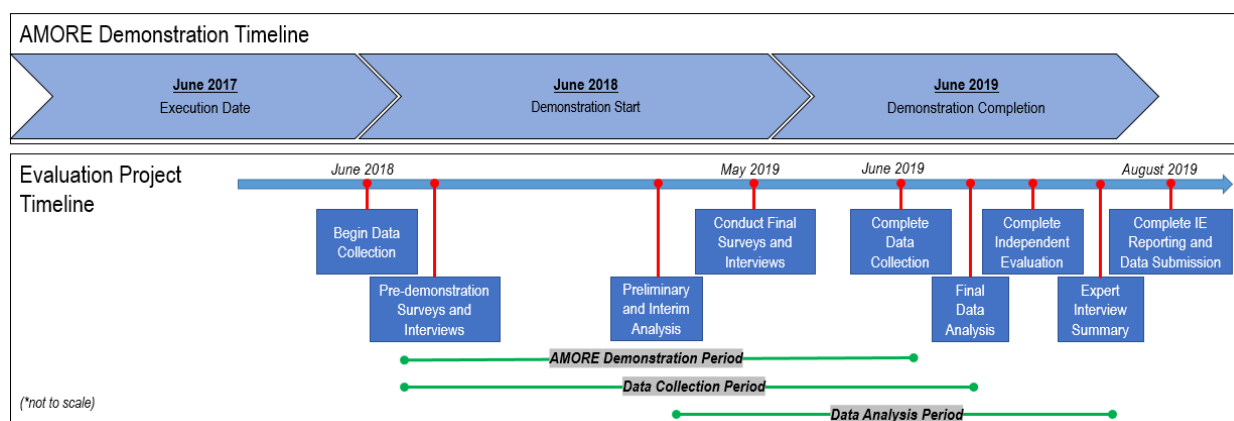
Source: Booz Allen Hamilton, February 2018

Figure 2. MOD Sandbox Evaluation and Demonstration Schedule

Data relevant to the program will be collected between June 2018 and June 2019. This data will be shared with the IE team for evaluation purposes. There is a soft launch as well as an official launch for the app that may correspond to the release of different versions of the app as deemed necessary by the project team. If there are changes made to the app between launches, or any other changes to the app that take place during the project evaluation period, the project team will fully disclose to the IE team what changes are made and when. This will allow the IE team to consider the app iterations within their evaluation. The IE will ask questions in the Before and After surveys pertaining to any changes made to understand the impact of changes on users. Furthermore, the IE team will conduct separate sets of analyses for each app iteration (when relevant) in order to not confound effects and to understand the impact of changes on results. More details on the data types, elements, and collection timeframes are provided in Chapter 4.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **13**

Roles and Responsibilities

The three main entities involved in the evaluation and their corresponding high-level roles are as follows:

- **The site team** coordinates the collection of the requested evaluation data from the various project partners throughout the demonstration period, and transfers the data to the IE team

- **The IE team** supports the site team in the definition of the requested data elements, and performs the analysis using the data provided by the site team

- **The USDOT team** supervises the work and provides support for topics that encompass more than one site (e.g. coordination with TNCs who are partnering with several Sandbox sites)

Data Transfer and Storage

Various types of qualitative and quantitative data sources are involved in the evaluation, as specified in Chapter 2. Figure 3 below shows the overall data collection framework, including the steps and parties involved in data design, collection, transfer and storage.
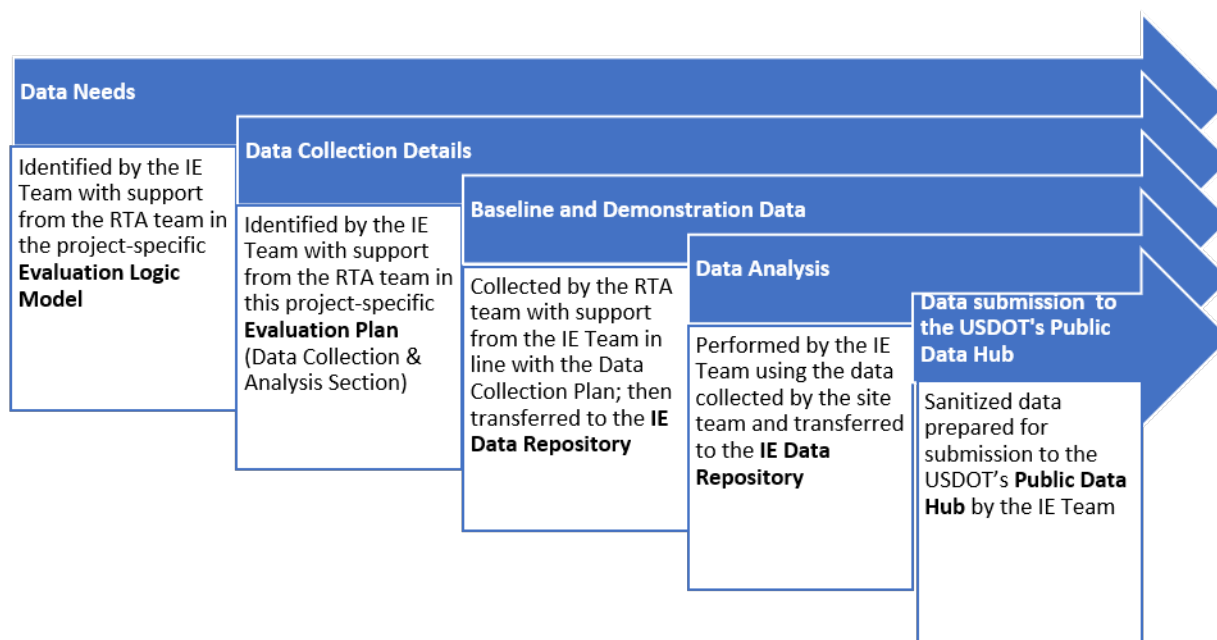
Source: Booz Allen Hamilton, August 2018

Figure 3. AMORE Data Collection Framework

Data Collection Responsibilities

Table 2 denotes the data collection responsibilities for the various data types required for the evaluation.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

14 | RTA of Pima County AMORE Project Evaluation Plan

Table 2. Data Type and Data Collection Responsibilities for AMORE MOD Sandbox Evaluation

Data Type	Data Collection Responsibilities
Survey Data (AMORE Users)	• The survey will be designed by the IE team, in coordination with RTA, and will be administered by the RTA team. The collected data will be transferred to the IE team at regular intervals.
Metropia [User] Travel Activity Data	• This data includes details on all the trips executed by Metropia DUO app. This data will be collected automatically by Metropia and will be transferred to RTA Sandbox demonstration team. The RTA team can provide access to a downloadable or query-enabled cloud-interface of the data to the IE team. The data will be devoid of any Personally Identifiable Information.
Activity Data from RubyRide	• This data includes details on all the trips executed by RubyRide, including the fare collected from the travelers. This data will be collected automatically by the app. The collected data will be transferred to the IE team by the RTA Sandbox demonstration team. Alternately, the RTA team can provide access to a downloadable or query-enabled cloud-interface of the data to the IE team. The data will be devoid of any Personally Identifiable Information.
Usage data of RubyRide and Metropia	• The RTA team will collect this data and will transfer it to the IE team for analysis.
Public Transit ridership data	• This data will be transferred to the IE team by the RTA Sandbox demonstration team. Alternately, the RTA team can provide access to a downloadable or query-enabled cloud-interface of the data to the IE team. The data will be devoid of any Personally Identifiable Information.
Activity Data from Paratransit Providers	• This data includes details on all the WAV-accessible trips executed by paratransit providers operating in conjunction with AMORE. This data will be collected by the operating companies and will be transferred to RTA Sandbox demonstration team. The RTA team can provide access to a downloadable or query-enabled cloud-interface of the data to the IE team. The data will be devoid of any Personally Identifiable Information.
Interview Data from Stakeholders	• Interviewees are identified by the IE Team in collaboration with the RTA Team • The IE Team is connected to the interviewees by the RTA Team • The IE Team conducts the expert interviews via phone or in person.

Risk Management

The IE Team will continually monitor risk in an ongoing process throughout the demonstration period and identify the best resources within the team to address each risk.
Some of the main risks involved in the evaluation are included below.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **15**

Schedule

The IE Team will maintain a demonstration tracking schedule to track and contact the demonstration teams for data and documentation. The Team will keep an up-to-date integrated schedule that reflects updates from the site teams on a constant basis. Components of the evaluation reports will be created throughout the demonstration period, as the data and documentation for the project becomes available. The site Team should inform the IE team of any changes in schedule that could affect the overall evaluation schedule (e.g. delays in the demonstration schedule).

Data Quality Assurance

The IE Team will perform spot checks on the data as it is being collected throughout the demonstration period to proactively manage risks related to data quality. This will allow the following:

- Avoiding insufficient data on performance of MOD demonstration to reliably estimate impacts and/or benefits.
- Addressing challenges in empirical data including lack of consistency, biases, and incompleteness.
- Identifying and controlling sources of error.
- Consideration of quality and quantity issues in data collection.
- Ensuring data privacy and proprietary protections in line with human subjects' protections
- Consideration of confounding factors.

Table 3 includes risk mitigation strategies that will be employed to ensure the availability of the requested data types for the evaluation.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

16 | RTA of Pima County AMORE Project Evaluation Plan

Table 3. Data Type and Risk Mitigation Strategies for AMORE Sandbox Evaluation

Data Type	Risk Mitigation Strategies
Survey Data (AMORE Users)	• This data includes perception data on AMORE services both before- and after- the Sandbox demonstration, to be stratified based on several demographics. The analyses primarily rely on identifying clusters of data for each of the type of demographics, such as parents with minors, older adults, persons without personal automobiles etc. If a gap exists in the number of surveyed persons under each category, the IE team will conduct stratified weighting and other statistical procedures to ensure adequate representation.
Metropia [User] Travel Activity Data	• The activity data includes data elements specific to Metropia trips executed. Receiving all the data elements specified in this Evaluation Plan is vital to computation of performance measures. The IE team will communicate the elements to the RTA team to ensure that they are included in the data transfer agreements between Metropia and RTA.
Activity Data from RubyRide	• The activity data includes data elements specific to trips executed by RubyRide. Receiving all the data elements specified in this Evaluation Plan is vital to computation of performance measures. The IE team will communicate the elements to the RTA team to ensure that they are included in the data transfer agreements between RubyRide and RTA.
Usage data of RubyRide and Metropia	• The IE team will receive access to these data sets from the RTA team.
Public Transit ridership data	• The ridership data from RTA need to be consistent over a temporal scale (Before/After). The IE team will convey the importance of consistent methods of data collection and elements to the RTA team to avoid any disparity. In addition, the IE team will also collect data regarding any external factors that would affect ridership in any way (such as events).
Activity Data from Paratransit Providers	• The activity data includes data elements specific to trips executed by Paratransit Providers. Receiving all the data elements specified in this Evaluation Plan is vital to computation of performance measures. The IE team will communicate the elements to the RTA team to ensure that they are included in the data transfer agreements between Paratransit Providers and RTA. The IE team realizes that paratransit provider Sun Van is operated by the City of Tucson, not RTA, and hence this may introduce challenges to get all the requested data. Other travel activity data sources will be used to fill any gaps in paratransit activity data.
Interview Data from Stakeholders	• The RTA team will facilitate the connection between the IE team and expert interviewees, and will help in getting their commitment to participate in the interviews.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **17**

Data Collection & Analysis Plan

This chapter describes the plan for data collection and analysis for the AMORE MOD Sandbox Project. It summarizes the data that needs to be collected by the project, and how that data should be processed in delivery to the evaluation team. The Evaluation Team will require data processing from the Project Team in order to produce the requested data format. The Project Team may also have to process data to remove any personally identifiable information if it is transmitted.

The data collection plan follows the logic model at the time of the plan composition. Each data field discussed is associated with a hypothesis and a performance metric. Certain types of data collected will address multiple hypotheses. In cases where the data structure is the same, the plan will refer to the data plan for a hypothesis that is already described. Most pilot based data (data provided by project partners) should be provided from the beginning of the pilot. The evaluation team also requests that some data about general Pima County travel activity, such as ridership, costs etc., be provided back to 2015 if possible. The request for longer time series of activity is motivated by the need to help discern potential background trends that could have been present before the project and then continue through it. Naturally, any data collected as a result of the project itself, can only be produced from the beginning of data collection by systems implemented by the project. With this draft, the evaluation team does not know the data structures that are available for specific data types. In the discussion that follows, the team presents the structure that would be preferred if possible. Other structures may be capable of delivering the same or similar insights and these structures can be discussed with the RTA/Pima County team. The evaluation team has specified the ideal structure where possible in the sections that follow. Further detail will be produced in subsequent discussions.

