REGIONAL FARE COLLECTION
BEST PRACTICES AND
FEASIBILITY STUDY

May 2018
ACKNOWLEDGEMENTS

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A special thanks to Emmanuel Nunez and Lucien Campillo of HART and Flamingo Fares and to the Transit Cooperative Research Program and their TCRP Report 177: Preliminary Strategic Analysis of Next Generation Fare Payment Systems for Public Transportation.

This report was funded by the Jacksonville Transportation Authority and the Northeast Florida Regional Transportation Commission.
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1. Executive Summary

This *Regional Fare Best Practices and Feasibility Study (Fare Study)* was created to:

- Identify opportunities to allow customers to easily move across the county lines with a single payment transaction
- Develop fair and equitable cost sharing agreements between transit agencies when transporting paratransit passengers that live in other counties.

There are six transit providers in Northeast Florida: Jacksonville Transportation Authority (JTA), Clay Transit, Nassau Transit, Baker County Council on Aging, Sunshine Bus, and the Ride Solution. Each of these agencies provide service within their counties, connect services with the transit agencies in adjacent counties and take their most vulnerable passengers directly to their destination within adjacent counties.

Today, these direct trips often overlap trips provided by other transit agencies and are not coordinated regionally. Each transit agency has different fixed and flex route fare and transfer policies. There is no single regional value pass or fare media to encourage passengers to take advantage of the multiple transit service opportunities.

Innovative technologies have recently emerged that will allow each of the transit agencies in Northeast Florida to partner together and provide coordinated transit service to all residents in our region. This Fare Study explores the evolving technologies and lessons learned from transit agencies that have implemented the new technologies.

The results of the Fare Study are recommended steps to develop a coordinated regional fare system in Northeast Florida including:

1. **Implement a Regional Fare Governance Structure and Agreements.** The transit agencies should build from the existing Regional Transit Coordinating Committee relationship for equitable participation in developing a regional fare, cost sharing framework and associated technologies.
2. **Coordinate Fare Policies.** Simplified and coordinated fare policies should be established to include provisions for innovative pricing such as fare capping and loyalty programs once the technology is in place.

3. **Develop Cost-Sharing Model.** This model will encourage transit agencies transporting clients across county lines to pick up passengers residing in other counties who may be going to the same or nearby destinations as their clients. The cost allocation would assign 80% of the trip revenue to the agency providing the trip (covering cost of driver and vehicle) and 20% to the agency that booked the trip to cover administration, reservations and billing costs.

4. **Procure Emerging Technology while Utilizing Existing Technology.** Account-based ticketing in a “all-in-one” smart phone application will provide the region with the highest degree of flexibility and convenience while remaining the most economical for each of the partners. The technology should utilize the existing technologies shared in the region such as the TransPortal regional trip planning application and the Trapeze paratransit and flex route scheduling software. Ultimately, it should also link to real-time passenger information and other modes of transportation services.

5. **Implement the new Fare Collection System.** Integration into the coordinated fare collection system should occurred incrementally to minimize risk of disruption and improve potential for a smooth and successful start-up.

*Figure 1: Coordinated Regional Fare Payment System*
2. Context

On a typical day, people in Northeast Florida cross county lines in personal cars, transit vehicles, taxis, transportation network vehicles and on bicycles. This regional travel is driven by the substantial number of employment and medical centers in Duval County and the growing demand for residential centers in surrounding counties.

The demand for single-occupancy vehicle alternatives is expected to increase as our residents become weary of the congestion on our roadways and as they grow older and can no longer drive. Studies\(^1\) also show that young adults are moving from car ownership to alternative transportation services including public transportation. This generation puts more importance on using their smart phones instead of driving.

There are six transit providers in Northeast Florida: Jacksonville Transportation Authority, Clay Transit, Nassau Transit, Baker County Council on Aging, Sunshine Bus, and the Ride Solution. Each of these agencies provide service within their counties, connect services with the transit agencies in adjacent counties and take their most vulnerable passengers directly to their destination within adjacent counties.

Given the significant amount of intercounty travel within the region, there exists a high degree of duplicative travel. Public transit passengers are not encouraged to use multiple transit agencies or modes service. No reciprocity agreement is in place between transit providers, causing agencies to simply take care of their own county residents. This causes agencies to operate vehicles at less than full occupancy often traveling directly behind another agency’s vehicle to one of the regional medical centers.

This Regional Fare Best Practices and Feasibility Study (Fare Study) was created to identify a transit fare payment instrument to allow customers to easily move across the county lines with a single payment transaction and to develop fair and equitable cost sharing agreements between transit agencies.

The conversation for establishing a regional fare payment system has been discussed during numerous studies. Most recently, the examination of a regional fare system was identified as a priority project in the Regional Transit Action Plan (Action Plan) prepared through the guidance

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of the Northeast Florida Regional Transportation Commission (RTC). This Action Plan identified the need to coordinate efforts for transportation services to reduce the cost of services provided; eliminate service duplication; lower fare collection costs; and provide a more seamless, convenient and enhanced customer experience for riders as they travel throughout the region.

2.1. Report Overview

This Fare Study examines the current state of the Northeast Florida region, best practices of peer agencies, technologies and fare collection methodologies available and makes recommendations for a Northeast Florida Regional Fare System.

The Study is written with two primary goals:

- Focus on the customers to make it easier for them to pay for travel on various mobility modes with a single transaction or fare instrument
- Focus on the transit agencies to allow the services to be more sustainable and potentially grow to provide more services for the customers

Benefits of a Regional Fare

» Enhance customer satisfaction with ease of fare payment
» Increase ridership through seamless regional travel options, discounts and loyalty benefits
» Reduce fare collection costs, fraud and abuse
» Improve timeliness, accuracy and equity in reconciling revenues to agency partners
» Enable agencies to coordinate the transport of demand response passengers
» Encourage use of automated transit tax benefits
» Enhance planning data on travel patterns
» Expand opportunities to partner with non-transit organizations such as parking, bike share, coffee shops, and other businesses
3. State of Regional Travel

Northeast Florida is home to over 1.52 million people. Over 614,400 commuters travel for work daily within the region. The US Census 2015 American Community Survey (ACS) demonstrates that approximately 85% of all commuters drive alone. Almost 20% rely on transit, carpool, a friend or relative, taxi, or bicycle to access employment.

Table 1 and Figure 3 both demonstrate the relationship of daily commuters between their county of residence and county of work.

» Roughly half of the daily commuters in Baker, Clay, Nassau and St. Johns counties, work in another county.

» More people commute from Putnam County to St. Johns County than to Duval County for work.

» Most of Duval County’s workers stay within Duval County. However, over 20,000 daily commuters travel from Duval County to the surrounding counties for work.

» There is evidence of over 6,000 people traveling daily to work between Clay, St. Johns, and Putnam counties.

Table 1: Daily Commuter Travel Flows - Percentages

<table>
<thead>
<tr>
<th>Commuters</th>
<th>TO</th>
</tr>
</thead>
<tbody>
<tr>
<td>FROM</td>
<td>Baker</td>
</tr>
<tr>
<td>Baker</td>
<td>53.0%</td>
</tr>
<tr>
<td>Clay</td>
<td>0.5%</td>
</tr>
<tr>
<td>Duval</td>
<td>0.2%</td>
</tr>
<tr>
<td>Nassau</td>
<td>0.4%</td>
</tr>
<tr>
<td>Putnam</td>
<td>-</td>
</tr>
<tr>
<td>St. Johns</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: American Community Survey (2009-2013)
This regional travel has significant impacts on commute times. Table 2 shows average commute time for each county relative to the percentage of internal (staying within the county) and external (leaving the county) commuter trips. Duval County has the shortest average commute time at 23.5 minutes. Clay County has the longest at 32.3 minutes.

3.1. Existing Transit Services

Almost 12.7 million annual transit and paratransit trips are provided in the region. Table 3 shows the number and type of transit trips by county. Services to seniors and disabled persons encompass much of transit service provision for all counties except Duval. Regionally, over 3.7 million trips are provided to seniors and disabled passengers for access to medical appointments, jobs, and quality of life improvements. This demand will grow as the number of seniors residing in the region is expected to double over the next ten years.