Table 4 below summarizes the data types, data elements, collection periods, collection responsibility and mechanisms, and hypothesis alignment for the AMORE Sandbox project evaluation. The table is followed by a more detailed data collection and analysis plan for each evaluation hypothesis.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 18

Table 4. Data Type, Data Elements, Period of Collection, Collection Responsibility and Mechanisms, and Hypothesis Alignment

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment
Survey Data (AMORE users Before-and-After Design; and Recent Trip)	**Before-and-After Survey:** • Individual travel patterns • Impact that AMORE project has had on travel behavior • Impacts on vehicle ownership • Mode split • Impacts of credits and incentives on changing travel behavior • Recent public transit trip attributes and alternative modes of travel • Use of AMORE for carpooling with parents and children • Perceptions of changes in mobility and accessibility • Perception of first-mile and last-mile access, wait times, and travel times • Demographics and socioeconomics • Disability status • Home and work location **Recent Trip Survey:** • Mode that would have been used in the absence of the AMORE application • Trip purpose, time of departure, and/or the influence of the credit.	• The **Before Survey** will have to be launched at the time the project is beginning with an established set of users that can be contacted. The same users will be contacted at the end of the project to fill out the **After Survey.** • The **Recent Trip Survey** would be implemented soon after system launch, and extend throughout the demonstration period.	• Survey questions are developed by the IE team in collaboration with the RTA team (*draft survey questions are provided in Appendix of this document*) • Surveys are administered by the RTA team • Survey responses are transferred by the RTA team to the IE team, once administered	1, 2, 3, 4, 5, 6, 8, 9

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **19**

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment
Metropia [User] Travel Activity Data	• De-identified User ID • Trip ID • Timestamp of Request • Timestamp of Booking (users can book for now or later) • Date and Time Stamp of Pick up • Date and Time Stamp of Drop off • Origin (as stated by user) • Destination (as stated by user) • Trip cost to passenger (subject to change between multiple iterations of the project) • Unit of currency (dollars, Metropia digital rewards, etc.) • Trip cost to agency or incentive provider (may be $0) • Incentive earned (if any) • Time from passenger request to vehicle arrival at trip origin (response or wait time) • Mode requested (e.g., Driving, DUO, RR Transit-Hailing, Fixed-Route Transit, etc.) • Trip executed (Yes/No) • Vehicle ID (for DUO or RubyRide) • Passenger with a disability requiring wheelchair accessible vehicle (WAV) (yes/no) • WAV sufficient to provide service (yes/no/NA)	The data collection period would cover the project performance period (beginning with the launch of the AMORE app and ending at the end of the MOD Sandbox evaluation period)	• Collected by the RTA/Pima County team and transferred to the IE team	1, 6, 7, 8, 9,10

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

20 | RTA of Pima County AMORE Project Evaluation Plan

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment
Vehicle attributes and activity data from RubyRide and Metropia DUO	**Ruby and DUO Vehicle Attributes** • Vehicle ID • Vehicle Make • Vehicle Model • Vehicle Year • WAV Vehicle (yes/no/NA) **Ruby and DUO Vehicle Activity Data** • Vehicle ID • Trip ID • Miles traveled to passenger pickup (Fetch distance) • Trip Miles (Fare distance) • Cumulative Vehicle Miles Traveled with Operator at Pickup (Ruby Ride only) • Cumulative Vehicle Miles Traveled with Operator at Drop-off (Ruby Ride only) • Open Miles (Unassigned distance) preceding Trip ID (RubyRide only) • Cost to Operator (for Hypothesis 7)	The data collection period would cover the project performance period (beginning with the launch of the AMORE app and ending at the end of the MOD Sandbox evaluation period)	• Collected by the RTA/Pima County team and transferred to the IE team	6, 7

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment

Usage data of RubyRide and Metropia	**Data on usage of RubyRide and Metropia prior to the launch of the AMORE project**
	
	• RubyRide: trips per month
	• Metropia: measure of engagements per month
	
	Example data structure:
	• Operator
	• Month/Year
	• Count of Trips/Engagements (e.g., incentives taken with Metropia)
	• Count of Website or App Events (possible additional measures below)
	   o Queries to the system,
	   o Number of downloads,
	   o The daily retention rate,
	   o The total number of trips completed, and
	   o The total number of dollars spent within the application
	• Unique User Count active during the month
	• Cumulative User Count
		The data collection period for the usage data of RubyRide and Metropia is requested from 2015 through the end of the MOD Sandbox project evaluation period. Both were founded before 2015. The request is simply to provide usage data starting from whenever the application first came into existence.	• Collected by the RTA/Pima County team and transferred to the IE team	9

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment
Paratransit providers: Travel activity data	• De-identified User ID • Trip ID • Timestamp of Request • Timestamp of Booking (users can book for now or later) • Date and Time Stamp of Pick up • Date and Time Stamp of Drop off • Origin (as stated by user) • Destination (as stated by user) • Trip cost to passenger (subject to change between multiple iterations of the project) • Trip cost to agency or incentive provider (may be $0) • Time from passenger request to vehicle arrival at trip origin (response or wait time) • Vehicle ID or Type • Passenger with a disability requiring wheelchair accessible vehicle (WAV) (yes/no) • WAV sufficient to provide service (yes/no/NA)	The paratransit provider data would be requested to include 2017 to the end of the evaluation period	• Collected by the RTA/Pima County team and transferred to the IE team	10
Public Transit ridership data	• Unlinked trips, or daily count of users on each facility or route that will be influenced by the project • Count data for facility transfers (transfer counts) • Daily OD counts to and from these stations	Ridership data is requested back to 2015	• Collected by the RTA/Pima County team and transferred to the IE team	2

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 23

Data Type	Data Elements	Period of Collection	Collection Responsibility and Mechanisms	Hypothesis Alignment
Expert Interviews	• Qualitative documentation from stakeholder interviews	Stakeholder interviews should occur at least six months after the launch of the demonstration, but it may be conducted later, as long as it is within a maximum of two months after the end of the demonstration period	• Interviewees are identified by the IE Team in collaboration with the RTA/Pima County Team • The IE Team is connected to the interviewees by the RTA/Pima County Team • The IE Team conducts the expert interviews via phone or in person	11

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

24 | RTA of Pima County AMORE Project Evaluation Plan

Detailed Data Collection and Analysis Plan by Evaluation Hypothesis

Hypothesis 1: The average number of modes that travelers use increases.

> **Performance Metric:** Number of mobility options utilized by commuters

> ### Data Types & Sources

> - **Survey of AMORE users, Before-and-After design**

>> The survey of AMORE users will be used to understand impacts that the project has had on travel behavior, accessibility, and mobility. The survey will ask questions pertaining to:

>> - Individual travel patterns
>> - The impact that the AMORE project has had on travel behavior
>> - Impacts on vehicle ownership
>> - Mode split
>> - Impacts of credits and incentives on changing travel behavior
>> - Recent public transit trip attributes and alternative modes of travel
>> - Use of AMORE for carpooling with parents and children
>> - Perceptions of changes in mobility and accessibility
>> - Perception of first-mile and last-mile access, wait times, and travel times
>> - Demographics and socioeconomics
>> - Disability Status
>> - Home and work location

> - **Metropia Travel Activity Data**

>> The ConOps v4 shows that Metropia is the main conduit for users to engage with the AMORE system. Based on the Rider Use Case, the riders can engage AMORE via Metropia for:

>> 1) Driving
>> 2) DUO (carpooling)
>> 3) Ruby Ride Transit Hailing
>> 4) Fixed-Route Transit
>> 5) eBike (planned in the future)

>> Travel activity data of users would contain information on modes used by AMORE users. The structure of this data could answer a number of questions related to the evaluation. The following list of fields would define a single row of data for each data type.

> - **User Travel Activity Data**

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **25**

- De-identified User ID
- Trip ID
- Timestamp of Request
- Timestamp of Booking (users can book for now or later)
- Date and Time Stamp of Pick up
- Date and Time Stamp of Drop off
- Origin (as stated by user)
- Destination (as stated by user)
- Trip cost to passenger (subject to change between multiple iterations of the project)
- Unit of currency (dollars, Metropia digital rewards, etc.)
- Trip cost to agency or incentive provider (may be $0)
- Incentive earned (if any)
- Time from passenger request to vehicle arrival at trip origin (response or wait time)
- Mode requested (e.g., Driving, DUO, RR Transit-Hailing, Fixed-Route Transit, etc.)
- Trip executed (Yes/No)
- Vehicle ID (for DUO or RubyRide)
- Passenger with a disability requiring wheelchair accessible vehicle (WAV) (yes/no)
- WAV sufficient to provide service (yes/no/NA)

Data Collection Period:

The period of data collection will be from the start to the end of the project evaluation period. Summarized activity data describing the modes taken by users may exist for users before the start of the project, which, if available would establish a baseline of modal profiles that would enable a robust evaluation of change. Without this baseline profile however, data collected at the beginning of the project and then longitudinally during the project should provide enough information to address the hypothesis.

Regarding the survey, the Before survey will have to be launched at the time the project is beginning with an established set of users that can be contacted. The same users will be contacted at the end of the project to fill out the After survey.

Analysis Procedure:

The analysis procedure will compute the travel mode share of users before and after project implementation using the survey responses and mode of travel data (if available). The baseline approach will to use the survey data to evaluate how modes of travel increased. Questions will be in the survey that evaluate the before and after change in travel behavior of users. These questions will be ordinal scale, evaluating frequencies of travel by mode. In addition, questions will be included that evaluate whether credits from AMORE are causing changes in behavior that increase the diversity of the modes. The

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

26 RTA of Pima County AMORE Project Evaluation Plan

hypothesis would be more reliably evaluated with activity data showing the change in modal behavior over time. The activity data defined in this hypothesis would be evaluated in the form of moving averages of modes taken per user over time to determine whether users increase the diversity and number of modes taken through the Metropia app over time. However, Metropia may not see all user activity, so the survey will be the primary data set, supplemented with any mode insights from the Metropia App.

Hypothesis 2: Public transportation ridership, including service offerings that are part of program, will increase due to AMORE.

Performance Metric: Public transit ridership

Data Types & Sources:

- **Public transit ridership**

    This data consists of ridership data at appropriate transit facilities and bus routes with the transit agencies that could be affected by the project. The scope of the ridership data should cover all facilities that will be influenced by the project. The data would ideally consist of the unlinked trips, or daily count of users on each facility or route. If count data for facility transfers exist (transfer counts), this would be useful to include in this data. If available for transit stations, the data is requested to distinguish access and egress activity. If daily OD counts are available for activity to and from these stations, this structure would be most preferred, but otherwise raw entrance and exit counts by day by station and stop would be sufficient.

- **Survey of AMORE users – Before-and-After design**

    The survey will be implemented as described in Hypothesis 1.

- **Survey of AMORE users – Recent Trip Survey**

    A recent trip survey is a survey that is given to selected respondents after their most recent trip using a credit or application of the AMORE project. The recent trip survey would be administered to respondents after they took a trip, and ask one to two questions about that trip. One question would be about mode substitution. That is, what mode would they have used in the absence of the AMORE application, which is mechanistically Metropia and RubyRide. The other question may be about trip purpose, time of departure, and/or the influence of the credit. Metropia's app emphasizes shifting departure time for incentives, so for this project, additional survey questions focusing on this dynamic would be insightful. Based on the ConOps v4, Metropia appears to be the main conduit for users to engage with AMORE. Recent trip surveys are not asked after every trip for every user. Rather, a sample of users is surveyed for a sample of trips taken following engagement with AMORE. The technical feasibility of the recent trip survey will be explored with the project team and the evaluation team.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **27**

Data Collection Period:

> The data collection period for the public transit ridership data is requested from 2015 to the end of the evaluation period. The data collection period for the Before-and-After Survey is as described in Hypothesis 1. The recent trip survey data collection period is continuous through the performance period of the project.

Analysis Procedure:

> The objective of this hypothesis is to evaluate whether public transit ridership increases as a result of the project. Naturally, public transit ridership data is the primary data source to analyze to evaluate a hypothesis about ridership. However, the scale of the project may not be large enough to produce movements in ridership that are perceptible in aggregate ridership data. For this reason, the evaluation team will also use survey data to determine whether respondents changed their behavior as a result of the credits and applications of the AMORE project. The recent trip survey, if doable, will be the most direct survey based measurement of this. The general survey will also be able to address key questions about change in transit ridership behavior that results from the project. The survey will contain questions about user travel behavior and whether the implementation of this project has affected their transit use. The evaluation will specifically look at metrics like the percentage of users that indicate they increased their use of public transportation as a result of the project.

Hypothesis 3: Older adults and those with no access to a vehicle find that AMORE provides affordable mobility options for work or social activities that they would otherwise forgo or defer.

Performance Metric: Reported mobility (and perception of mobility options) among the described demographics

Data Types & Sources:

- **Survey of AMORE users**

> The survey will be implemented as described in Hypothesis 1.

Data Collection Period:

> The data collection period for the survey is as described in Hypothesis 1.

Analysis Procedure:

> The survey will contain questions that probe the general affordability of mobility and the affordability of mobility through AMORE services. The responses of older adults as well as those that do not have a vehicle will be analyzed separately. The survey responses will be aggregated according to various metrics. The metrics will capture reported mobility, as well as perception of mobility, such as the percentage of users that believe AMORE has increased their mobility options.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

28 RTA of Pima County AMORE Project Evaluation Plan

The responses will be used to determine the subgroups that are the focus of this hypothesis.

Hypothesis 4: Parents carpool more when driving minors as a result of AMORE.

Performance Metric: Reported carpooling patterns by parents of minors, before and after AMORE implementation

Data Types & Sources:

- **Survey of AMORE users**

    The survey will be implemented as described in Hypothesis 1.

Data Collection Period:

    The data collection period for the survey is as described in Hypothesis 1.

Analysis Procedure:

    The survey responses considered will be restricted to those users that indicate they are parents of minors. These survey responses will be aggregated according to various metrics that capture travel behavior before and after project implementation. For example, the evaluation team would compute the percentage of parents that indicate they carpooled when driving minors before the implementation of AMORE as well as the percentage of parents that indicate they carpooled when driving minors after the implementation of AMORE. The evaluation will determine whether there is a change in percentages due to project implementation and quantify any increases (or decreases) observed in the amount of carpooling.

Hypothesis 5: Users of AMORE will reduce their use of personal automobiles.

Performance Metric: Before and after use of personal automobiles by trips

Data Types & Sources:

- **Survey of AMORE users – Before-and-After design**

    The survey will be implemented as described in Hypothesis 1.

- **Survey of AMORE users – Recent Trip Survey**

    The survey will be implemented as described in Hypothesis 2.

Data Collection Period:

    The data collection period for the survey is as described in Hypothesis 1 and Hypothesis 2.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **29**

Analysis Procedure:

The survey responses will be aggregated according to various metrics that capture travel behavior before and after project implementation. For example, the evaluation team would compute the estimated number of trips and distance traveled by personal vehicles before project implementation as well as the estimated number of trips and distance traveled by personal vehicles after project implementation for each user. The survey will also evaluate whether there is any change in vehicle ownership, or reduced demand to acquire or use vehicles (vehicle suppression). Annual or monthly driving will also be measured. Changes in these measures will be used to evaluate the hypothesis through the main survey. The recent trip survey may also support this hypothesis since it will explore mode shift as a result of AMORE engagement.

Hypothesis 6: VMT will fall among users of AMORE (by use case/segment: older adults, school trips, commuters).