The types of transit services currently operated in the region include fixed, flex (deviated fixed route), express, bus rapid transit (BRT), paratransit and ferry services. Areas with higher residential density (more people per square mile) are typically served best by fixed route bus. Paratransit/demand response services are the most expensive services to provide because each trip is customized, covers more miles and serves fewer people per vehicle hour. Flex routes are designed to serve emerging markets and lower density areas. The cost-effectiveness of flex routes is typically between that of fixed route and paratransit.
During the Study’s development each of the agencies and their current fare collection practices were examined. The following sections of this chapter explore each of the transit agency partners.

*Figure 4: Map of Existing Transit Services*
3.1.1 Baker County Council on Aging

The Baker County Council on Aging provides transportation for the residents of Baker County with trips into Duval, Columbia, and Alachua Counties. Their transit operations center is in Macclenny. The fleet is comprised of 20 transit vehicles which are maintained in-house.

The agency transports passengers into Jacksonville daily on their demand response services. They have two public flex routes including the Bobcat Shuttle, operating between Macclenny and Lake City and the Wildcat Shuttle operating between Macclenny and Jacksonville every weekday. Passengers may connect with other agency transit services at multiple stops in Jacksonville (JTA) and in Lake City (SVTA).

The agency offers passengers $25 monthly passes for the Wildcat and Bobcat shuttles. These passes are printed with valid dates each month. Cash fares are collected in cash boxes. However, many medical patients don’t pay a fare.

3.1.2 Clay Transit

Clay Transit is an agency of the Clay County Council on Aging. It is in Green Cove Springs and provides services throughout Clay County and into Duval and Alachua Counties. The paratransit and Flex route fleet is comprised of 36 vehicles which are maintained by the Clay County maintenance facility. The agency operates 7 flex routes including:

- Red Line: Middleburg to Orange Park Mall (Connection with JTA and Ride Solution)
- Blue Line: Green Cove Springs to NAS Jax
- Purple Line: Middleburg to Health Department- Bear Run area
- Orange Line: Orange Park Loop
- Green Line: Green Cove Springs to Orange Park
- Teal Line: Keystone Heights to the Black Creek Park-N-Ride (Connection with JTA)
- Magenta Line: Keystone Heights to Gainesville

The public Flex route fare is $1 with an additional $1 for deviations of up to ¾ of a mile of the route. The agency offers passengers $25 monthly passes for the flex routes. Seniors, children under 6, persons with disabilities and anyone with a Medicare card may ride at half price. The drivers collect fares in envelopes and turn them in daily with their manifests.
3.1.3 Jacksonville Transportation Authority

The Jacksonville Transportation Authority (JTA) provides traditional fixed and paratransit services throughout the City of Jacksonville. It also provides some innovative services such as:

- Bus Rapid Transit (BRT) service named the **First Coast Flyer** which operates as a spine to the regional transit system
- Automated fixed guideway (Skyway) service in the Downtown area
- Flex routes services in the neighborhoods
- Express route services from the outlying areas
- Stadium Shuttle service for various sporting events
- River crossing ferryboat service named the **St Johns River Ferry**

The fleet is comprised of 190 fixed route vehicles, 99 paratransit vehicles, 1 ferryboat and 6 monorail trains.

The regular bus fare is $1.50 and express route fare is $2. The agency offers a 1-day pass for $4, a 3-day pass for $10, a 7-day pass for $16 or a 31-day pass for $50.

The agency offers passengers smart cards (STAR Card) and a mobile ticketing option that works on both Android and iOS smart phones. The JTA fixed route buses are equipped with GFI Odyssey fareboxes with integrated smart card readers. Ticket vending machines are available at 19 locations around the city. Passengers may also reload their STAR Cards or purchase limited use cards online or at point of sale (CPOS) machines at local Winn Dixie grocery stores.
3.1.4 Nassau Transit

Nassau Transit is an agency of the Nassau County Council on Aging (NCOAA) located in Fernandina Beach. The agency provides daily trips within Nassau County and to Jacksonville. The fleet is comprised of 22 vehicles which are maintained by various privately-owned maintenance shops.

The agency provides medical trips (Dialysis) primarily on Monday, Wednesday and Friday and shopping trips on Tuesday and Thursday. They also operate 8 Flex routes including:

- Island Hopper (Amelia Island Circulator)
- Fernandina-Yulee (Route 126)
- Fernandina-Yulee-Jacksonville Express (Route 8000)
- Fernandina-Yulee-Jacksonville (Route 111)
- Hilliard-Callahan-Yulee (Route 7)
- Hilliard-Callahan-Jacksonville (Route 375)
- Hilliard-Callahan-Jacksonville; Yulee-Jacksonville (Route 7000)
- Hilliard-Callahan-Yulee (Route 7500)

Passengers may connect with other agency transit services at the River City Marketplace (JTA) and in Downtown Jacksonville at FSCJ (JTA).

The operators turn in envelopes containing the $1 cash fares, which are counted and populated on driver tally sheets. In addition to cash, Nassau Transit sells tickets. Tickets are good for a set number of rides, and the driver circles or crosses out each trip until all rides on the ticket are used. Seniors technically do not ride free, however their trip to a doctor or shopping is not denied if they don’t have the fare.

3.1.5 Ride Solution (Putnam County)

Ride Solution is the transit provider for Putnam County. Their operations center is in Palatka where they maintain a diverse fleet of 33 vehicles. The agency provides traditional paratransit, Flex and Express route services, inter-city Greyhound service to Gainesville, Jacksonville, and St. Augustine and van pool commuter services.
They operate 7 public routes including:
- Palatka City Flex Route
- Interlachen Flex Route (Fridays only)
- Orange Park Commuter Express Route
- South Putnam Flex Route
- St Augustine-Palatka-Gainesville Greyhound Service
- Palatka-Jacksonville Greyhound Service
- Cross County Flex/Express Route

Passengers may connect with other agency transit services at the Orange Park Mall (Clay Transit and JTA), Jacksonville Greyhound Station (JTA and Greyhound), Gainesville Greyhound Station (Gainesville RTC and Greyhound), along US 1 (Sunshine Bus) in St Augustine or at the Eastgate Square Shopping Center (Sunshine Bus) in East Palatka.

The local bus fare is $1, and the Greyhound regional fare is $2. Drivers collect fares in envelopes and turn them in daily. In addition to cash, Ride Solution sells tickets that can be used as fare.

3.1.6 Sunshine Bus Company (St Johns County)

The Sunshine Bus Company is the name of the flex route subsidiary of the St. Johns Council on Aging. The administration offices are in Downtown St Augustine while the operations center is 6 miles south of that facility. The agency maintains their 41 vehicles in house.

The agency provides paratransit and flex route services throughout St Johns County and into Duval and Alachua Counties including:
- Red Line: A1A, Downtown St Augustine, & St. Johns County Government Center
- Blue Line: US1 & Downtown Areas
- Purple Line: SR 16 Outlet Malls & Avenues Mall Area
- Orange Line: West St. Augustine
- Green Line: A1A & US1
- Teal Line: Hastings & Flagler Estates
- Connector Line: St. Augustine South, Vilano Beach, Government Center, & Seabridge Square

Passengers may connect with other agency transit services at the Avenues Mall (JTA) in Jacksonville, along US 1 (Ride Solution) in St Augustine or at the Eastgate Square Shopping Center (Ride Solution) in East Palatka.

The regular Sunshine Bus fare is $1. Seniors, age 60 or more and students can ride at half price. Their $30 monthly passes are a laminated printed card, color coded by month. After the 15th of the month, the passes are half price. The drivers collect fares in a cash box and submits them to the Dispatch office daily.
3.2. Fare and Fare Media in Northeast Florida

All transit agencies in Northeast Florida accept cash fares and those fares are comparable at $1 to $1.50 for local trips and $2 for regional trips. Charges for flex route deviations vary from free (or no policy) to $2 per deviation. JTA offers the most variety of value passes, while Ride Solution and Nassau Transit offer no choices other than the base cash fare. Table 4 details the various fare rates and value pass options.