Performance Metric: Measured VMT of travel activity (by use case/segment: older adults, school trips, commuters), Before and after reports of VMT in the survey

Data Types & Sources:

- **Travel and Vehicle Activity Data**
- **User Travel Activity Data**
  User Travel Activity Data is as described in Hypothesis 1.
- **Ruby and DUO Vehicle Attributes**
  - Vehicle ID
  - Vehicle Make
  - Vehicle Model
  - Vehicle Year
  - WAV Vehicle (yes/no/NA)
- **Ruby and DUO Vehicle Activity Data**
  - Vehicle ID
  - Trip ID
  - Miles traveled to passenger pickup (Fetch distance)
  - Trip Miles (Fare distance)
  - Cumulative Vehicle Miles Traveled with Operator at Pickup (Ruby Ride only)
  - Cumulative Vehicle Miles Traveled with Operator at Drop-off (Ruby Ride only)
  - Open Miles (Unassigned distance) preceding Trip ID (RubyRide only)
  - Cost to Operator (for Hypothesis 7)
- **Survey of AMORE users – Before-and-After design**

  The survey will be implemented as described in Hypothesis 1.

- **Survey of AMORE users – Recent Trip Survey**

  The survey will be implemented as described in Hypothesis 2.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

30 RTA of Pima County AMORE Project Evaluation Plan

Data Collection Period:

The data collection period for the travel activity data and survey is as described in Hypothesis 1 and Hypothesis 2.

Analysis Procedure:

The analysis will evaluate the trends of the travel and vehicle activity data to first understand the driving that is occurring as a result of the AMORE system. The survey will be used to assess the change in behavior that results from AMORE (e.g., what would have happened in AMORE's absence). The two data sources will be used together to assess the net VMT impacts of AMORE, and break those impacts down by subgroup as appropriate. VMT impacts will also be translated into energy impacts through the linking of fuel economy data to VMT. Travel activity data may be linked to individual surveys, allowing for a before and after analysis that incorporates both travel activity data as well as survey responses. The evaluation team would use the collective survey responses to compute before-project VMT and the surveys with the travel activity data to compute after-project VMT.

Hypothesis 7: AMORE provides MaaS/MOD services that lower per-trip cost to operator and provide additional affordable options for consumers.

Performance Metric: Difference in average cost per trip, and per passenger-mile, of AMORE and comparable transit and SOV trips

Data Types & Sources:

- **User Travel Activity Data**

    User Travel Activity Data is as described in Hypothesis 1.

- **RubyRide Cost Data**

    Ideally, cost is an included data field in the RubyRide vehicle activity data, but if this is not the case then the evaluation team could use aggregated data over the course of the pilot. In particular, the evaluation team would require the aggregated values: the total number of trips taken, the total cost from all trips, the average trip mileage, and the average vehicle occupancy.

Data Collection Period:

The data collection period for this data will be from the start to the end of the project evaluation period.

Analysis Procedure:

In the ideal situation, the evaluation team would have the costs associated with individual trips, allowing for a more comprehensive analysis. If possible, this could be included in

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **31**

the Vehicle Activity Data. By examining the origin and destination data, the evaluation team would identify the comparable public transit options that users could have used as an alternative to their RubyRide trip and the costs associated with those alternatives. The evaluation team would compute the difference in costs among comparable options, and aggregate those differences to attain an overall difference in cost per trip and per passenger-mile.

If individual cost data is not feasible, then aggregated cost data would be sufficient for a similar, yet less comprehensive, analysis. The evaluation team would compute the overall cost per trip and cost per passenger-mile for all RubyRide trips that occurred during the pilot. These outcomes would be compared to the corresponding cost metrics of other options that currently operate in the pilot area.

Hypothesis 8: AMORE project increases carpooling among Tucson residents (specifically in the Rita Ranch pilot area).

Performance Metric: Reported carpooling from survey and activity data (if known)

Data Types & Sources:

- **Survey of AMORE users – Before-and-After design**

  The survey will be implemented as described in Hypothesis 1.

- **Survey of AMORE users – Recent Trip Survey**

  The survey will be implemented as described in Hypothesis 2.

- **User Travel Activity Data**

  The user travel activity data is as described in Hypothesis 1.

Data Collection Period:

The data collection period for the survey and travel activity data is as described in Hypothesis 1.

Analysis Procedure:

The survey data would be used to assess the amount of carpooling conducted by AMORE users before the project implementation. The survey would also be used to assess carpooling at the end of the evaluation period. The recent trip survey would also be a valuable input to this analysis. It will provide insight as to whether carpooling trips would have been taken using another mode. The ideal design would tie this data to a Trip and Passenger de-ID. The evaluation team would use the survey responses to estimate before-project carpooling and survey along with travel activity data to compute after-project carpooling. This would allow for an individual user analysis that describes whether more carpooling has occurred as a result of the project.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

32 RTA of Pima County AMORE Project Evaluation Plan

Hypothesis 9: The integration of these mobility options into Metropia increases the use of RubyRide and Metropia.

Performance Metric: Utilization of RubyRide and Metropia

Data Types & Sources:

- **User Travel Activity Data**

    The user travel activity data is as described in Hypothesis 1.

- **Usage data of RubyRide and Metropia**

    This information would comprise data on usage of RubyRide and Metropia prior to the launch of the AMORE project. The general activity data may simply be measured by user engagement. For RubyRide, this may comprise a simple measure of trips per month. For Metropia, this may comprise a measure of engagements per month. The number of unique users would also be useful for the evaluation of this hypothesis. An example data structure would consist of the following:

    - Operator
    - Month/Year
    - Count of Trips/Engagements (e.g., incentives taken with Metropia)
    - Count of Website or App Events (possible additional measures below)
        - Queries to the system,
        - Number of downloads,
        - The daily retention rate,
        - The total number of trips completed, and
        - The total number of dollars spent within the application
    - Unique User Count active during the month
    - Cumulative User Count
- **Survey of AMORE users – Before-and-After design**

    The survey will be implemented as described in Hypothesis 1.

Data Collection Period:

    The data collection period for the usage data of RubyRide and Metropia is requested from 2015 through the end of the project evaluation period. Both were founded before 2015. The request is simply to provide usage data starting from whenever the application first came into existence. The data collection period for the survey is as described in Hypothesis 1.

Analysis Procedure:

    The analysis will evaluate whether the RubyRide and Metropia mobile applications are being used more since project implementation. The usage data will provide insight into how people use the technology and whether that usage is consistent or changes over

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **33**

time. Other key performance indicators (KPIs) that would be relevant are the total number of downloads, the daily retention rate, the total number of trips completed, and the total number of dollars spent within the application. The evaluation team would compare the trends of these KPIs for each application individually before project implementation to that of the combined application after project implementation.

The survey would also support evaluating this hypothesis. The survey will contain questions about user travel behavior before and after project implementation. The evaluation will specifically look at metrics like the percentage of users who indicate they use RubyRide and/or Metropia more since the start of the project.

Hypothesis 10: First and last mile service to passengers with disabilities is equivalent to that provided to passengers without disabilities.

Performance Metric: Response time, Travel time, Fare, Wheelchair Accessible Vehicles (WAV) trip requests, Trips provided with WAV

Data Types & Sources:

- **User Travel Activity Data**

   The user travel activity data is as described in Hypothesis 1.

- **Paratransit providers**

   Travel activity data from existing paratransit provider would have to be supplied to conduct a direct comparison of travel, wait and scheduling times. The evaluation team would work with the project team to identify the appropriate paratransit providers. The evaluation team would request data that would be generally structured in the following form:

   - De-identified User ID
   - Trip ID
   - Timestamp of Request
   - Timestamp of Booking (users can book for now or later)
   - Date and Time Stamp of Pick up
   - Date and Time Stamp of Drop off
   - Origin (as stated by user)
   - Destination (as stated by user)
   - Trip cost to passenger (subject to change between multiple iterations of the project)
   - Trip cost to agency or incentive provider (may be $0)
   - Time from passenger request to vehicle arrival at trip origin (response or wait time)
   - Vehicle ID or Type
   - Passenger with a disability requiring wheelchair accessible vehicle (WAV) (yes/no)

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

34 RTA of Pima County AMORE Project Evaluation Plan

o   WAV sufficient to provide service (yes/no/NA)

Data Collection Period:

The data collection period for the user travel activity data is as described in Hypothesis 1. The paratransit provider data would be requested to include 2017 to the end of the evaluation period.

Analysis Procedure:

For this analysis, the evaluation team would compare the activity data statistics from trips corresponding to users with disabilities to those without disabilities. The paratransit operators might be responsible for all WAV trips or share this responsibility with the other operators. If the latter is true, the evaluation team would combine the data from both sources, separating the trips by user disability status and/or WAV service. Two comparisons would be completed. One comparison would be with the AMORE project and existing paratransit services. The other would be with WAV passengers and non-WAV passengers within AMORE. The evaluation team would compute the average response time (time from request to pick-up), travel time (time spent in vehicle), and fare for both groups and check that there are no significant differences. The evaluation team would also sum the total number of WAV requests and compare that to the total number of trips that actually provided WAV service. This ratio should be comparable to the ratio of trip requests to total trips completed for nondisabled users. These comparisons would allow the evaluation team to determine if the service provided to disabled and nondisabled users is equivalent with the pilot.

Hypothesis 11: The process of deploying the project will produce lessons learned and recommendations for future research and deployment.

Performance Metric: N/A

Data Sources:

- **Stakeholder interviews**

  This data is qualitative in nature. The Project Team will identify members that can be available to interview with the Evaluation Team. The Project Team should specify a minimum of three people with enough knowledge on the project to talk candidly about its successes and challenges. The Evaluation Team will interview these candidates to understand the lessons learned from project implementation.

Data Collection Period:

The data collection for stakeholder interviews should occur at least six months after the launch of the demonstration, but it may be conducted later, as long as it is within a maximum of two months after the end of the demonstration period.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **35**

Analysis Procedure:

An expert interview protocol will be developed. The interviews will be conducted and synthesized from notes and recordings into a summary describing key insights from experts directly involved in the project.

Table 5. Suggested Interviewee Name, Role/Affiliation, and Contact Info

Interviewee	Role/Affiliation	Contact Info
James McGinnis	Program Director/RTA	jmcginnis@pagregion.com/ 520-495-1483
Yi-Chang Chiu	Program Manager/Metropia	yc.chiu@metropia.com/ 520-268-8067
Jeff Ericson	Task Manager/RubyRide	jeff@rubyride.co/ 412-742-8243
Chris Coleman	Communications Manager/Metropia	chris.colemon@metropia.com/ 512-351-2504

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

36 RTA of Pima County AMORE Project Evaluation Plan

Appendix A. Selected Draft Survey Questions: Before-After Survey

This section presents selected draft survey questions for those who use the AMORE system. These survey questions are subject to revision, additions, and deletions. These questions provide examples of the types of questions that may be asked, subject matter to be covered, and serve as a starting point for final design. Wording may be adjusted to handle specific nuance or circumstances that are germane to the project. Additional questions may be added. These questions are drafted to cover the general subject matter of the logic model. The timing and the structure of the survey implementation may also change content, based on input from project partners. Branching and skip logic will be used, not everyone will see every question or every option. The questions below are designed within a before-after context. In this survey, respondents are surveyed twice, once at the beginning of the project and once at the end, to report on the impact that the project has had on their travel behavior. It is intended that questions will be supported by activity data provided by the AMORE project. The survey may require modification to present context specific questions within the Tucson area and surrounding environment. Input on the survey question content and design is continuously welcome from all project partners.

Finally, a proposed Recent Trip Survey design is also considered for this evaluation, and is presented following the draft before-after design.

Draft Before Survey

1. Including yourself, how many people live in your current household?

    o   1
    o   2
    o   3
    o   4
    o   5
    o   6
    o   More than 6

>>>>>>>>>>>>>>>>>>>>>>>>>**Branch Rule: HOUSEHOLD**>>>>>>>>>>>>>>>>>**START**

IF (Response > 1) THEN NEXT

>>>

2. What describes your relation to the other people in your current household? (e.g., if you live with your mother, select "Parent/Guardian(s)"). (Please check all that apply.)

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 37

- o Parent/Guardian(s)
- o Relatives (e.g., siblings, etc.)
- o Housemates/Roommates
- o Partner/Significant Other
- o Children (who are under your guardianship)

3. Please select the option that best describes your relationship to the other people in your household. This question helps us correctly categorize your responses in terms of either household or individual.

- o We share some expenses, like rent and utilities.
- o We share expenses and income, and make financial decisions together, like buying a car.
- o Other, please specify: _____

>>>>>>>>>>>>>>**Branch Rule: HOUSEHOLD**>>>>>>>>>>>>>>**END**

4. How many vehicles do **< you / your household > currently** own or lease?

- o 0
- o 1
- o 2
- o 3
- o 4
- o 5 or more

>>>>>>>>>>**Branch Rule: OWNS VEHICLES>>>>>**>>>>**START**

If Response /= 0 THEN NEXT

>>>

5. Please list the year, make, and model of the vehicle(s) that **< you / your household > currently** own or lease as well as your best estimate of the miles driven on each during the last 12 months (e.g., 2008 Honda Civic, 2000 miles per year).

Make sure to report all miles driven on the vehicle by anyone in your household. Please list the

vehicle you drive most first.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

38 RTA of Pima County AMORE Project Evaluation Plan

<Show only number of vehicles selected in Q4>

	Year	Make	Model	Approximate miles driven on the vehicle in the last year
Vehicle 1				
Vehicle 2				
Vehicle 3				
Vehicle 4				
Vehicle 5				

6. Do you commute to work and/or school?

   o Yes, I commute to work
   o Yes, I commute to school
   o Yes, I commute to work **and** school
   o No, none of the above

>>>>>>>>>>**Branch Rule: COMMUTES TO WORK>>>>>>>>>START**

If commutes to work THEN NEXT

>>>

7. Which vehicle do you most often use to commute to work?

   <List the vehicles entered below>

   o <Vehicle 1 Make, Model, Year>
   o <Vehicle 2 Make, Model, Year>
   o <Vehicle 3 Make, Model, Year>
   o <Vehicle 4 Make, Model, Year>
   o <Vehicle 5 Make, Model, Year>
   o I do not drive, I use another mode to get to work

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **39**

>>>>>>>>>>**Branch Rule: VEHICLE USED IN WORK COMMUTE>>>>>>>>>START**

If Response = <Some vehicle 1 through 5> THEN NEXT

>>>

8. Please approximate the miles driven in the last 12 months **specifically for commuting to work**. Do not include miles driven in any other vehicles or for any other purposes.

    <Can be drop down menu>

    o   0 miles
    o   500 miles
    o   1,000 miles
    o   1,500 miles
    o   2,000 miles
    o   2,500 miles
    o   3,000 miles
    o   3,500 miles
    o   4,000 miles
    o   4,500 miles
    o   5,000 miles
    o   5,500 miles
    o   6,000 miles
    o   6,500 miles
    o   7,000 miles
    o   7,500 miles
    o   8,000 miles
    o   8,500 miles
    o   9,000 miles
    o   9,500 miles
    o   10,000 miles
    o   10,500 miles
    o   11,000 miles
    o   11,500 miles
    o   12,000 miles
    o   12,500 miles
    o   13,000 miles
    o   13,500 miles
    o   14,000 miles
    o   14,500 miles
    o   15,000 miles
    o   15,500 miles
    o   16,000 miles
    o   16,500 miles
    o   17,000 miles
    o   17,500 miles
    o   18,000 miles
    o   18,500 miles
    o   19,000 miles

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

40 RTA of Pima County AMORE Project Evaluation Plan

- o 19,500 miles
- o 20,000 miles
- o More than 20,000 miles

>>>>>>>>>> Branch Rule: VEHICLE USED IN WORK COMMUTE >>>>>>>>>>>END

>>>>>>>>>>>>>>Branch Rule: COMMUTES TO WORK >>>>>>>>>>>>>>END

>>>>>>>>>>**Branch Rule: COMMUTES TO SCHOOL>>>>>>>>>>START**

If commutes to school THEN NEXT

>>

9. Which vehicle do you most often use to commute to school?

    <List the vehicles entered below>

    - o <Vehicle 1 Make, Model, Year>
    - o <Vehicle 2 Make, Model, Year>
    - o <Vehicle 3 Make, Model, Year>
    - o <Vehicle 4 Make, Model, Year>
    - o <Vehicle 5 Make, Model, Year>
    - o I do not drive, I use another mode to get to school

>>>>>>>>>>**Branch Rule: VEHICLE USED IN SCHOOL COMMUTE>>>>>>>>>>START**

If Response = <Some vehicle 1 through 5> THEN NEXT

>>

10. Please approximate the miles driven in the last 12 months **specifically for commuting to school**. Do not include miles driven in any other vehicles or for any other purposes.

    <Can be drop down menu>

    - o 0 miles
    - o 500 miles
    - o 1,000 miles
    - o 1,500 miles
    - o 2,000 miles

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **41**

- o 2,500 miles
- o 3,000 miles
- o 3,500 miles
- o 4,000 miles
- o 4,500 miles
- o 5,000 miles
- o 5,500 miles
- o 6,000 miles
- o 6,500 miles
- o 7,000 miles
- o 7,500 miles
- o 8,000 miles
- o 8,500 miles
- o 9,000 miles
- o 9,500 miles
- o 10,000 miles
- o 10,500 miles
- o 11,000 miles
- o 11,500 miles
- o 12,000 miles
- o 12,500 miles
- o 13,000 miles
- o 13,500 miles
- o 14,000 miles
- o 14,500 miles
- o 15,000 miles
- o 15,500 miles
- o 16,000 miles
- o 16,500 miles
- o 17,000 miles
- o 17,500 miles
- o 18,000 miles
- o 18,500 miles
- o 19,000 miles
- o 19,500 miles
- o 20,000 miles
- o More than 20,000 miles

>>>>>>>>>> Branch Rule: VEHICLE USED IN SCHOOL COMMUTE>>>>>>>>>>>>END

>>>>>>>>>>>>>>>Branch Rule: COMMUTES TO SCHOOL >>>>>>>>>>>>>END

>>>>>>>>>>>>>>>**Branch Rule: OWNS VEHICLES** >>>>>>>>>>>>>>**END**

Now, we will ask you about how you've traveled in the Tucson region over the past 12 months.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

42 RTA of Pima County AMORE Project Evaluation Plan

11. Which of the following modes of transportation have you used in the **Tucson region during the last 12 months**?

    Please check all that apply.

    NOTE: This question defines the universal modes that get used by the respondent. From here, the number of modes that they see reduces to only those relevant as questions proceed.

    - o Drive alone
    - o Drive/Ride with family/friend (non-commute)
    - o Carpool (for commuting)
    - o Carpool (for transporting children)
    - o Walk (to a destination)
    - o Bicycle
    - o Sun Link Streetcar
    - o Sun Tran Bus (including Sun Express Service)
    - o Sun Shuttle Neighborhood Transit Service (non-paratransit)
    - o Paratransit Service
    - o Intercity Bus (e.g., Greyhound)
    - o Intercity Rail (e.g., Amtrak)
    - o RubyRide
    - o Uber/Lyft
    - o Taxi
    - o Motorcycle or Scooter
    - o Vanpool
    - o Microtransit & Commuter Vans (e.g., Chariot, Via, dollar vans)
    - o Employer Shuttle (for commuting)
    - o Car Rental within the Tucson region
    - o Other, please specify: _____

12. Please indicate how frequently you **currently** use the following modes**.**

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **43**

	Not available to me or not in my area	Never in the last year	Less than once per month	Once per month	Every other week	1 to 3 times per week	4 to 6 times per week	Once per day	2 to 4 times per day	More than 4 times per day
<Mode that was selected in Q11>										
<Mode that was selected in Q11>										
<…>										

Please answer the following questions about your most recent trip when you last used the Metropia App to access AMORE services.

13. Which of the app services did this trip use?

    o Driving
    o DUO Carpooling
    o Transit-Hailing RubyRide
    o Fixed-Route Public Transit
    o Other, please specify: _____

14. What was the **origin** of this trip?

    Please indicate two streets that cross near this location, and the city.

    City: _____
    Street #1: _____
    Street #2: _____

15. What type of place was this?

    o Home
    o Work
    o Work-related meeting
    o School
    o Retail

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

44 RTA of Pima County AMORE Project Evaluation Plan

- o Social/Recreational
- o Medical
- o Place of worship
- o Other, please specify: _____

16. What was the **final destination** of this trip?

Please indicate two streets that cross near this location, and the city.

City: _____
Street #1: _____
Street #2: _____

17. What type of place was this?

- o Home
- o Work
- o Work-related meeting
- o School
- o Retail
- o Social/Recreational
- o Medical
- o Place of worship
- o Other, please specify: _____

18. What was the purpose of this trip?

- o Get to/from a restaurant/bar
- o Go to/from other social/recreational activities (not a restaurant/bar)
- o Commute to/from work
- o Commute to/from school
- o Go to/from public transit
- o Go to/from work-related meetings during the day
- o Go to/from grocery shopping
- o Go to/from other shopping (non-groceries)
- o Run non-shopping errands
- o Go to/from healthcare services
- o Go to/from the airport
- o Go to/from the gym
- o Go to/from place of worship
- o Move bulky items
- o Transport pets
- o Other, please specify: _____

19. At what time did you start this trip (from your origin)?

<Can be drop down menu>

- o 5:00AM

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **45**

- o 5:30AM
- o 6:00AM
- o 6:30AM
- o 7:00AM
- o 7:30AM
- o 8:00AM
- o 8:30AM
- o 9:00AM
- o 9:30AM
- o 10:00AM
- o 10:30AM
- o 11:00AM
- o 11:30AM
- o 12:00PM
- o 12:30PM
- o 1:00PM
- o 1:30PM
- o 2:00PM
- o 2:30PM
- o 3:00PM
- o 3:30PM
- o 4:00PM
- o 4:30PM
- o 5:00PM
- o 5:30PM
- o 6:00PM
- o 6:30PM
- o 7:00PM
- o 7:30PM
- o 8:00PM
- o 8:30PM
- o 9:00PM
- o 9:30PM
- o 10:00PM
- o 10:30PM
- o 11:00PM
- o 11:30PM
- o 12:00AM
- o 12:30AM
- o 1:00AM
- o 1:30AM
- o 2:00AM
- o 2:30AM
- o 3:00AM
- o 3:30AM
- o 3:00AM
- o 3:30AM
- o 4:00AM
- o 4:30AM

20. What day was this trip?

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

46 RTA of Pima County AMORE Project Evaluation Plan

- o Monday
- o Tuesday
- o Wednesday
- o Thursday
- o Friday
- o Saturday
- o Sunday

21. About how long did it take you to plan this trip? This is the estimated amount of time that you used the Metropia App to conduct this trip.

- o I did not spend any time on the Metropia App
- o 30 seconds or less
- o 1 minute
- o 2 minutes
- o 3 minutes
- o 4 minutes
- o 5 minutes
- o 6 minutes
- o 7 minutes
- o 8 minutes
- o 9 minutes
- o 10 minutes
- o More than 10 minutes

>>>>>>>>>>>>>>>>> **Branch Rule: DUO OR RR** >>>>>>>>>>>>START

IF (Trip was DUO Carpooling or Transit-Hailing RubyRide)
>>

22. Did you use **< DUO Carpooling / Transit-Hailing RubyRide >** to connect to or from a public transit system during this trip?

- o No
- o Yes, I used it to get from my origin to a transit stop
- o Yes, I used it to get from a transit stop to my destination

>>>>>>>>>>>>>>>>> **Branch Rule: CONNECTED TO/FROM PUBLIC TRANSIT**
>>>>>>>>>>>>>START

IF (Person connected to/from public transit)
>>

23. Which transit system did you use?

- o Sun Link Streetcar
- o Sun Tran Bus
- o Sun Shuttle Neighborhood Transit Service

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **47**

- o Amtrak
- o Other, please specify: _____

>>>>>>>>>>>>>>>> Branch Rule: CONNECTED TO PUBLIC TRANSIT >>>>>>>>>>>START

IF (Person connected to public transit)
>>

24. About how long did you wait for the **< DUO Carpooling / Transit-Hailing RubyRide >** vehicle at your origin?

    <Can be drop down menu>

    - o 30 seconds or less
    - o 1 minute
    - o 2 minutes
    - o 3 minutes
    - o 4 minutes
    - o 5 minutes
    - o 6 minutes
    - o 7 minutes
    - o 8 minutes
    - o 9 minutes
    - o 10 minutes
    - o 11 minutes
    - o 12 minutes
    - o 13 minutes
    - o 14 minutes
    - o 15 minutes
    - o 16 minutes
    - o 17 minutes
    - o 18 minutes
    - o 19 minutes
    - o 20 minutes
    - o 21 minutes
    - o 22 minutes
    - o 23 minutes
    - o 24 minutes
    - o 25 minutes
    - o 26 minutes
    - o 27 minutes
    - o 28 minutes
    - o 29 minutes
    - o 30 minutes
    - o More than 30 minutes

25. What was the approximate location of the transit stop that you arrived at?

    Please list two streets that cross near that location.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

48 RTA of Pima County AMORE Project Evaluation Plan

Street 1: _____

Street 2: _____

26. About how long did you wait for the **< streetcar/bus/shuttle/train>** at the transit stop?

<Can be drop down menu>

- o 30 seconds or less
- o 1 minute
- o 2 minutes
- o 3 minutes
- o 4 minutes
- o 5 minutes
- o 6 minutes
- o 7 minutes
- o 8 minutes
- o 9 minutes
- o 10 minutes
- o 11 minutes
- o 12 minutes
- o 13 minutes
- o 14 minutes
- o 15 minutes
- o 16 minutes
- o 17 minutes
- o 18 minutes
- o 19 minutes
- o 20 minutes
- o 21 minutes
- o 22 minutes
- o 23 minutes
- o 24 minutes
- o 25 minutes
- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

27. Did this trip contain any transfers (i.e., switching vehicles at any point in the trip)?

- o Yes
- o No

28. What was the approximate location of the transit stop where you got off the **< streetcar/bus/shuttle/train>**?

Please list two streets that cross near that location.

Street 1: _____

Street 2: _____

29. What mode did you use to **get from** this transit stop to your final destination?

   - o Walk
   - o Bicycle
   - o Drive alone
   - o Picked up/dropped off by family/friend
   - o RubyRide
   - o Regular Uber/Lyft
   - o Taxi
   - o Carpool
   - o Other, please specify: _____

>>>>>>>>>>>>>>>**Branch Rule: CONNECTED TO PUBLIC TRANSIT** >>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>>> **Branch Rule: CONNECTED FROM PUBLIC TRANSIT** >>>>>>>>>>>>**START**

IF (Person connected from public transit)
>>

30. What mode did you use to **get to** the transit stop from your origin?

   - o Walk
   - o Bicycle
   - o Drive alone
   - o Picked up/dropped off by family/friend
   - o RubyRide
   - o Regular Uber/Lyft
   - o Taxi
   - o Carpool
   - o Other, please specify: _____

31. What was the approximate location of the transit stop that you arrived at?

Please list two streets that cross near that location.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

50 | RTA of Pima County AMORE Project Evaluation Plan

Street 1: _____

Street 2: _____

32. About how long did you wait for the **< streetcar/bus/shuttle/train>** at the transit stop?

<Can be drop down menu>

- o 30 seconds or less
- o 1 minute
- o 2 minutes
- o 3 minutes
- o 4 minutes
- o 5 minutes
- o 6 minutes
- o 7 minutes
- o 8 minutes
- o 9 minutes
- o 10 minutes
- o 11 minutes
- o 12 minutes
- o 13 minutes
- o 14 minutes
- o 15 minutes
- o 16 minutes
- o 17 minutes
- o 18 minutes
- o 19 minutes
- o 20 minutes
- o 21 minutes
- o 22 minutes
- o 23 minutes
- o 24 minutes
- o 25 minutes
- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

33. Did this trip contain any transfers (i.e., switching vehicles at any point in the trip)?

- o Yes
- o No

34. What was the approximate location of the transit stop where you got off the **< streetcar/bus/shuttle/train>**?

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **51**

Please list two streets that cross near that location.