The most significant differences in fare policies between the agencies is the treatment of reduced fares and transfers.

Table 4: Fare Rates and Value Pass Options in Northeast Florida

<table>
<thead>
<tr>
<th>Agency</th>
<th>Local &amp; Regional</th>
<th>Base Fare</th>
<th>Seniors</th>
<th>Reduce Fare</th>
<th>Daily Pass</th>
<th>Reduce Daily Pass</th>
<th>Monthly Pass</th>
<th>Reduced Monthly Pass</th>
<th>Flex Deviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker Transit</td>
<td></td>
<td>$1.00</td>
<td>$1.00</td>
<td>$.50</td>
<td>N/A</td>
<td>N/A</td>
<td>$25.00</td>
<td>N/A</td>
<td>$1.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$2.00</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>$25.00</td>
<td>N/A</td>
<td>$.50</td>
</tr>
<tr>
<td>Clay Transit</td>
<td></td>
<td>$1.00</td>
<td>$.50</td>
<td>$.50</td>
<td>N/A</td>
<td>N/A</td>
<td>$30.00</td>
<td>N/A</td>
<td>$1.00</td>
</tr>
<tr>
<td>JTA</td>
<td></td>
<td>$1.50</td>
<td>Free</td>
<td>$.75</td>
<td>$4.00</td>
<td>$1.50</td>
<td>$50.00</td>
<td>$30.00</td>
<td>$.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$2.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Nassau Transit</td>
<td></td>
<td>$1.00</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Free</td>
<td></td>
</tr>
<tr>
<td>Ride Solution</td>
<td></td>
<td>$1.00</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Sunshine Bus</td>
<td></td>
<td>$1.00</td>
<td>$.50</td>
<td>$.50</td>
<td>$2.00</td>
<td>$1.00</td>
<td>$30.00</td>
<td>N/A</td>
<td>$2.00</td>
</tr>
<tr>
<td>Source: Transit Agency Survey Responses 2016</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
3.2.1 Reduced Fare Policies

Transit agencies offer reduced fares on fixed and flex route services as a method to encourage passengers to use these services versus their more expensive to operate paratransit services. Agencies that receive FTA Section 5307 grant funds are also required by federal law to offer seniors, individuals with disabilities or individuals presenting a Medicare care with a 50% discount on fares during off-peak hours. Some transit systems extend reduced fare options to youth, students, military personnel, veterans, and individuals with low-income.

Seniors are defined differently and have different fixed and flex route fare discounts including:

- **Baker County** – individuals over the age of 60 or with disabilities can ride at half the regular fare
- **Clay County** - individuals over the age of 60 or with disabilities ride and children under 6 years old can ride at half the regular fare
- **Duval County** – individuals over the age of 65 ride at no charge as long as they have a valid Senior STAR card and individuals with a disability or with low income (recipient of Social Security Income) can ride at half the regular fare
- **Nassau County** – no discounts offered
- **Putnam County** – no discounts offered
- **St Johns County** - individuals over the age of 60, with disability or with Medicare or Medicaid card; children under 6 years old and students with any student ID including college or vocational school can ride with half price fares

3.2.2 Transfer Policy

A bus transfer generally refers to a passenger departing one transit vehicle and boarding another transit vehicle to access their final destination. Some agencies allow passengers to transfer buses at no additional fare at certain locations or within a certain time period. However, many agencies do not offer any free or reduced fare transfers. Passengers using these systems have to pay the full fare on each transit vehicle they board.

The JTA and Sunshine Bus have a published policy to not allow free or reduced fare transfers. The other agencies in the region have no published transfer policy. However, they do allow passengers to transfer at no additional cost at various transfer hubs.
3.2.3 Value Passes and Tickets

Transit agencies provide value passes to encourage frequent use of their systems and to help social service agencies purchase fares for their clients. The value passes could take the form of a prepaid fare card or ticket with a specific dollar value, predetermined number of trips or period of time.

Each transit agency in the region offers different types of value passes to their passengers including:

- Baker and Clay Transit offer riders calendar month paper passes.
- Sunshine Bus offers riders calendar month and daily paper passes at regular and reduced fare rates.
- Nassau Transit offers passengers the ability to purchase multiple “NassPASSES” tickets at reduced prices. The prices range from six rides for $5 to twenty rides for $15.
- Ride Solution sells tickets at face value of $1 and discounts tickets to large volume purchasers (social service agencies).
- JTA has a large number of “rolling” time passes which are activated on first use. These passes include daily, 3-day, 7-day and monthly passes at regular and reduced fare rates.

While value passes may be a great way to reduce the cost of a passenger’s commute, 50% of JTA’s riders still pay the cash fare. This is likely due to the fact that low income passengers are unable to pay the full cost of the value pass at one time.

3.3. Regional Paratransit Trips

Paratransit service is a demand responsive or on-demand door-to-door transportation service. This service type is provided by each transit agency for individuals unable to use their fixed or flex route service. Eligibility for this service varies by agency. The eligibility criteria may include:

- Individuals with a disability
- Individuals over the age of 60
- Individuals with low income (threshold varies by agency)
- Dialysis trips only
- Medical trips may be prioritized, limiting non-medical trips

Most of the medical centers and social service agencies needed by Northeast Florida residents eligible for paratransit services, are located in Jacksonville. This requires them to schedule long distance, and even more costly paratransit trips from their home counties into Jacksonville. Their transit vehicles are often not filled to capacity and may travel directly behind paratransit vehicles from other counties.

Table 5 demonstrates the average monthly paratransit trips into Duval County.
This analysis reflects an average of 3,025 monthly external trips in the region with Clay County operating the most external trips per month at 1,175 followed by Baker County, Putnam County, Duval County, Nassau County, and Saint John’s County. This table identifies the following:

- Baker County provides 773 average monthly external trips with primary destinations to Duval, Clay and Alachua counties
- Clay Transit provides 1,175 average monthly external trips with primary destinations to Duval and Alachua counties
- JTA provides 274 average monthly external trips with primary destinations to Clay County
- Nassau Transit provides 222 average monthly external trips with primary destinations to Duval County
- Ride Solution provides 503 average monthly external trips with primary destinations to Alachua, St Johns and Clay Counties
- St Johns County provides 78 average monthly external trips with primary destinations to Duval County

Table 6 reflects this information as percentages with *internal* trips depicted in bold. Most of travel by jurisdiction is internal trips; the majority of external travel is occurring from the surrounding counties into Duval County.

**Table 5: Average Monthly Paratransit Trips by Jurisdiction (Based on Jan – Mar 2017 Period)**

<table>
<thead>
<tr>
<th>Agency</th>
<th>Baker</th>
<th>Clay</th>
<th>Duval</th>
<th>Nassau</th>
<th>Putnam</th>
<th>St Johns</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker Transit</td>
<td>3,465</td>
<td>106</td>
<td>598</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>69</td>
<td>4,163</td>
</tr>
<tr>
<td>Clay Transit</td>
<td>-</td>
<td>13,316</td>
<td>946</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>229</td>
<td>13,628</td>
</tr>
<tr>
<td>JTA</td>
<td>-</td>
<td>270</td>
<td>59,402</td>
<td>1</td>
<td>-</td>
<td>7</td>
<td>4</td>
<td>59,678</td>
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<tr>
<td>Nassau Transit</td>
<td>-</td>
<td>-</td>
<td>222</td>
<td>5,638</td>
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<td>-</td>
<td>-</td>
<td>5,859</td>
</tr>
<tr>
<td>Ride Solution</td>
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<td>90</td>
<td>59</td>
<td>2</td>
<td>11,497</td>
<td>119</td>
<td>233</td>
<td>12,063</td>
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<tr>
<td>Sunshine Bus</td>
<td>-</td>
<td>2</td>
<td>74</td>
<td>-</td>
<td>-</td>
<td>9,483</td>
<td>2</td>
<td>10,471</td>
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<tr>
<td>Monthly</td>
<td>3,465</td>
<td>13,783</td>
<td>61,301</td>
<td>5,641</td>
<td>11,497</td>
<td>9,610</td>
<td>537</td>
<td>98,940</td>
</tr>
</tbody>
</table>