Street 1: _____

Street 2: _____

35. About how long did you wait for the **< DUO Carpooling / Transit-Hailing RubyRide >** vehicle at the transit stop?

<Can be drop down menu>

- o   30 seconds or less
- o   1 minute
- o   2 minutes
- o   3 minutes
- o   4 minutes
- o   5 minutes
- o   6 minutes
- o   7 minutes
- o   8 minutes
- o   9 minutes
- o   10 minutes
- o   11 minutes
- o   12 minutes
- o   13 minutes
- o   14 minutes
- o   15 minutes
- o   16 minutes
- o   17 minutes
- o   18 minutes
- o   19 minutes
- o   20 minutes
- o   21 minutes
- o   22 minutes
- o   23 minutes
- o   24 minutes
- o   25 minutes
- o   26 minutes
- o   27 minutes
- o   28 minutes
- o   29 minutes
- o   30 minutes
- o   More than 30 minutes

>>>>>>>>>>>>>>>**Branch Rule: CONNECTED FROM PUBLIC TRANSIT** >>>>>>>>>>>>>>>**END**

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

52 RTA of Pima County AMORE Project Evaluation Plan

>>>>>>>>>>>>>>**Branch Rule: CONNECTED TO/FROM PUBLIC TRANSIT** >>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>> **Branch Rule: DID NOT CONNECT TO/FROM PUBLIC TRANSIT** >>>>>>>>>>>>>>**START**

IF (Person did not connect to/from public transit)
>>

36. About how long did you wait for the **< DUO Carpooling / Transit-Hailing RubyRide >** vehicle at your origin?

    <Can be drop down menu>

    - o 30 seconds or less
    - o 1 minute
    - o 2 minutes
    - o 3 minutes
    - o 4 minutes
    - o 5 minutes
    - o 6 minutes
    - o 7 minutes
    - o 8 minutes
    - o 9 minutes
    - o 10 minutes
    - o 11 minutes
    - o 12 minutes
    - o 13 minutes
    - o 14 minutes
    - o 15 minutes
    - o 16 minutes
    - o 17 minutes
    - o 18 minutes
    - o 19 minutes
    - o 20 minutes
    - o 21 minutes
    - o 22 minutes
    - o 23 minutes
    - o 24 minutes
    - o 25 minutes
    - o 26 minutes
    - o 27 minutes
    - o 28 minutes
    - o 29 minutes
    - o 30 minutes
    - o More than 30 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **53**

>>>>>>>>>>>>>>>**Branch Rule: DID NOT CONNECT TO/FROM PUBLIC TRANSIT**
>>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>**Branch Rule: DUO OR RR** >>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>>> **Branch Rule: PUBLIC TRANSIT TRIP** >>>>>>>>>>>>**START**

IF (Trip was public transit)
>>

37. What mode did you use to **get to** the transit stop from your origin?

   - o Walk
   - o Bicycle
   - o Drive alone
   - o Picked up/dropped off by family/friend
   - o RubyRide
   - o Regular Uber/Lyft
   - o Taxi
   - o Carpool
   - o Other, please specify: _____

38. What was the approximate location of the transit stop that you arrived at?

   Please list two streets that cross near that location.

   Street 1: _____

   Street 2: _____

39. About how long did you wait for the **< streetcar/bus/shuttle/train>** at the transit stop?

   <Can be drop down menu>

   - o 30 seconds or less
   - o 1 minute
   - o 2 minutes
   - o 3 minutes
   - o 4 minutes
   - o 5 minutes
   - o 6 minutes
   - o 7 minutes
   - o 8 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

54 RTA of Pima County AMORE Project Evaluation Plan

- 9 minutes
- 10 minutes
- 11 minutes
- 12 minutes
- 13 minutes
- 14 minutes
- 15 minutes
- 16 minutes
- 17 minutes
- 18 minutes
- 19 minutes
- 20 minutes
- 21 minutes
- 22 minutes
- 23 minutes
- 24 minutes
- 25 minutes
- 26 minutes
- 27 minutes
- 28 minutes
- 29 minutes
- 30 minutes
- More than 30 minutes

40. Did this trip contain any transfers (i.e., switching vehicles at any point in the trip)?

- Yes
- No

41. What was the approximate location of the transit stop where you got off the **< streetcar/bus/shuttle/train>**?

Please list two streets that cross near that location.

Street 1: _____

Street 2: _____

42. What mode did you use to **get from** this transit stop to your final destination?

- Walk
- Bicycle
- Drive alone
- Picked up/dropped off by family/friend
- RubyRide
- Regular Uber/Lyft
- Taxi
- Carpool
- Other, please specify: _____

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **55**

>>>>>>>>>>>>>>>**Branch Rule: PUBLIC TRANSIT TRIP**>>>>>>>>>>>>>>>**END**

43. Thinking about the entire trip (from origin to destination), about how long was your **total travel time** for this trip?

    <Can be drop down menu>

    o   Less than 5 minutes
    o   5 minutes
    o   10 minutes
    o   15 minutes
    o   20 minutes
    o   25 minutes
    o   30 minutes
    o   35 minutes
    o   40 minutes
    o   45 minutes
    o   50 minutes
    o   55 minutes
    o   60 minutes
    o   1 hour and 5 minutes
    o   1 hour and 10 minutes
    o   1 hour and 15 minutes
    o   1 hour and 20 minutes
    o   1 hour and 25 minutes
    o   1 hour and 30 minutes
    o   1 hour and 35 minutes
    o   1 hour and 40 minutes
    o   1 hour and 45 minutes
    o   1 hour and 50 minutes
    o   1 hour and 55 minutes
    o   2 hours
    o   More than 2 hours

44. Did you adjust your original trip plans to take advantage of the credits and incentives offered through the AMORE program?

    o   No, I would have conducted this trip in the exact same way regardless of points or the AMORE program
    o   Yes, I changed my time of departure
    o   Yes, I changed my mode(s) of travel (e.g., chose carpooling over driving alone)
    o   Yes, I changed my time of departure **and** my mode(s) of travel

45. About how long ago did you take this trip?

    o   Today
    o   Yesterday
    o   This past week

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

56 RTA of Pima County AMORE Project Evaluation Plan

- o This past month
- o 2 to 3 months ago
- o 4 to 6 months ago
- o More than 6 months ago

46. If AMORE was not available, then how would you have made this trip otherwise?

- o I would not have made the trip
- o I would have driven all the way
- o Sun Link Streetcar
- o Sun Tran Bus
- o Sun Shuttle Neighborhood Transit Service
- o Ride from friend or family
- o RubyRide
- o Regular Uber/Lyft
- o Taxi
- o Bicycle
- o Walk
- o Carpool
- o Other, please specify: _____

Now, we will ask you some more general questions about your use of AMORE services (via the Metropia App) and perceptions of your mobility and accessibility.

47. Are you a parent (or legal guardian) of any children?

Please select "0" if you do not have any children or otherwise select the number of children that you have.

- o 0
- o 1
- o 2
- o 3
- o 4
- o 5 or more

>>>>>>> Branch Rule: HAS CHILDREN >>>>>>>>>>>START

IF (If Response /= 0 THEN NEXT)
>>>

48. Please indicate how frequently **< your child/each of your children >** uses carpooling to get to school or other activities. Please include all instances of DUO Carpooling that are facilitated through the Metropia App, regardless of whether you are the driver or not.

"Never" is selected by default, if they do not carpool, just skip it.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **57**

<Show only number of children selected in Q47>

	Never in the last year	Less than once per month	Once per month	Every other week	1 to 3 times per week	4 to 6 times per week	Once per day	2 to 4 times per day	More than 4 times per day
Child 1	☒	☐	☐	☐	☐	☐	☐	☐	☐
Child 2	☒	☐	☐	☐	☐	☐	☐	☐	☐
Child 3	☒	☐	☐	☐	☐	☐	☐	☐	☐
Child 4	☒	☐	☐	☐	☐	☐	☐	☐	☐
Child 5	☒	☐	☐	☐	☐	☐	☐	☐	☐

>>>>>>>>>>>>>>>**Branch Rule: HAS CHILDREN** >>>>>>>>>>>>>>**END**

49. Currently, how would you characterize your travel needs?

    Please check all activities that impose significant travel needs on your monthly activity.

    o Commuting to work or school
    o Socializing with friends
    o Shopping for food
    o Taking kids to and from school and activities
    o Shopping for other things
    o Going on recreational trips
    o Physical exercise
    o Going to medical appointments
    o Going to places of worship
    o Other, please specify: _____

50. How often do you use the Metropia App to access AMORE services?

    o Never in the last year
    o Less than once per month
    o Once per month
    o Every other week
    o 1 to 3 times per week

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

58 RTA of Pima County AMORE Project Evaluation Plan

o 4 to 6 times per week
o Once per day
o 2 to 4 times per day
o More than 4 times per day

>>>>>>>>>>>>>>>Branch Rule: USES METROPIA>>>>>>>>>>>>>>START

IF (Person has used Metropia in the past year)

>>

51. When using the Metropia App to make trips, how often do you take advantage of the credits and incentives offered through the AMORE program?

   o Every trip
   o The vast majority of trips
   o More than half of trips
   o About half of trips
   o Less than half of trips
   o Very few trips
   o Never

52. How much do you agree with the following statement?

   "The credits and incentives offered through the AMORE program have affected the way I travel, often encouraging me to change my time of departure in order to receive points."

   o Strongly agree
   o Agree
   o Neither agree nor disagree
   o Disagree
   o Strongly disagree

53. How much do you agree with the following statement?

   "The credits and incentives offered through the AMORE program have affected the way I travel, often encouraging me to change my mode of travel (e.g., choosing carpooling over driving alone) in order to receive points."

   o Strongly agree
   o Agree
   o Neither agree nor disagree
   o Disagree
   o Strongly disagree

>>>>>>>>>>>>>>>**Branch Rule: USES METROPIA** >>>>>>>>>>>>>>**END**

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **59**

54. Overall, I currently consider myself to be…

   Note: this question refers to your access and use of transportation services, not your physical capabilities.

   - o Very mobile
   - o Somewhat mobile
   - o Not very mobile
   - o Not mobile at all

55. Overall, I currently consider my wait times to be…

   Note: this question refers to the average time you wait for vehicles to pick you up. Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

   - o 1 (Unacceptable)
   - o 2
   - o 3
   - o 4
   - o 5 (Acceptable)
   - o 6
   - o 7
   - o 8
   - o 9
   - o 10 (Excellent)
   - o Not applicable

56. Overall, I currently consider my travel times to be...

   Note: this question refers to the average time you spend traveling in vehicles. Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

   - o 1 (Unacceptable)
   - o 2
   - o 3
   - o 4
   - o 5 (Acceptable)
   - o 6
   - o 7
   - o 8
   - o 9
   - o 10 (Excellent)
   - o I don't know

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

60 RTA of Pima County AMORE Project Evaluation Plan

57. Overall, how would you rate your ability to access desired areas and locations within the Tucson region? Please rate on a scale of 1 to 10, where 10 is Excellent access, and 1 is Very Poor access.

   o   1 (Very Poor)
   o   2
   o   3
   o   4
   o   5
   o   6
   o   7
   o   8
   o   9
   o   10 (Excellent)

58. How would you rate your ability to **get to and from public transit** in the Tucson region? Please rate on a scale of 1 to 10, where 10 is Excellent connectivity, and 1 is Very Poor connectivity.

   o   1 (Very Poor)
   o   2
   o   3
   o   4
   o   5
   o   6
   o   7
   o   8
   o   9
   o   10 (Excellent)
   o   I don't know

Now, we will ask you questions about your demographic profile.

59. What is your gender?

   o   Male
   o   Female
   o   Other, please specify: _____
   o   Prefer not to answer

60. In what year were you born?

        Drop-down <years>

61. Do you use a wheelchair?

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **61**

       o   Yes
       o   No

62. Do you have other disabilities that require specialized accommodations for transportation?

       o   Yes
       o   No

63. Do you require transportation vehicles and infrastructure that is ADA compliant (wheelchair or scooter) to get around?

       o   Yes
       o   No

64. What is the highest level of education you have completed?

       o   Less than high school
       o   Currently in high school
       o   High school/GED
       o   Currently in 2-year college
       o   2-year college degree
       o   Currently in 4-year college
       o   4-year college degree
       o   Currently in post-graduate degree
       o   Post-graduate degree (MA, MS, PhD, MD, JD, etc.)
       o   Other, please specify: _____
       o   Prefer not to answer

65. What is your race or ethnicity?

Please check all that apply.

       o   African American
       o   American Indian or Alaskan Native
       o   Asian
       o   Caucasian/White
       o   Hispanic or Latino
       o   Middle-Eastern
       o   Native Hawaiian or Pacific Islander
       o   South Asian (e.g., Indian, Pakistani, etc.)
       o   Southeast Asian
       o   Other, please specify: _____
       o   Prefer not to answer

>>>>>>>>>>>>>>Branch Rule: HOUSEHOLD STRUCTURE>>>>>>>>>>>>>>START

IF (Person is considered household)

>>>

Please indicate the number of household members (including yourself) that fall into the different age groups listed below.

	0 people	1 person	2 people	3 people	4 people	5 people	More than 5 people
0 - 5							
6 - 15							
16 - 18							
19 - 65							
66 or older							

>>>>>>>>>>>>>>>Branch Rule: HOUSEHOLD STRUCTURE >>>>>>>>>>>>>>END

66. What kind of housing do you currently live in?

   o   Detached single-family home
   o   Attached single-family home
   o   Building with more than 100 units
   o   Building with between 10 and 100 units
   o   Building/house with fewer than 10 units
   o   Mobile home/RV/Trailer
   o   Other, please specify: _____

67. Approximately what was **< your/your household >** gross (pre-tax) income last year?

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **63**

- o Less than $10,000
- o $10,000 to $14,999
- o $15,000 to $24,999
- o $25,000 to $34,999
- o $35,000 to $49,999
- o $50,000 to $74,999
- o $75,000 to $99,999
- o $100,000 to $149,999
- o $150,000 to $199,999
- o $200,000 or more
- o Prefer not to answer

68. Please indicate two streets that cross near your **home location** as well as the city.

    City: _____

    Street #1: _____

    Street #2: _____

69. Please indicate two streets that cross near your **work location** as well as the city. If you do not travel to a work location, you can skip this question.

    City: _____

    Street #1: _____

    Street #2: _____

70. [OPTIONAL] This survey asked a lot of questions about your travel behavior with the AMORE systems in the Tucson region. Please feel free to elaborate here on how you travel and use the Metropia App.

    Your comments (if you provide any) will only be reviewed confidentially in support of your other responses. You will not be contacted about them. Anything you write may help support the impact analysis, or clarify responses you provided in the survey.

    You can tell us about elements we might have missed through the survey questions or that you feel need additional clarification. This is completely optional, you can write as much as you would like or nothing at all. If you do choose to provide comments, please try to convey input that is constructive, helpful, and kindly worded; what you write will be read. In either case, thank you again for taking this survey.

    <Comment Box>

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

64 RTA of Pima County AMORE Project Evaluation Plan

Draft After Survey

1. Including yourself, how many people live in your current household?
    o   1
    o   2
    o   3
    o   4
    o   5
    o   6
    o   More than 6

>>>>>>>>>>>>>>>>>>>>>>>>>**Branch Rule: HOUSEHOLD**>>>>>>>>>>>>>>>>>>**START**

IF (Response > 1) THEN NEXT

>>

2. What describes your relation to the other people in your current household? Please check all that apply.)

    O   Parent/Guardian(s)
    O   Relatives (e.g., siblings, etc.)
    O   Housemates/Roommates
    O   Partner/Significant Other
    O   Children (who are under your guardianship)

3. Please select the option that best describes your relationship to the other people in your household. This question helps us correctly categorize your responses in terms of either household or individual.

    O   We share some expenses, like rent and utilities.
    O   We share expenses and income, and make financial decisions together, like buying a car.
    O   Other, please specify: _____

>>>>>>>>>>>>>>>**Branch Rule: HOUSEHOLD**>>>>>>>>>>>>>>>**END**

4. How many vehicles do **< you / your household > currently** own or lease?

    o   0
    o   1
    o   2
    o   3

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **65**

- o   4
- o   5 or more

>>>>>>>>>>**Branch Rule: OWNS VEHICLES>>>>>>>>>START**

If Response /= 0 THEN NEXT

>>>

5. Please list the year, make, and model of the vehicle(s) that **< you / your household > currently** own or lease as well as your best estimate of the miles driven on each during the last 12 months (e.g., 2008 Honda Civic, 2000 miles per year).

    Make sure to report all miles driven on the vehicle by anyone in your household. Please list the

    vehicle you drive most first.

    <Show only number of vehicles selected in Q4>

	Year	Make	Model	Approximate annual mileage
Vehicle 1				
Vehicle 2				
Vehicle 3				
Vehicle 4				
Vehicle 5				

6. Did **< you / your household >** own or lease **<this same vehicle / these same vehicles > prior to using AMORE services (via the Metropia App)**?

    - o   **< I / we >** did not own or lease any vehicles before, and **< I / we >** do not now
    - o   **< I / we >** have the same vehicle(s) now as before
    - o   **< I / we >** have gotten rid of a vehicle(s), **definitely or partially** because of using AMORE services
    - o   **< I / we >** have gotten rid of a vehicle(s), **but not** because of using AMORE services
    - o   **< I / we >** have bought or leased a new vehicle(s), **definitely or partially** because of using AMORE services

---

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

66 RTA of Pima County AMORE Project Evaluation Plan

- ○ **< I / we >** have bought or leased a new vehicle(s), **but not** because of using AMORE services
- ○ **< I / we >** have gotten rid of a vehicle(s) **and** bought or leased a new vehicle(s)

>>>>>>>>>>**Branch Rule: GOT RID OF VEHICLES BECAUSE OF AMORE>>>>>>>>>START**

If (Response = got rid of vehicles because of AMORE) THEN NEXT

>>

7. How many vehicles did **< you / your household >** get rid of since using AMORE services (via the Metropia App)? Only consider those vehicles that were gotten rid of (at least partially) due to using AMORE services and disregard vehicles that were gotten rid of for any other reasons.

   - ○ 0
   - ○ 1
   - ○ 2
   - ○ 3
   - ○ 4
   - ○ 5 or more

8. Please list the year, make, and model of the vehicle(s) that **< you / your household > got rid of** as well as your best estimate of the miles driven on each in the year before getting rid of them (e.g., 2008 Honda Civic, 2000 miles per year).

   Make sure to report all miles driven on the vehicle by anyone in your household. Please list the vehicle you drove most first.

   <Show only number of vehicles selected in Q7>

	Year	Make	Model	Approximate annual mileage
Vehicle 1				
Vehicle 2				
Vehicle 3				
Vehicle 4				
Vehicle 5				

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **67**

>>>>>>>>>>>>>>>**Branch Rule: GOT RID OF VEHICLES BECAUSE OF AMORE**
>>>>>>>>>>>>>>>**END**

>>>>>>>>>>>**Branch Rule: BOUGHT VEHICLES BECAUSE OF AMORE>>>>>>>>>START**

If (Response = bought vehicles because of AMORE) THEN NEXT

>>>

9. Please indicate which vehicles **< you / your household >** have bought or leased since using AMORE services (via the Metropia App).

    <Show year, make, model of vehicles listed in Q5>

	This vehicle was bought/leased before	This vehicle was bought/leased after, **definitely or partially** because of using AMORE services	This vehicle was bought/leased after, **but not** because of using AMORE services
Vehicle 1			
Vehicle 2			
Vehicle 3			
Vehicle 4			
Vehicle 5			

>>>>>>>>>>>>>>>**Branch Rule: BOUGHT VEHICLES BECAUSE OF AMORE** >>>>>>>>>>>>>>>**END**

>>>>>>>>>>>**Branch Rule: GOT RID OF AND BOUGHT VEHICLES >>>>>>>>>START**

If (Response = got rid of and bought vehicles) THEN NEXT

>>>

10. How many vehicles did **< you / your household >** get rid of since using AMORE services (via the Metropia App)? Only consider those vehicles that were gotten rid of (at least partially) due to using AMORE services and disregard vehicles that were gotten rid of for any other reasons.

    o   0

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

68 | RTA of Pima County AMORE Project Evaluation Plan

- o 1
- o 2
- o 3
- o 4
- o 5 or more

11. Please list the year, make, and model of the vehicle(s) that **< you / your household > got rid of** as well as your best estimate of the miles driven on each in the year before getting rid of them (e.g., 2008 Honda Civic, 2000 miles per year).

Make sure to report all miles driven on the vehicle by anyone in your household. Please list the vehicle you drove most first.

<Show only number of vehicles selected in Q10>

	Year	Make	Model	Approximate annual mileage
Vehicle 1				
Vehicle 2				
Vehicle 3				
Vehicle 4				
Vehicle 5				

12. Please indicate which vehicles **< you / your household >** have bought or leased since using AMORE services (via the Metropia App).

<Show year, make, model of vehicles listed in Q5>

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **69**

	This vehicle was bought/leased before	This vehicle was bought/leased after, **definitely or partially** because of using AMORE services	This vehicle was bought/leased after, **but not** because of using AMORE services
Vehicle 1			
Vehicle 2			
Vehicle 3			
Vehicle 4			
Vehicle 5			

>>>>>>>>>>>>>>>>**Branch Rule: GOT RID OF AND BOUGHT VEHICLES** >>>>>>>>>>>>>>>>**END**

13. Has your use of AMORE services (via the Metropia App) impacted the amount you drive?

   o Definitely
   o Probably
   o Probably not
   o Definitely not

>>>>>>>>>>>**Branch Rule: IMPACTED DRIVING>>>>>>>>>>START**

If Response = Definitely or Probably THEN NEXT

>>

14. To the best of your ability, please try to estimate **the change in how many miles per month** you have driven **< your / your household >** vehicle(s) as a result of using AMORE services (via the Metropia App).

   For example, if using AMORE services has caused about 100 fewer miles of driving per month on vehicle 1, select "less" and then select that value. If it has caused you to drive 100 more miles, then select "more" and that value.

   If you have not changed your driving of a vehicle due to your use of AMORE services, just select "no change due to my use of AMORE services."

   <Show only number of vehicles selected in Q5>

   Piped Vehicle 1:   <Drop down menu of change: "more", "less", "no change">

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

70 | RTA of Pima County AMORE Project Evaluation Plan

<Drop down menu of miles, if "no change" selected, only miles option should be zero>

Piped Vehicle 2: <Drop down menu of change: "more", "less", "no change">
<Drop down menu of miles, if "no change" selected, only miles option should be zero>

Piped Vehicle 3: <Drop down menu of change: "more", "less", "no change">
<Drop down menu of miles, if "no change" selected, only miles option should be zero>

Piped Vehicle 4: <Drop down menu of change: "more", "less", "no change">
<Drop down menu of miles, if "no change" selected, only miles option should be zero>

Piped Vehicle 5: <Drop down menu of change: "more", "less", "no change">
<Drop down menu of miles, if "no change" selected, only miles option should be zero>

>>>>>>>>>>>>>>>**Branch Rule: IMPACTED DRIVING** >>>>>>>>>>>>>**END**

15. As a result of using AMORE services (via the Metropia App), I drive overall (in terms of distance, with all vehicles)...

   o Much more than I did before
   o More than I did before
   o About the same as I did before (my use of AMORE services had little to no impact on how much I drive)
   o Less than I did before
   o Much less than I did before
   o I have changed how much I drive, but not because of using AMORE services

>>>>>>>>>>**Branch Rule: DRIVE MORE OR LESS>>>>>**>>>>**START**

If Response = Much more, More, Less, or Much Less THEN NEXT

>>>

16. How important has your use of AMORE services (via the Metropia App) been in contributing to your **< increase / decrease >** in driving?

   o Extremely important
   o Very important
   o Moderately important
   o Slightly important
   o Not at all important

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 71

>>>>>>>>>>>>>>**Branch Rule: DRIVE MORE OR LESS** >>>>>>>>>>>>>>**END**

17. Do you commute to work and/or school?

- o Yes, I commute to work
- o Yes, I commute to school
- o Yes, I commute to work **and** school
- o No, none of the above

>>>>>>>>>>**Branch Rule: COMMUTES TO WORK>>>>>>>>>START**

If commutes to work THEN NEXT

>>

18. Which vehicle do you most often use to commute to work?

<List the vehicles entered below>

- o <Vehicle 1 Make, Model, Year>
- o <Vehicle 2 Make, Model, Year>
- o <Vehicle 3 Make, Model, Year>
- o <Vehicle 4 Make, Model, Year>
- o <Vehicle 5 Make, Model, Year>
- o I do not drive, I use another mode to get to work

>>>>>>>>>>**Branch Rule: VEHICLE USED IN WORK COMMUTE>>>>>>>>>START**

If Response = <Some vehicle 1 through 5> THEN NEXT

>>

19. Please approximate the miles driven in the last 12 months **specifically for commuting to work**. Do not include miles driven in any other vehicles or for any other purposes.

<Can be drop down menu>

- o 0 miles
- o 500 miles
- o 1,000 miles
- o 1,500 miles
- o 2,000 miles
- o 2,500 miles

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

72 RTA of Pima County AMORE Project Evaluation Plan

- o   3,000 miles
- o   3,500 miles
- o   4,000 miles
- o   4,500 miles
- o   5,000 miles
- o   5,500 miles
- o   6,000 miles
- o   6,500 miles
- o   7,000 miles
- o   7,500 miles
- o   8,000 miles
- o   8,500 miles
- o   9,000 miles
- o   9,500 miles
- o   10,000 miles
- o   10,500 miles
- o   11,000 miles
- o   11,500 miles
- o   12,000 miles
- o   12,500 miles
- o   13,000 miles
- o   13,500 miles
- o   14,000 miles
- o   14,500 miles
- o   15,000 miles
- o   15,500 miles
- o   16,000 miles
- o   16,500 miles
- o   17,000 miles
- o   17,500 miles
- o   18,000 miles
- o   18,500 miles
- o   19,000 miles
- o   19,500 miles
- o   20,000 miles
- o   More than 20,000 miles

>>>>>>>>> Branch Rule: VEHICLE USED IN WORK COMMUTE >>>>>>>>>>END

20. Has the amount you drive to get to work changed at all since using AMORE services (via the Metropia App)?

- o   No, I did not drive to work before, and I do not now
- o   No, the amount I drive is the same now as before
- o   Yes, I drive less, **definitely or partially** because of using AMORE services
- o   Yes, I drive less, **but not** because of using AMORE services
- o   Yes, I drive more, **definitely or partially** because of using AMORE services
- o   Yes, I drive more, **but not** because of using AMORE services

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **73**

>>>>>>>>> Branch Rule: COMMUTES TO WORK >>>>>>>>>>>END

>>>>>>>>>>**Branch Rule: COMMUTES TO SCHOOL>>>>>>>>>START**

If commutes to school THEN NEXT

>>

21. Which vehicle do you most often use to commute to school?

<List the vehicles entered below>

- o   <Vehicle 1 Make, Model, Year>
- o   <Vehicle 2 Make, Model, Year>
- o   <Vehicle 3 Make, Model, Year>
- o   <Vehicle 4 Make, Model, Year>
- o   <Vehicle 5 Make, Model, Year>
- o   I do not drive, I use another mode to get to school

>>>>>>>>>>**Branch Rule: VEHICLE USED IN SCHOOL COMMUTE>>>>>>>>>START**

If Response = <Some vehicle 1 through 5> THEN NEXT

>>

22. Please approximate the miles driven in the last 12 months **specifically for commuting to school**. Do not include miles driven in any other vehicles or for any other purposes.