**Table 6: Percentage of Paratransit Trips — Internal and External (Jan – Mar 2017)**

<table>
<thead>
<tr>
<th>Agency</th>
<th>Baker</th>
<th>Clay</th>
<th>Duval</th>
<th>Nassau</th>
<th>Putnam</th>
<th>St Johns</th>
<th>Other External</th>
<th>External Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker Transit</td>
<td>81.8%</td>
<td>2.5%</td>
<td>14.1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.6%</td>
<td>18.2%</td>
</tr>
<tr>
<td>Clay Transit</td>
<td>-</td>
<td>91.9%</td>
<td>6.5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.6%</td>
<td>8.1%</td>
</tr>
<tr>
<td>JTA</td>
<td>-</td>
<td>0.4%</td>
<td>99.5%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.5%</td>
</tr>
<tr>
<td>Nassau Transit</td>
<td>-</td>
<td>-</td>
<td>3.8%</td>
<td>96.2%</td>
<td>-</td>
<td>-</td>
<td>3.8%</td>
<td>-</td>
</tr>
<tr>
<td>Ride Solution</td>
<td>-</td>
<td>0.7%</td>
<td>0.5%</td>
<td>-</td>
<td>95.8%</td>
<td>1.0%</td>
<td>1.9%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Sunshine Bus</td>
<td>-</td>
<td>-</td>
<td>0.8%</td>
<td>-</td>
<td>-</td>
<td>99.2%</td>
<td>-</td>
<td>0.8%</td>
</tr>
</tbody>
</table>
As shown in Table 6:

- Baker County has the largest share of regional travel, with the majority of external trips going to Duval County
- Putnam County has most of its external travel to areas outside of Northeast Florida, primarily to Alachua County (Gainesville)

The percentage of external trips compared to internal trips is most relevant for considerations in operating regional services and implementing a regional fare.

In addition to understanding internal and external travel volumes and percentages within the region, it is important to identify key destinations.

All agencies report that a significant percentage of their Duval County trips have destinations to Shands/UF Health and to the VA Clinic.

Other reported frequent regional trips include:

- Baker Transit – St. Vincent’s Medical Center, Brooks Rehab, and VA Medical Center Gainesville
- Clay Transit – ARC Jacksonville, Pine Castle School, ARC of Bradford, Oakleaf Publix, Argyle Winn Dixie
- JTA – Orange Park Mall and Orange Park Medical Center
- Nassau Transit – Fresenius Dialysis Main St and Mayo Clinic
- Ride Solution – St Augustine Winn Dixie, Meridian Detox in Gainesville and VA Medical Center Gainesville
- St Johns – Arlington Dialysis Center, Riverside Pain Physicians, Coastal Spine & Pain Jacksonville

Each of the agencies, except JTA also report that when their drivers are scheduled to take passengers to a medical facility outside of their home county, the driver is expected to remain in that county until the passenger is ready to return. This is done to reduce deadhead miles and hours. However, it does create a lot of unproductive time – daily.
3.4. Operations and Cost Metrics

The transit agencies in the region have long been trying to establish policies, procedures and reimbursement rates to better coordinate paratransit trips. A regionally coordinated transportation system, by combining travel where warranted, has the benefits of reducing the cost of services provided; eliminating service duplication; and providing a more seamless, convenient and enhanced customer experience for riders.

Coordinated regional transit service delivery (multiple providers and multiple jurisdictions) requires a means to share the cost of service delivery between providers for delivery of regional trips that include serving non-home-county riders. For example, sharing the cost of a vehicle originating in Nassau County destined to UF Heath in Jacksonville that picks up a rider in Duval County also destined to UF Health. In this example, a means of determining the share of the cost of service incurred by Nassau County to provide service in Duval County for the Duval County resident is needed. To achieve equitable cost sharing, a cost allocation model is necessary.

3.6.1 Cost Allocation Practices

A challenge in coordinated transportation is whether each transportation provider is compensated for a fair share of the operating costs and receives a fair share of fare revenue, proportionate cost sharing. While, several cost sharing models exist for fixed route and paratransit services, the most widely used is the cost-based approach.

Cost sharing is beneficial in that costs are spread out through coordination of transportation services in a region which can provide greater productivities for the provider and the customer by reducing the need for duplicative services. The most commonly used approach to cost sharing is the cost-based approach, in which the transportation provider’s share of the overall cost of the service they provide is in proportion to the amount of the all costs of producing the service for all transportation providers. As reported in the *TCRP Report 144- Sharing the Costs of Human Services Transportation*, this process involves the following:

- Track the number of service miles, service hours, and passenger trips provided by each transportation provider for a particular time period (month, quarter, annually)
- Identify average hourly cost, average mileage cost, and the fixed cost ratio
- Calculate each agency’s respective share of total costs of service
- Input data into a cost sharing model
- Bill each transportation provider on proportionate share of total cost within each jurisdiction

This model focuses on cost of service and is widely applied to fixed route services where operating service hours and service miles are consistent on a daily basis. For paratransit services, this model is also commonly used. However, because paratransit service miles and hours vary widely from day-to-day, the model requires significant efforts in data analysis for record-keeping.
In Northeast Florida, the majority of the regional travel is provided through flex and paratransit services in which service miles and hours vary daily based on trips booked. In addition, the service providers in Northeast Florida developed a regional scheduling software that includes all the service providers. Regional scheduling provides a means to identify the costs by provider for services delivered, including the costs of services supplied outside of the home county. Therefore, the cost of service model is not appropriate for the region as it will generate the need for significant post trip data analyses.

A more streamlined proportionate cost-sharing model will need to be created with accommodation to the fact that the service providers schedule their trips and perform related billing and reporting requirements on the same web-based scheduling platform.

### 3.6.2 Operations Cost Metrics

Operations performance metrics are provided below for fixed route and demand responsive services for each county. The metrics provided are standard for the transit industry. The key metrics are defined as follows:

- Unlinked passenger trips – annual passenger boardings
- Vehicle revenue hours – total vehicle hours of operation in revenue service
- Vehicle revenue miles – total vehicle miles of operation in revenue service
- Total operating expenses – total cost to operate the service
- Cost per trip – operating cost divided by total passenger boardings
- Cost per revenue hour – operating cost divided by vehicle revenue hours of service
- Cost per revenue mile – operating cost divided by vehicle revenue miles of service