<Can be drop down menu>

- o   0 miles
- o   500 miles
- o   1,000 miles
- o   1,500 miles
- o   2,000 miles
- o   2,500 miles
- o   3,000 miles
- o   3,500 miles
- o   4,000 miles
- o   4,500 miles
- o   5,000 miles
- o   5,500 miles
- o   6,000 miles
- o   6,500 miles

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

74 RTA of Pima County AMORE Project Evaluation Plan

- o 7,000 miles
- o 7,500 miles
- o 8,000 miles
- o 8,500 miles
- o 9,000 miles
- o 9,500 miles
- o 10,000 miles
- o 10,500 miles
- o 11,000 miles
- o 11,500 miles
- o 12,000 miles
- o 12,500 miles
- o 13,000 miles
- o 13,500 miles
- o 14,000 miles
- o 14,500 miles
- o 15,000 miles
- o 15,500 miles
- o 16,000 miles
- o 16,500 miles
- o 17,000 miles
- o 17,500 miles
- o 18,000 miles
- o 18,500 miles
- o 19,000 miles
- o 19,500 miles
- o 20,000 miles
- o More than 20,000 miles

>>>>>>>>>> Branch Rule: VEHICLE USED IN SCHOOL COMMUTE >>>>>>>>>>>>END

23. Has the amount you drive to get to school changed at all since using AMORE services (via the Metropia App)?

- o No, I did not drive to school before, and I do not now
- o No, the amount I drive is the same now as before
- o Yes, I drive less, **definitely or partially** because of using AMORE services
- o Yes, I drive less, **but not** because of using AMORE services
- o Yes, I drive more, **definitely or partially** because of using AMORE services
- o Yes, I drive more, **but not** because of using AMORE services

>>>>>>>>>>>>>>>>Branch Rule: COMMUTES TO SCHOOL >>>>>>>>>>>>>>END

24. As a result of the AMORE services offered through the Metropia App, my dependency on personal vehicles has…

- O Greatly declined

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **75**

- o Declined
- o Remained about the same
- o Increased
- o Greatly increased

>>>>>>>>>>>>>>>>**Branch Rule: OWNS VEHICLES** >>>>>>>>>>>>>>>**END**

Now, we will ask you about how you've traveled in the Tucson region over the past 2 years.

25. Which of the following modes of transportation have you used in the **Tucson region during the last 2 years**?

    Please check all that apply.

    NOTE: This question defines the universal modes that get used by the respondent. From here, the number of modes that they see reduces to only those relevant as questions proceed.

    - o Drive alone
    - o Drive/Ride with family/friend (non-commute)
    - o Carpool (for commuting)
    - o Carpool (for transporting children)
    - o Walk (to a destination)
    - o Bicycle
    - o Sun Link Streetcar
    - o Sun Tran Bus (including Sun Express Service)
    - o Sun Shuttle Neighborhood Transit Service (non-paratransit)
    - o Paratransit Service
    - o Intercity Bus (e.g., Greyhound)
    - o Intercity Rail (e.g., Amtrak)
    - o RubyRide
    - o Uber/Lyft
    - o Taxi
    - o Motorcycle or Scooter
    - o Vanpool
    - o Microtransit & Commuter Vans (e.g., Chariot, Via, dollar vans)
    - o Employer Shuttle (for commuting)
    - o Car Rental within the Tucson region
    - o Other, please specify: _____

26. Please indicate how frequently you **currently** use the following modes**.**

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

76 RTA of Pima County AMORE Project Evaluation Plan

	Not available to me or not in my area	Never in the last year	Less than once per month	Once per month	Every other week	1 to 3 times per week	4 to 6 times per week	Once per day	2 to 4 times per day	More than 4 times per day
<Mode that was selected in Q25>										
<Mode that was selected in Q25>										
<…>										

27. Overall, about how much more or less often have you used these modes **as a result of using AMORE services (via the Metropia App)**?

Overall, because of my use of AMORE services, I travel by…

	I did not use this mode before, and I do not use it now	Much more often	More often	About the same	Less often	Much less often	Changed, but not because of using AMORE services
<Mode that was selected in Q25>							
<Mode that was selected in Q25>							
<…>							

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **77**

Please answer the following questions about your most recent trip when you last used the Metropia App to access AMORE services.

28. Which of the app services did this trip use?

  - o Driving
  - o DUO Carpooling
  - o Transit-Hailing RubyRide
  - o Fixed-Route Public Transit
  - o Other, please specify: _____

29. What was the **origin** of this trip?

  Please indicate two streets that cross near this location, and the city.

  City: _____
  Street #1: _____
  Street #2: _____

30. What type of place was this?

  - o Home
  - o Work
  - o Work-related meeting
  - o School
  - o Retail
  - o Social/Recreational
  - o Medical
  - o Place of worship
  - o Other, please specify: _____

31. What was the **final destination** of this trip?

  Please indicate two streets that cross near this location, and the city.

  City: _____
  Street #1: _____
  Street #2: _____

32. What type of place was this?

  - o Home
  - o Work
  - o Work-related meeting
  - o School
  - o Retail
  - o Social/Recreational

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

78 | RTA of Pima County AMORE Project Evaluation Plan

- o Medical
- o Place of worship
- o Other, please specify: _____

33. What was the purpose of this trip?

- o Get to/from a restaurant/bar
- o Go to/from other social/recreational activities (not a restaurant/bar)
- o Commute to/from work
- o Commute to/from school
- o Go to/from public transit
- o Go to/from work-related meetings during the day
- o Go to/from grocery shopping
- o Go to/from other shopping (non-groceries)
- o Run non-shopping errands
- o Go to/from healthcare services
- o Go to/from the airport
- o Go to/from the gym
- o Go to/from place of worship
- o Move bulky items
- o Transport pets
- o Other, please specify: _____

34. At what time did you start this trip (from your origin)?

<Can be drop down menu>

- o 5:00AM
- o 5:30AM
- o 6:00AM
- o 6:30AM
- o 7:00AM
- o 7:30AM
- o 8:00AM
- o 8:30AM
- o 9:00AM
- o 9:30AM
- o 10:00AM
- o 10:30AM
- o 11:00AM
- o 11:30AM
- o 12:00PM
- o 12:30PM
- o 1:00PM
- o 1:30PM
- o 2:00PM
- o 2:30PM
- o 3:00PM
- o 3:30PM
- o 4:00PM
- o 4:30PM

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 79

- o 5:00PM
- o 5:30PM
- o 6:00PM
- o 6:30PM
- o 7:00PM
- o 7:30PM
- o 8:00PM
- o 8:30PM
- o 9:00PM
- o 9:30PM
- o 10:00PM
- o 10:30PM
- o 11:00PM
- o 11:30PM
- o 12:00AM
- o 12:30AM
- o 1:00AM
- o 1:30AM
- o 2:00AM
- o 2:30AM
- o 3:00AM
- o 3:30AM
- o 3:00AM
- o 3:30AM
- o 4:00AM
- o 4:30AM

35. What day was this trip?

- o Monday
- o Tuesday
- o Wednesday
- o Thursday
- o Friday
- o Saturday
- o Sunday

36. About how long did it take you to plan this trip? This is the estimated amount of time that you used the Metropia App to conduct this trip.

- o I did not spend any time on the Metropia App
- o 30 seconds or less
- o 1 minute
- o 2 minutes
- o 3 minutes
- o 4 minutes
- o 5 minutes
- o 6 minutes
- o 7 minutes
- o 8 minutes
- o 9 minutes
- o 10 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

80 RTA of Pima County AMORE Project Evaluation Plan

      o   More than 10 minutes

>>>>>>>>>>>>>>> Branch Rule: DUO OR RR >>>>>>>>>>>START

IF (Trip was DUE Carpooling or Transit-Hailing RubyRide)
>>>

37. Did you use **< DUO Carpooling / Transit-Hailing RubyRide >** to connect to or from a public transit system during this trip?

    ○ No
    ○ Yes, I used it to get from my origin to a transit stop
    ○ Yes, I used it to get from a transit stop to my destination

>>>>>>>>>>>>>>>>> Branch Rule: CONNECTED TO/FROM PUBLIC TRANSIT
>>>>>>>>>>>>START

IF (Person connected to/from public transit)
>>>

38. Which transit system did you use?

    ○ Sun Link Streetcar
    ○ Sun Tran Bus
    ○ Sun Shuttle Neighborhood Transit Service
    ○ Amtrak
    ○ Other, please specify: _____

>>>>>>>>>>>>>>>>> Branch Rule: CONNECTED TO PUBLIC TRANSIT >>>>>>>>>>>START

IF (Person connected to public transit)
>>>

39. About how long did you wait for the **< DUO Carpooling / Transit-Hailing RubyRide >** vehicle at your origin?

    <Can be drop down menu>

      o   30 seconds or less
      o   1 minute
      o   2 minutes
      o   3 minutes
      o   4 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **81**

- o 5 minutes
- o 6 minutes
- o 7 minutes
- o 8 minutes
- o 9 minutes
- o 10 minutes
- o 11 minutes
- o 12 minutes
- o 13 minutes
- o 14 minutes
- o 15 minutes
- o 16 minutes
- o 17 minutes
- o 18 minutes
- o 19 minutes
- o 20 minutes
- o 21 minutes
- o 22 minutes
- o 23 minutes
- o 24 minutes
- o 25 minutes
- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

40. What was the approximate location of the transit stop that you arrived at?

    Please list two streets that cross near that location.

    Street 1: _____

    Street 2: _____

41. About how long did you wait for the **< streetcar/bus/shuttle/train>** at the transit stop?

    <Can be drop down menu>

    - o 30 seconds or less
    - o 1 minute
    - o 2 minutes
    - o 3 minutes
    - o 4 minutes
    - o 5 minutes
    - o 6 minutes
    - o 7 minutes
    - o 8 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

82 RTA of Pima County AMORE Project Evaluation Plan

- o 9 minutes
- o 10 minutes
- o 11 minutes
- o 12 minutes
- o 13 minutes
- o 14 minutes
- o 15 minutes
- o 16 minutes
- o 17 minutes
- o 18 minutes
- o 19 minutes
- o 20 minutes
- o 21 minutes
- o 22 minutes
- o 23 minutes
- o 24 minutes
- o 25 minutes
- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

42. Did this trip contain any transfers (i.e., switching vehicles at any point in the trip)?

- o Yes
- o No

43. What was the approximate location of the transit stop where you got off the **< streetcar/bus/shuttle/train>**?

Please list two streets that cross near that location.

Street 1: _____

Street 2: _____

44. What mode did you use to **get from** this transit stop to your final destination?

- O Walk
- O Bicycle
- O Drive alone
- O Picked up/dropped off by family/friend
- O RubyRide
- O Regular Uber/Lyft
- O Taxi

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **83**

o   Carpool
o   Other, please specify: _____

>>>>>>>>>>>>>>>**Branch Rule: CONNECTED TO PUBLIC TRANSIT** >>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>> **Branch Rule: CONNECTED FROM PUBLIC TRANSIT** >>>>>>>>>>>>**START**

IF (Person connected from public transit)
>>>

45. What mode did you use to **get to** the transit stop from your origin?

   o   Walk
   o   Bicycle
   o   Drive alone
   o   Picked up/dropped off by family/friend
   o   RubyRide
   o   Regular Uber/Lyft
   o   Taxi
   o   Carpool
   o   Other, please specify: _____

46. What was the approximate location of the transit stop that you arrived at?

   Please list two streets that cross near that location.

   Street 1: _____

   Street 2: _____

47. About how long did you wait for the **< streetcar/bus/shuttle/train>** at the transit stop?

   <Can be drop down menu>

   o   30 seconds or less
   o   1 minute
   o   2 minutes
   o   3 minutes
   o   4 minutes
   o   5 minutes
   o   6 minutes
   o   7 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

- o 8 minutes
- o 9 minutes
- o 10 minutes
- o 11 minutes
- o 12 minutes
- o 13 minutes
- o 14 minutes
- o 15 minutes
- o 16 minutes
- o 17 minutes
- o 18 minutes
- o 19 minutes
- o 20 minutes
- o 21 minutes
- o 22 minutes
- o 23 minutes
- o 24 minutes
- o 25 minutes
- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

48. Did this trip contain any transfers (i.e., switching vehicles at any point in the trip)?

- o Yes
- o No

49. What was the approximate location of the transit stop where you got off the **< streetcar/bus/shuttle/train>**?

Please list two streets that cross near that location.

Street 1: _____

Street 2: _____

50. About how long did you wait for the **< DUO Carpooling / Transit-Hailing RubyRide >** vehicle at the transit stop?

<Can be drop down menu>

- o 30 seconds or less
- o 1 minute
- o 2 minutes
- o 3 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **85**

- o 4 minutes
- o 5 minutes
- o 6 minutes
- o 7 minutes
- o 8 minutes
- o 9 minutes
- o 10 minutes
- o 11 minutes
- o 12 minutes
- o 13 minutes
- o 14 minutes
- o 15 minutes
- o 16 minutes
- o 17 minutes
- o 18 minutes
- o 19 minutes
- o 20 minutes
- o 21 minutes
- o 22 minutes
- o 23 minutes
- o 24 minutes
- o 25 minutes
- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

>>>>>>>>>>>>>>>**Branch Rule: CONNECTED FROM PUBLIC TRANSIT** >>>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>**Branch Rule: CONNECTED TO/FROM PUBLIC TRANSIT** >>>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>>> **Branch Rule: DID NOT CONNECT TO/FROM PUBLIC TRANSIT** >>>>>>>>>>>>>>**START**

IF (Person did not connect to/from public transit)
>>

51. About how long did you wait for the **< DUO Carpooling / Transit-Hailing RubyRide >** vehicle at your origin?

    <Can be drop down menu>

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

86 | RTA of Pima County AMORE Project Evaluation Plan

- o 30 seconds or less
- o 1 minute
- o 2 minutes
- o 3 minutes
- o 4 minutes
- o 5 minutes
- o 6 minutes
- o 7 minutes
- o 8 minutes
- o 9 minutes
- o 10 minutes
- o 11 minutes
- o 12 minutes
- o 13 minutes
- o 14 minutes
- o 15 minutes
- o 16 minutes
- o 17 minutes
- o 18 minutes
- o 19 minutes
- o 20 minutes
- o 21 minutes
- o 22 minutes
- o 23 minutes
- o 24 minutes
- o 25 minutes
- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

>>>>>>>>>>>>>>>**Branch Rule: DID NOT CONNECT TO/FROM PUBLIC TRANSIT**
>>>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>**Branch Rule: DUO OR RR** >>>>>>>>>>>>>>>**END**

>>>>>>>>>>>>>>>>> **Branch Rule: PUBLIC TRANSIT TRIP** >>>>>>>>>>>>>>START

IF (Trip was public transit)
>>

52. What mode did you use to **get to** the transit stop from your origin?

   O Walk

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **87**

- o Bicycle
- o Drive alone
- o Picked up/dropped off by family/friend
- o RubyRide
- o Regular Uber/Lyft
- o Taxi
- o Carpool
- o Other, please specify: _____

53. What was the approximate location of the transit stop that you arrived at?

    Please list two streets that cross near that location.

    Street 1: _____

    Street 2: _____

54. About how long did you wait for the **< streetcar/bus/shuttle/train>** at the transit stop?

    <Can be drop down menu>

    - o 30 seconds or less
    - o 1 minute
    - o 2 minutes
    - o 3 minutes
    - o 4 minutes
    - o 5 minutes
    - o 6 minutes
    - o 7 minutes
    - o 8 minutes
    - o 9 minutes
    - o 10 minutes
    - o 11 minutes
    - o 12 minutes
    - o 13 minutes
    - o 14 minutes
    - o 15 minutes
    - o 16 minutes
    - o 17 minutes
    - o 18 minutes
    - o 19 minutes
    - o 20 minutes
    - o 21 minutes
    - o 22 minutes
    - o 23 minutes
    - o 24 minutes
    - o 25 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

88 RTA of Pima County AMORE Project Evaluation Plan

- o 26 minutes
- o 27 minutes
- o 28 minutes
- o 29 minutes
- o 30 minutes
- o More than 30 minutes

55. Did this trip contain any transfers (i.e., switching vehicles at any point in the trip)?

- o Yes
- o No

56. What was the approximate location of the transit stop where you got off the **< streetcar/bus/shuttle/train>**?

Please list two streets that cross near that location.

Street 1: _____

Street 2: _____

57. What mode did you use to **get from** this transit stop to your final destination?

- O Walk
- O Bicycle
- O Drive alone
- O Picked up/dropped off by family/friend
- O RubyRide
- O Regular Uber/Lyft
- O Taxi
- O Carpool
- O Other, please specify: _____

>>>>>>>>>>>>>>>**Branch Rule: PUBLIC TRANSIT TRIP**>>>>>>>>>>>>>>>**END**

58. Thinking about the entire trip (from origin to destination), about how long was your **total travel time** for this trip?

<Can be drop down menu>

- o Less than 5 minutes
- o 5 minutes
- o 10 minutes
- o 15 minutes

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **89**

- o 20 minutes
- o 25 minutes
- o 30 minutes
- o 35 minutes
- o 40 minutes
- o 45 minutes
- o 50 minutes
- o 55 minutes
- o 60 minutes
- o 1 hour and 5 minutes
- o 1 hour and 10 minutes
- o 1 hour and 15 minutes
- o 1 hour and 20 minutes
- o 1 hour and 25 minutes
- o 1 hour and 30 minutes
- o 1 hour and 35 minutes
- o 1 hour and 40 minutes
- o 1 hour and 45 minutes
- o 1 hour and 50 minutes
- o 1 hour and 55 minutes
- o 2 hours
- o More than 2 hours

59. Did you adjust your original trip plans to take advantage of the credits and incentives offered through the AMORE program?

   - O No, I would have conducted this trip in the exact same way regardless of points or the AMORE program
   - O Yes, I changed my time of departure
   - O Yes, I changed my mode(s) of travel (e.g., chose carpooling over driving alone)
   - O Yes, I changed my time of departure **and** my mode(s) of travel

60. About how long ago did you take this trip?

   - o Today
   - o Yesterday
   - o This past week
   - o This past month
   - o 2 to 3 months ago
   - o 4 to 6 months ago
   - o More than 6 months ago

61. If AMORE was not available, then how would you have made this trip otherwise?

   - o I would not have made the trip
   - o I would have driven all the way
   - o Sun Link Streetcar
   - o Sun Tran Bus
   - o Sun Shuttle Neighborhood Transit Service
   - o Ride from friend or family
   - o RubyRide

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

90 RTA of Pima County AMORE Project Evaluation Plan

- o Regular Uber/Lyft
- o Taxi
- o Bicycle
- o Walk
- o Carpool
- o Other, please specify: _____

Now, we will ask you some more general questions about your use of AMORE services (via the Metropia App) and perceptions of your mobility and accessibility.

62. Are you a parent (or legal guardian) of any children?

    Please select "0" if you do not have any children or otherwise select the number of children that you have.

    - o 0
    - o 1
    - o 2
    - o 3
    - o 4
    - o 5 or more

>>>>>>> Branch Rule: HAS CHILDREN >>>>>>>>>>>START

IF (If Response /= 0 THEN NEXT)
>>>

63. Please indicate how frequently **< your child/each of your children >** uses carpooling to get to school or other activities. Please include all instances of DUO Carpooling that are facilitated through the Metropia App, regardless of whether you are the driver or not.

    "Never" is selected by default, if they do not carpool, just skip it.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **91**

<Show only number of children selected in Q62>

	Never in the last year	Less than once per month	Once per month	Every other week	1 to 3 times per week	4 to 6 times per week	Once per day	2 to 4 times per day	More than 4 times per day
Child 1	☒	☐	☐	☐	☐	☐	☐	☐	☐
Child 2	☒	☐	☐	☐	☐	☐	☐	☐	☐
Child 3	☒	☐	☐	☐	☐	☐	☐	☐	☐
Child 4	☒	☐	☐	☐	☐	☐	☐	☐	☐
Child 5	☒	☐	☐	☐	☐	☐	☐	☐	☐

64. Overall, about how much more or less often have you used carpooling to transport your children **as a result of using AMORE services (via the Metropia App)**?

   o I did not use carpooling to transport my children before, and I do not use it now
   o Much more often
   o More often
   o About the same
   o Less often
   o Much less often
   o Changed, but not because of using AMORE services

>>>>>>>>>>>>>>>>**Branch Rule: HAS CHILDREN** >>>>>>>>>>>>>>>>**END**

65. Currently, how would you characterize your travel needs?

   Please check all activities that impose significant travel needs on your monthly activity.

   o Commuting to work or school
   o Socializing with friends
   o Shopping for food
   o Taking kids to and from school and activities
   o Shopping for other things
   o Going on recreational trips
   o Physical exercise
   o Going to medical appointments
   o Going to places of worship

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

92 RTA of Pima County AMORE Project Evaluation Plan

o   Other, please specify:_____

66. How often do you use the Metropia App to access AMORE services?

      o   Never in the last year
      o   Less than once per month
      o   Once per month
      o   Every other week
      o   1 to 3 times per week
      o   4 to 6 times per week
      o   Once per day
      o   2 to 4 times per day
      o   More than 4 times per day

67. As a result of the AMORE services offered through the Metropia App, would you say that you use the app more?

      o   I did not use the Metropia App at all before AMORE
      o   Definitely
      o   Probably
      o   Probably not
      o   Definitely not

>>>>>>>>>>>>>>>Branch Rule: USES METROPIA>>>>>>>>>>>>>>START

IF (Person has used Metropia in the past year)

>>>

68. When using the Metropia App to make trips, how often do you take advantage of the credits and incentives offered through the AMORE program?

      o   Every trip
      o   The vast majority of trips
      o   More than half of trips
      o   About half of trips
      o   Less than half of trips
      o   Very few trips
      o   Never

69. How much do you agree with the following statement?

"The credits and incentives offered through the AMORE program have affected the way I travel, often encouraging me to change my time of departure in order to receive points."

      o   Strongly agree
      o   Agree

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **93**

- o Neither agree nor disagree
- o Disagree
- o Strongly disagree

70. How much do you agree with the following statement?

    "The credits and incentives offered through the AMORE program have affected the way I travel, often encouraging me to change my mode of travel (e.g., choosing carpooling over driving alone) in order to receive points."

    - o Strongly agree
    - o Agree
    - o Neither agree nor disagree
    - o Disagree
    - o Strongly disagree

>>>>>>>>>>>>>>>>**Branch Rule: USES METROPIA** >>>>>>>>>>>>>>>**END**

71. Overall, I currently consider myself to be…

    Note: this question refers to your access and use of transportation services, not your physical capabilities.

    - o Very mobile
    - o Somewhat mobile
    - o Not very mobile
    - o Not mobile at all

72. As a result of the AMORE services offered through the Metropia App, how would you say your mobility has changed?

    Note: this question again refers to your access and use of transportation services, not your physical capabilities.

    - o It is much better
    - o It is better
    - o It is about the same
    - o It is worse
    - o It is much worse

73. Overall, I currently consider my wait times to be…

    Note: this question refers to the average time you wait for vehicles to pick you up. Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

94 RTA of Pima County AMORE Project Evaluation Plan

- o 1 (Unacceptable)
- o 2
- o 3
- o 4
- o 5 (Acceptable)
- o 6
- o 7
- o 8
- o 9
- o 10 (Excellent)
- o Not applicable

74. As a result of the AMORE services offered through the Metropia App, how would you say your wait times have changed?

Note: this question again refers to the average time you wait for vehicles to pick you up. Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

- o They are much shorter
- o They are shorter
- o They are about the same
- o They are longer
- o They are much longer
- o Not applicable

75. Overall, I currently consider my travel times to be...

Note: this question refers to the average time you spend traveling in vehicles. Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

- o 1 (Unacceptable)
- o 2
- o 3
- o 4
- o 5 (Acceptable)
- o 6
- o 7
- o 8
- o 9
- o 10 (Excellent)
- o I don't know

76. As a result of the AMORE services offered through the Metropia App, how would you say your travel times have changed?

Note: this question again refers to the average time you spend traveling in vehicles. Please rate on a scale of 1 to 10, where 10 is Excellent, and 1 is Very Poor.

- o They are much shorter
- o They are shorter

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 95

- o They are about the same
- o They are longer
- o They are much longer
- o I don't know

77. Overall, how would you rate your ability to access desired areas and locations within the Tucson region? Please rate on a scale of 1 to 10, where 10 is Excellent access, and 1 is Very Poor access.

   - o 1 (Very Poor)
   - o 2
   - o 3
   - o 4
   - o 5
   - o 6
   - o 7
   - o 8
   - o 9
   - o 10 (Excellent)

78. As a result of the AMORE services offered through the Metropia App, would you say your ability to access desired areas and locations within the Tucson region has improved?

   - o Definitely
   - o Probably
   - o Probably not
   - o Definitely not

79. How would you rate your ability to **get to and from public transit** in the Tucson region? Please rate on a scale of 1 to 10, where 10 is Excellent connectivity, and 1 is Very Poor connectivity.

   - o 1 (Very Poor)
   - o 2
   - o 3
   - o 4
   - o 5
   - o 6
   - o 7
   - o 8
   - o 9
   - o 10 (Excellent)
   - o I don't know

80. As a result of the AMORE services offered through the Metropia App, would you say your ability to **get to and from public transit** in the Tucson region has improved?

   - o Definitely
   - o Probably
   - o Probably not
   - o Definitely not
   - o I don't know

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

96 | RTA of Pima County AMORE Project Evaluation Plan

81. As a result of the AMORE services offered through the Metropia App, how would you say the the number of modes you use to travel has changed?

    o   I use many more modes
    o   I use more modes
    o   I use about the same number of modes
    o   I use less modes
    o   I use many less modes
    o   I don't know

82. Would you say you are able to make more trips using AMORE services (via the Metropia App) that you would have previously been forced to forgo or defer?

    o   I had no difficulty making trips before AMORE
    o   Definitely
    o   Probably
    o   Probably not
    o   Definitely not

83. [OPTIONAL] This survey asked a lot of questions about your travel behavior with the AMORE systems in the Tucson region. Please feel free to elaborate here on how your use of the Metropia App has impacted your travel.

    Your comments (if you provide any) will only be reviewed confidentially in support of your other responses. You will not be contacted about them. Anything you write may help support the impact analysis, or clarify responses you provided in the survey.

    You can tell us about elements we might have missed through the survey questions or that you feel need additional clarification. This is completely optional, you can write as much as you would like or nothing at all. If you do choose to provide comments, please try to convey input that is constructive, helpful, and kindly worded; what you write will be read. In either case, thank you again for taking this survey.

    <Comment Box>

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **97**

Appendix B. Selected Draft Survey Questions: *Recent Trip Survey*

The implementation of a recent trip survey may benefit the evaluation. The recent trip survey is a simple survey that asks two or three questions about the recent trip. It asks mode shift and trip purpose. The recent trip survey is valuable because it gets high resolution mode shift, ideally tied to a specific trip. It is a little more technically challenging to implement, because it requires quick follow up after a recent trip (usually via email), and the survey operator must try to avoid over-surveying people if they take a lot of trips. Below are some example questions that could be asked. Additional or different questions may be designed in discussion with the project team.

1. If AMORE was not available, how would you have made this trip?

   o I would not have made the trip
   o I would have driven all the way
   o Sun Link Streetcar
   o Sun Tran Public bus
   o Ruby Ride
   o Got a ride from friend or family
   o Regular Uber or Lyft
   o Regular Taxi
   o Bicycle
   o Walk
   o Carpooled
   o Other, please specify:_____

2. If AMORE was not available, would you have traveled at different time?

   o Yes, 1 to 2 hours earlier
   o Yes, 30 to 60 minutes earlier
   o Yes, 15 to 30 minutes earlier
   o Yes, 0 to 15 minutes earlier
   o No
   o Yes, 0 to 15 minutes later
   o Yes, 15 to 30 minutes later
   o Yes, 30 to 60 minutes later
   o Yes, 1 to 2 hours later

3. What was the purpose of this trip?

   o Go to or from a restaurant/bar
   o Social/recreational trips
   o Commute to or from work

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | 98

- o Commute to or from school
- o Go to or from public transit
- o Go to or from work-related meetings during the day
- o Go to or from grocery shopping
- o Go to or from other shopping (non-groceries)
- o Run non-shopping errands
- o Go to or from healthcare services
- o Go to or from gym
- o Move bulky items
- o Transport pets
- o Other, please specify: _____

U.S. Department of Transportation
Federal Transit Administration
Intelligent Transportation Systems Joint Program Office

RTA of Pima County AMORE Project Evaluation Plan | **99**

U.S. Department of Transportation