#### Table 7: Regional Operations Cost Metrics

<table>
<thead>
<tr>
<th>Agency</th>
<th>Unlinked Passenger Trips</th>
<th>Vehicle Revenue Hours</th>
<th>Vehicle Revenue Miles</th>
<th>Total Operating Expenses</th>
<th>Cost Per Trip</th>
<th>Cost per Hour</th>
<th>Cost per Mile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fixed &amp; Flex Routes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JTA</td>
<td>11,634,258</td>
<td>618,327</td>
<td>8,557,699</td>
<td>$70,455,887</td>
<td>$6.06</td>
<td>$113.95</td>
<td>$8.23</td>
</tr>
<tr>
<td>Clay Transit</td>
<td>54,362</td>
<td>14,809</td>
<td>269,058</td>
<td>$544,696</td>
<td>$10.02</td>
<td>$36.78</td>
<td>$2.02</td>
</tr>
<tr>
<td>Nassau Transit</td>
<td>10,639</td>
<td>8,380</td>
<td>184,864</td>
<td>$291,193</td>
<td>$27.37</td>
<td>$34.75</td>
<td>$1.58</td>
</tr>
<tr>
<td>Sunshine Bus</td>
<td>293,239</td>
<td>24,559</td>
<td>525,411</td>
<td>$1,016,473</td>
<td>$3.47</td>
<td>$41.39</td>
<td>$1.93</td>
</tr>
<tr>
<td>Baker Transit</td>
<td>7,245</td>
<td>8,462</td>
<td>135,852</td>
<td>$325,752</td>
<td>$44.96</td>
<td>$38.50</td>
<td>$2.40</td>
</tr>
<tr>
<td><strong>Paratransit</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JTA</td>
<td>375,013</td>
<td>225,662</td>
<td>4,112,869</td>
<td>$14,079,521</td>
<td>$37.54</td>
<td>$62.39</td>
<td>$3.42</td>
</tr>
<tr>
<td>Clay Transit</td>
<td>81,096</td>
<td>37,429</td>
<td>744,329</td>
<td>$1,678,205</td>
<td>$20.69</td>
<td>$44.84</td>
<td>$2.25</td>
</tr>
<tr>
<td>Nassau Transit</td>
<td>37,359</td>
<td>19,392</td>
<td>219,261</td>
<td>$582,213</td>
<td>$15.58</td>
<td>$30.02</td>
<td>$2.66</td>
</tr>
<tr>
<td>Baker Transit</td>
<td>24,662</td>
<td>11,778</td>
<td>236,568</td>
<td>$567,254</td>
<td>$23.00</td>
<td>$48.16</td>
<td>$2.40</td>
</tr>
<tr>
<td>Sunshine Bus</td>
<td>17,192</td>
<td>9,351</td>
<td>86,629</td>
<td>$616,682</td>
<td>$35.87</td>
<td>$65.95</td>
<td>$7.12</td>
</tr>
<tr>
<td>Ride Solution</td>
<td>143,448</td>
<td>42,944</td>
<td>751,924</td>
<td>$2,319,617</td>
<td>$16.17</td>
<td>$54.01</td>
<td>$3.08</td>
</tr>
</tbody>
</table>

Source: Transit Agency Survey Responses 2016
4. Peer Program Review

Regional fare payment systems are in operation in hundreds of regions across the globe. To understand the potential challenges and opportunities that this region may face while implementing a regional fare system, peer systems were analyzed. The first analysis was a brief review of the organizational structures of regional fare systems. The second analysis went into more detail on the entire fare system.

4.1. Organizational Structures

For comparison of the systems with multiple partners, Table 8 examines five regions for best practices applicable for the Northeast Florida region. The programs were reviewed based on governance and organization, procurement of the system, and fare policy coordination.

Table 8: Organizational Structure Peer Review

<table>
<thead>
<tr>
<th>Place</th>
<th>Card</th>
<th>Partner Agencies</th>
<th>Transit Mode</th>
<th>Governance Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlanta GA</td>
<td>Breeze</td>
<td>MARTA, Cobb Community Transit, GRTA Xpress, Gwinnett County Transit, Atlanta Streetcar</td>
<td>Bus, Premium Bus, BRT, Paratransit</td>
<td>Transit Agency with participatory governance</td>
</tr>
<tr>
<td>Los Angeles CA</td>
<td>TAP</td>
<td>LACMTA, Santa Clarita, Culver City, AVTA, Foothill Transit, Norwalk, Montebello</td>
<td>Bus, Premium Bus, BRT, Rail, Subway, ADA Paratransit</td>
<td>Transit Agency through MOU agreement</td>
</tr>
<tr>
<td>San Francisco Bay Area CA</td>
<td>Clipper</td>
<td>SFMTA (Muni), BART, AC Transit, Caltrain, Golden Gate Transit, Samtrans, SCVTA, WETA (ferry)</td>
<td>Bus, Premium Bus, Rail, Subway, Ferry, Cablecar</td>
<td>Regional Planning Agency with participatory governance</td>
</tr>
<tr>
<td>Tampa Bay, FL</td>
<td>Flamingo Fares</td>
<td>TheBus, HART/TECO Line Streetcar System, PCPT, PSTA/Jolley Trolley, and SCAT</td>
<td>Bus, Trolley, Paratransit</td>
<td>Transit Agency with participatory governance</td>
</tr>
<tr>
<td>Washington DC</td>
<td>SmarTrip</td>
<td>WMATA, DASH, Ride On, Fairfax Connector, ART, CUE, TheBus, Loudoun County, Omniride, DC Circulator, MTA</td>
<td>Bus, Premium Bus, Heavy Rail/Subway</td>
<td>Metropolitan Planning Organization with participatory governance</td>
</tr>
</tbody>
</table>
There were three common governance approaches found including:

1. **Lead Transit Agency with MOU Agreement and Participatory Governance** – In this governance model, one transit agency, typically the largest of the multiple transportation providers, is responsible for decision making on behalf of the other regional partners, including development of the fare payment program, specifications, business rules, transaction management and implementation. This model is used in Atlanta, Los Angeles, Tampa Bay and Washington, D.C. In Los Angeles, the Los Angeles County Metropolitan Transportation Authority procured and paid for the entire capital cost for the fare card technology and implementation. Operationally, no cost sharing occurs amongst the partner agencies, and customer transfer between transportation providers is seamless through use of the Tap card system. In Washington, D.C. each operator pays for its portion of the capital share for card integration and coordinates the various fare structures and policies of each participating operator through use of the SmarTrip card.

2. **Regional Transit Authority/Metropolitan Planning Organization** – In this governance model, a regional transit authority or metropolitan planning organization replaces the lead transit agency, in situations where the RTA or MPO operates the transportation services for the region. This model is used in the San Francisco Bay Area, in which the partner agencies have different fare structures encompassing flat and distance-based fares that are integrated with use of the Clipper card. In Toronto, the Regional Planning Organization governs the system through a board consisting of the member transportation providers and made up of committees.

3. **Peer-to-Peer** – In this governance model, the transportation providers share the same fare payment system in an open payment environment, provided through an interlocal agreement. This may take two logical forms: one where provider services overlap and requires revenue and cost sharing for services rendered (this is typically a human service model); the second is where revenues are shared via fares collected but service cost sharing is not a factor (this is typically a regional bus/bus/rail integration model).

4.2. **Detailed Peer System Analysis**

Two peer regions selected for a detailed peer system analysis were the Atlanta and the Tampa Bay Regions. The information was compiled through phone and in person interviews, in-house literature and web-based research.

4.2.1 **Atlanta Region**

The Atlanta region includes Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry and Rockdale counties, and the city of Atlanta. According to Atlanta Regional Commission’s latest population estimates, the area is home to 4.4 million people.
The Atlanta region is served by various transit agencies which provide a variety of transit services. These services range from heavy rail, fixed route services, university shuttles, as well as on-demand paratransit services, and vanpools. Some of the services are integrated regionally, while others are available only on a local level.

The Breeze card is metro Atlanta's transit fare product and collection system. Developed by MARTA, the Breeze Card is used by the four largest transit agencies in the Atlanta region: MARTA, GRTA Xpress, Gwinnett County Transit, and CobbLinc. The Breeze card is a reusable plastic card designed to store cash value, trips, and daily, weekly, or monthly passes.

Riders can load passes and cash value onto their Breeze Card without having to carry around multiple agency transit passes.

**Partnering Agencies**

**Metropolitan Atlanta Rapid Transit Authority (MARTA)** provides heavy rail and bus service in Fulton and DeKalb Counties. Its rail service includes 38 stations and four rail lines covering 48 miles of track, and its bus service provides over 91 routes covering over 1,000 route-miles. MARTA also offers ADA complimentary paratransit services (MARTA Mobility) for persons with disabilities. MARTA's real-time mobile app is called MARTA On-the-Go.

MARTA’s trains, buses and para-transit vehicles provide over 500,000 passenger trips within the city of Atlanta and Fulton and DeKalb counties every weekday.

**Georgia Regional Transportation Authority (GRTA) Xpress Bus** is a commuter bus service that provides trips to and from 12 counties in the Atlanta region into Downtown and Midtown Atlanta and other regional employment centers. It operates Monday through Friday, primarily during the morning and afternoon/evening commute times. All the routes connect to MARTA rail stations. There are various Xpress passes available for passengers in two different fare zones. Passengers may also use a Breeze Card to pay Xpress fare if it is loaded with stored cash value and to make free transfers between the MARTA systems.

**Cobb Community Transit (CCT)** provides local bus service within Cobb County and commuter bus to and from Downtown and Midtown Atlanta. Services operate Monday through Saturday. Breeze Cards can be used by passengers to transfer between the MARTA systems. Breeze Cards can be used for non-transfer trips as well, if they are loaded with stored cash value or a CCT fare product. ADA complimentary paratransit
services (CobbLinc Paratransit) are also available for qualified riders. CCT's real-time app is called GoCCT.

**Gwinnett County Transit (GCT)** provides local bus service within Gwinnett County and commuter bus to and from Downtown and Midtown Atlanta. Services operate Monday through Saturday. Breeze Cards can be used by passengers to transfer for free between the MARTA systems. Breeze Cards can be used for non-transfer trips as well, if they are loaded with stored cash value or a GCT fare product. ADA complimentary paratransit services (GCT Paratransit) are also available for qualified riders.

**Fare Payment System Overview**
MARTA modernized their fare system to a 100% Smartcard based system in 2007. The system was supplied by Cubic Transportation Systems. The regional agencies also came on-board at the same time utilizing the same Cubic backend system. Both long term and limited use media are part of the system which includes 565 fixed route vehicles and 211 paratransit vehicles. MARTA is currently implementing a Mobile Ticketing project as well as modernizing their current smart card system to an account based or open payment system. One common backend system, hosted by MARTA, is called the Cubic Nextfare Central System. The same back end manages sales and usage transaction for the regional agencies.

**Technology Setup**
The Fare equipment consists of:

- 341 Ticket Vending Machines (TVMs)
- 575 Faregates
- 25 Ticket Office Machines (TOMs)

The smart TVMs are located at most of the rail stations. All stations have faregates with a tag in and tag out system. On the buses, there are fareboxes with smart card validators and the transactions are held on each electronic control unit inside the farebox. The buses are probed via Wi-Fi when entering the garages and then transfers the data to the garage computer which in turn sends the data back to the Nextfare Central Computer system.

The regional agencies are probed in the same manner; however, they do not have their own backend system. Cobb County is the only agency that has a farebox integrated with the Breeze equipment. The farebox accepts magnetic technology as well as smartcard. Gwinnett and GRTA configurations do not have an integrated farebox. Their driver control units connect to separate smartcard validators and they utilize their own fare collection system. They use GFI for their fareboxes and backend system. These two agencies utilize magnetic technology. Two fare collections systems are utilized: Cubic and GFI.
**Staffing/Organization Structure:**
When the regional fare system was implemented, they established a Project Management Office (PMO) office with a dedicated Program Director tasked with overseeing all aspects of the regional fare project. Four (4) additional staff members were hired to assist with the project. There was also representation from various MARTA departments including IT and finance. The regional agencies assigned representatives to work with the PMO office in a technical and operational capacity.

Currently, MARTA has one (1) full-time Project Manager assigned to regional fare. This position oversees the various upgrades. Projects currently underway include upgrading the driver control units, updating their garage computers and implementing Mobile devices.

MARTA designed a clearinghouse and settles accounts depending on the cash collected versus credit card. There is a module within Nextfare that provides the clearing and then a combination of software and manual processes through Excel clearing is performed. MARTA settles once a month with the regional agencies. MARTA charges $3K per agency per month to host and run the clearinghouse solution.

**Major Issues Faced and Lessons Learned**

**Complexity:** The fares throughout the region were very complex due to the extensive number of fare combinations, upcharges, transfer fees, etc. MARTA was not able to implement a fully automated software-based clearinghouse solution as initially envisioned. It had to develop a combination of automated and manual processes that met their needs and the needs of the other regional agencies.

**Recommendation:** Based on the complexity and major issues faced when implementing a regional fare system, some organizations may want to consider an outsourced model.

**Perceived Lack of Control/Visibility:** MARTA controls the dissemination of reports etc., and it was initially a challenge for each agency to “turn over the reins” for information that was previously readily available to them. Changes to fare products and updates are now performed by MARTA and the other regional agencies must go through them as well. Some decisions made by MARTA had a direct impact on the other regional agencies who may not know or agreed with the change (i.e. free Breeze employee rides, etc.).

**Recommendation:** A steering committee structure should be put into place. This committee will ensure equality amongst agencies so that all voices are heard in the planning and implementation process.
4.2.2 Tampa Bay Region

Region Summary
The Tampa Bay Region includes Citrus, Hernando, Hillsborough, Manatee, Pasco, Pinellas and Sarasota counties. The area spans 6,000 square miles, three regional planning councils and five metropolitan planning organizations. There are over 33,000,000 annual transit riders in the Tampa Bay region.

The regional fare mobile app named Flamingo Fares was launched in September 2016. Counties currently participating in Flamingo Fares: Hernando (TheBus), Hillsborough (HART/TECO Line Streetcar System), Pasco (PCPT), Pinellas (PSTA/Jolley Trolley), and Sarasota (SCAT). Citrus, Polk and Manatee counties have opted out of the regional fare program due to various capacity reasons.

Regional Agencies
Hernando County (THE BUS) is a cooperative effort of the Hernando County Board of County Commissioners, Metropolitan Planning Organization, City of Brooksville, Florida Department of Transportation (FDOT), Federal Transit Administration (FTA) and McDonald Transit Associates, Inc. in serving the citizens with affordable public transportation serving 4-cross County routes and southern connection to Pasco County.

Hillsborough Area Regional Transit Authority (HART) is the public transportation provider in Hillsborough County. HART operates a comprehensive network of local, express and flex routes as well as a complimentary paratransit service for the disabled, and the TECO Line streetcar system. HART provides transit service with 29 local, 7 express, and 5 limited express routes, along with 5 flex service areas to the cities of Tampa, Temple Terrace, and parts of unincorporated Hillsborough County.

Pasco County (PCPT) is a division under the Pasco County Board of County Commissioners (BCC), providing public transportation throughout Pasco County since 1972. PCPT serves Dade City, Lacoochee, Trilby, and Zephyrhills in East Pasco, and the urbanized area of West Pasco County. PCPT operates 10 routes with 18 buses including complementary ADA paratransit service.

Pinellas Suncoast Transit Authority (PSTA), serves most of the unincorporated area of Pinellas County and 21 of the county’s 24 municipalities accounting for 97% of the county’s population and 97% of its land area. PSTA operates service from one main facility in the mid-county area.
Sarasota County (SCAT) provides service to the unincorporated County, the County’s municipalities, the Gulf beaches and into Manatee County. In addition to the fixed-routes, SCAT provides ADA complimentary paratransit service throughout the service area.

Other Partners include the Florida Department of Transportation (FDOT), Hillsborough Metropolitan Planning Organization (MPO) and the Tampa Bay Area Regional Transportation Authority (TBARTA).

Fare Payment System Overview
HART led the effort to build a regional account-based fare collection technology. The project is approximately 60% completed with expected final implementation in the Summer of 2018. The project is an account-based system in which riders can use an account based smart card, a limited use smart card, or a mobile app to pay for rides. The project also includes a centralized ‘back office’ to record transactional data, ridership, and distribute revenues to participating agencies.

All 5-county Tampa Bay regional transit agencies are merging to a smartcard/e-fare based seamless revenue collection system, and supporting back-office, with one media type for all patrons, irrespective of location, replacing or enhancing current agency farebox technology.

Technology Setup
Currently the five counties use a variety of systems to collect fares. The predominant systems are the GFI systems of the HART, SCAT and PSTA authorities in which a magnetic striped paper card is used. HART also uses GFI Fareboxes along the streetcar and MetroRapid lines. The other counties use visual passes. Cash still represents a high percentage of transactions across the region.

The Flamingo Fares app is powered by Bytemark. It is an open architecture and open payment system that also includes an interactive voice response system. The app is like a digital smart card. It has the capability to use stored value and a fare capping system on a calendar month. The transit vehicles have been installed with INIT validator equipment.

The customer can put cash into the account and view their account status online or at a validator. Multiple cards can be stored in one account and a card holder can pay for his fare via fare capping.
system and additional people via the stored value feature. Transit agencies can view their “taps” throughout the month.

**Staffing/Organization Structure**
HARTs Project Management office is managing the project and the contract for the region. Each of the agencies are also providing a project management team. The team meets bi-weekly.

The back-office software accounts for all transactions per location and agency. The Regional Working Group has decided that all revenues will be distributed by the 15th of the following month. Each agency has access to ridership, transactional and revenue data.

**Major Issues Faced and Lessons Learned**

**Multiple Interlocal Agreements** - The original strategy was to create one agreement that encompassed all agencies. However, that was not viable, and HART entered into separate agreements with each county or agency as appropriate. The agreements were not completed prior to the project starting. This cost a lot of time shifting from the management of the project to political discussions.

**No streamlined fare structure** - Each of the agencies and counties have their own fare structures and discounts. Agreements could not be made amongst the agencies.

**Project Management** - Each of the agencies have varying degrees of experience in project management in this field or of this complexity.

**Political and Leadership Changes** - Key leader changes have had a dramatic effect on project management as far as expectation management and understanding the objectives and scope of the project.

**Recommendations:** HART realized early in the planning stages the importance of obtaining input and feedback from all agencies involved and formed a Working Group. Coordinating with the Regional Working Group allowed for defining the individual agency requirements, incorporating industry knowledge on emerging farebox technologies and determining the provision of individual agency local funding contributions.

In preparation of the solicitation, technical requirements and overall Working Group approach, staff representing all 8 agencies visited several transit properties to experience first-hand how these technologies function and are implemented. Questions of project implementation (to include challenges), staffing impacts and associated and unknown costs were also asked and documented. Staff also attended conferences conducted by the American Public Transportation Association (APTA), the Florida Public Transportation Association (FPTA), and the Smart Card Alliance and participated in various conference calls with other transit agencies that have implemented related technologies.

HART also recommends that systems should be launched with a limited number of agencies and small group of passengers. The pilot group should be provided with free trips in return for their feedback.
4.3. **World-Wide Peer Mobile Applications (App) Highlights**

The 2018 APTA Fare Collection/Revenue Management Conference April 9 - 11 was held in Jacksonville. Over 400 people from all over the world attended. The hottest topic of the conference was mobile fare technology. Some of the comments heard about mobile applications include:

- Many people today feel that if the product does not have an app, it does not exist
- Mobile apps put the rider in control
- It improves the rider’s experiences, optimizes operations, reduces operational costs and reaches new riders
- It elevates the regional status of transit services
- It should provide: trip planning, real-time assistance, “where’s my bus” and “am I on the right bus” features, last mile integrations, travel alerts and schedule updates
- It should integrate weather and traffic information to encourage transit usage when appropriate, dining options along the route and even fitness applications

Michael Dinning from the Volpe National Transportation Systems Center is working with FTA and APTA members and staff to create a Multimodal Payment Integration Framework. We will closely follow their research which will include policy and governance as well as implementation and revenue reconciliation.

Many transit agencies presented their smart phone applications and share their lessons learned. A few highlights of the presentations include:

1. **East Japan Railway’s SUICA** (Super Urban Intelligent Card) program was launched in 2001. The card can be used to purchase rail tickets as well as train lockers, room keys, meals and shopping across Japan. Over 70 million cards have been issued. The SUICA is now a plastic card, a bank (visa) card, smart phone app and an Apple Watch app.

2. **Albany NY’s Navigator** system includes a reloadable smart card and mobile app. They use the fare capping or Pay As You Go system to automatically charge the “best fare” and offer customer loyalty rewards such as special offers, discounts, contests and promotions. The more the customer rides, the more rewards they will receive.

3. **Dayton OH’s RTA** is moving towards a mobility management role instead of a transit agency role. Their app “stalks” their buses in real time and provides seamless regional multimodal trips options.
4. **New Zealand’s Snapper** mobile application was introduced in 2012 as an Android app only. It can be used for transit, taxis and shopping. The train fare is based on distance traveled so passengers must tag on and tag off. They use a “trust-based model” when passengers forget to tag off. Nina Ive, Head of Sales and Marketing stated that customer behavior is moving towards “self-service” instead of retail support. They want a digital experience and prefer not to have to speak to someone.

5. **Maryland Transit Administration’s CharmCard**, smart card program was implemented in 2010. However, customers were slow to embrace the program and continued to use the old methods of fare payments. The MTA eliminated all paper fare media, increased card availability and added more CPOS and POS outlets. Within 10 months usage went from 2.5% to 28%. The MTA is still working on a mobile app with an open payment system to encourage regional interoperability. They feel that mobile apps will link transit to other modes and encourage users of other modes to try transit. Soon, more people may have smart phones than bank accounts or credit cards.

6. **Reno NV’s Token Transit** mobile app can easily support different languages and vision impairments. The agency recommends that you market the app well by making WiFi available so that passengers can download the app. They gave 50% discounts for the first pass purchase. This encouraged passengers to purchase the highest value passes. They give free passes to new residents or employers along route lines and to people attending conferences in the city. These free passes can be coded to allow tracking of use for future promotion purposes. Their app also has a feature that allows anyone to “text a pass” to anyone else. For example, as a graduation gift, all family members may text a pass to the graduate.

7. **London Railway** allows passengers to use their Oyster card, Android Pay smartphone, bPay device or Apple pay device with their fare capping system – as long as they use the same device for each tap. They do this so that they can focus on the goal of better customer experience. They “never forget about the 10-year-old who doesn’t have a smart phone or who’s smart phone has run out of power”.

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![Image of Oyster Card and Reader]
5. Fare Collection Technologies

Transit fares have evolved over the past decade and agencies now strive to maximize the customer experience while minimizing or eliminating the need for cash. The Northeast Florida region has a unique opportunity to carefully plan a regional fare system that will benefit all partners, especially our passengers.

Fare systems that support automated fare collection practices are becoming the norm. These technologies include new forms of fare system architecture (Card-Based or Account-Based Systems) and fare media (such as mobile phone applications and near-field communications).

The features of the emerging technologies are described in the sections below.

5.1. Fare System Architecture

Most fare systems implemented prior to the past 5 years were card-based systems. This includes magnetic stripe paper or smart card ticketing systems that store information on the card itself. These systems are also called “closed-loop” systems. In a card-based system, the fare transactions take place before the passenger takes a trip. Upon purchase, the passenger must decide to simply apply cash to the card’s purse or to purchase a value pass.

Innovative technologies have emerged recently that allow for “open-loop” and account-based systems. The fare media in these systems, are simply a token that identifies the passenger and associates that passenger with an account. The transit fare payment transactions occur in the central computer, within the passenger’s account. This is like the automated toll collection of a Sun Pass. No value or products are stored in the transponder.

Account-Based systems permits the use of many fare media options and enhances the ability to provide incentives and promotion across multiple transit agencies and with other modes and non-transit organizations. This smarter technology also expands opportunities for more creative fare and transfer options. Account-based systems can also be implemented in stages and can be tailor-made to meet the needs specific to the region.

Components of an account-based system may include:

- Account & Customer Centers for management and administration of passenger accounts, products, marketing and complaint management
- Mobility Centers for trip planning, reservations, travel information and travel assistance
- Security and Risk Engines for token vaults, cryptography, management of rules, hotlist management and fraud detection
- Payment Center for authorization and clearing of payments
- Tariff, Clearing and Reporting Centers for management of price calculations administration, financial end of day processing, settlement of payment records, reporting and business intelligence linkage
5.2. Fare Media

Fare media is the physical instrument that a passenger uses to be allowed access to a transit vehicle. If a closed-loop system is implemented, the number of potential fare media is limited. However, the potential is almost limitless in an account-based system. Accepting multiple fare media may have additional capital costs for fare media readers and central computer updates. The use of reloadable media or smart phones can reduce the cost of producing and distributing fare media for transit agencies.

Allowing the use of different fare media, permits the passenger to select the media that is the most convenient for them. A key industry goal is to allow consumers to use media they already possess (debit, credit and prepaid cards that are already in their wallets or mobile phones) to directly pay for rides on a transit system, rather than using those cards to buy another card sold by the transit authority. The same cards used at retail locations can be used for transit modes which encourages ridership due to the convenience factor.

The various media currently implemented in other transit agencies are described within this section.

5.2.1 Contactless Smart Cards

Contactless smart cards were the transit fare media of choice during the last decade. The card includes an embedded microcontroller, internal memory and small antenna. It communicates with a reader through a contactless radio frequency interface. The microcontroller can store substantial amounts of data and interact intelligently with a smart card reader. The smart card technology is available in a variety of forms including plastic cards, key fobs, watches, and USB-based tokens.

Locally, the JTA implemented their smart card system named the STAR card in 2012. The system includes a reloadable extended-use card and a short-term STAR ticket. Passengers that qualify for a reduced fare or free senior services are issued special STAR cards with their photo on the card.

5.2.2 Smartphone Applications

Smartphone have changed the way we do business, interact with each other and plan our daily commute. The Pew Research Center completed a study of mobile phone ownership in February 2018. They found that most of the American adult population (95%) now own a cellphone of some kind. The share of Americans that own smartphones is now 77%, up from just 35% in Pew Research Center’s first survey of smartphone ownership conducted in 2011. They also found that 84% of American household have at least one smartphone and a third of Americans live in a household with three or more smartphones. They also found that reliance on smartphones for
online access is especially common among younger adults, non-whites and lower-income Americans. More than half of all household in America contain a cellphone but not a landline telephone.

Agencies are starting to move away from a card-based model requiring the distribution of media and collection of cash towards more of a “Bring Your Own Media/Ticket/Device” account-based model.

An online survey run through Mass Transit Magazine in mid-2016 found that 87% of transit agencies have either implemented or are planning to implement mobile ticketing, and mobile ticketing is expected to be the leading fare ticketing option by 2021. The trend of moving to mobile convenience for customers helps to reduce the load on platform equipment.

JTA currently utilizes mobile QR Code Payments through the MyJTA app. The MyJTA app is powered by Passport allowing riders to plan their trips, track JTA transit and pay for their bus pass.

Quick Response or QR codes are most often used in smartphone applications today. The QR may be verified by visual or flash pass methods or by a QR reader. Other applications may use near field communication (NFC) enabled smartphones or another contactless device. NFC utilizes radio frequency (RF) to exchange data securely just like smart cards and operate with the same card readers. There are also several other mobile technology approaches in development that does not require the passengers to initiate an activity on their phones.

**PEER EXAMPLES**

**SFMTA** – Awarded to GlobeSherpa/Moovel. In 2015, San Francisco Municipal Transportation Agency began a new smartphone application for purchasing and using transit fares across the Muni system. The SFMTA Mobile App will allow transit riders to purchase, store, and use tickets to ride the Muni system using a smartphone and an e-commerce website. Users are able to store a debit or credit card or use PayPal to purchase tickets. SFMTA Transit Fare Inspectors verify mobile fares using a separate hand-held mobile device.

**Metra** – Awarded to Cubic/GlobeSherpa. Metra, the commuter rail division of the Illinois Regional Transportation Authority that serves Chicago and its metropolitan area, recently implemented mobile ticketing with the Ventra app. Commuters have the option to purchase mobile tickets to pay on-train fares using their smartphones linked with a credit or debit card, or a Ventra account. The app also incorporates features such as add transit value, load passes onto Ventra cards, check balances and receive real-time account alerts.
5.2.3 All-In-One Card or Application

The transit and transportation industries have begun to shift their focus to utilizing an “all-in-one” and/or multi-modal card or application for added customer convenience and to promote the use of public transportation and services.

The Northeast Florida region is in a unique position to examine various transportation services as a regional enterprise and manage it with common goals of enhanced mobility, decreased congestion, and improved access to transportation services. Cost sharing is an obvious way to create interest and to present an equitable option. As a start, the regional partners could consider looking outside of their immediate service area to include the ITS applications of sister organizations to include systems such as 511 systems, traffic apps, parking applications, etc. This approach entices consumers by providing an all-inclusive view of traffic congestion, parking availability, and transit locations/schedules. Coupled with the convenience of emerging mobile payment solutions, consumers are then provided with an incentive to move toward public transportation options.

Additionally, there are now several mobile applications available to enhance the customer experience. These include Transit App, Citymapper, Moovel, which integrate multiple transit modes (bus, rail, bike-share, ride-share, taxi, etc.) to provide customers with point-to-point travel options and arrival/departure information based on their location, and Swyft, which is a crowd-sourcing application where customers can provide real-time information on any delays or issues.

Integrated Apps (also known as Super Apps) provide superior convenience and flexibility to customers and may include:

- Fare-payment
- Real-time bus location information
- Multi-modal trip planning
- Fare promotions and coupons
- Bike share “access key”
- Service alerts
- Weather alerts
- Special events

Account based systems allow for tie in of first/last mile providers such as: Uber, Lyft and Sidecar. These shared modes compliment public transit and enhance mobility.
5.2.4  SMS Ticketing (Text Messaging)

A short message service (SMS) ticket can be purchased and sent via text to a phone – their own or to a friend or family member. This service is used across the globe and as near as Star Metro in Tallahassee and MCAT in Manatee County Florida. This service allows a passenger to receive a text message from the transit agency with a code for the type of pass the passenger has purchased or that has been purchased for the passenger. The message includes fare or pass type and expiration details. This is a flash pass approach, since the ticket information is displayed on the rider’s mobile device. A smart phone is not required for this technology. A SMS ticket can be delivered to any cell phone that can send and receive text messages.

5.2.5  Bluetooth Low Energy (BLE)

Another new technology that has emerged in transit is Bluetooth Low Energy (BLE), or beacon technology. This allows for fares to be collected via a beacon installed on a vehicle, so the customer just needs to board the vehicle and their fare is automatically charged to whatever card or device they are using. This is still in its early stages and requires some sort of proof of payment. Currently, it’s difficult to decipher
between deliberate misuse by a customer and technical failure. Once these issues are ironed out, it may be a feasible technology.

An example of how BLE works:

Step 1: Passenger sees the bus approaching; opens the phone app; selects bus and “checks in”
Step 2: The journey is detected and all bus stops along the journey are recorded
Step 3: Passenger disembarks, app loses connection to the bus and app “checks out” passenger
Step 4: The journey data and fare prices are calculated in the back office. Passenger receives email or text with bill for the journey

### 5.2.6 Wearables Fare Media

An emerging trend in Europe is a transit “wearable”. This technology is a multi-purpose, NFC-enabled wearable device (wristband, watch, key fobs etc.) that may integrate with health and activity tracking applications (e.g. Fitbit). Wearable devices can be useful for school children or riders with limited dexterity.

Description of the images, clockwise from top left: (1) Singapore’s wearable that doubles as transit pass and a smart health and fitness device; (2) London’s Oyster pass in a wearable RFID watchstrap widget; (3) Tokenize’s token smart rings with NFC and Bluetooth connectivity may be used at 50 public transit companies worldwide (4) Adidas and Berlin’s transport authority released a specially designed pair of sneakers that doubles as a train pass.
5.3. **Innovative Fare Pricing**

New technologies have provided opportunities for transit agencies to offer innovative fare pricing. TriMet in Portland Oregon was one of the first transit agencies in America to adopt a fare payment policy called fare capping or pass earning. New York, Houston and Tampa Bay have all adopted the fare capping policy. This policy resolves the issue of low-income riders paying more for transit than those with higher incomes because they cannot afford to pay the large up-front cost of a “value pass”.

In a fare capping system, the passenger will tap the fare media each time they board a transit vehicle. The back-office account-based system tracks the number of taps and charges the passenger the best fare option. Once the number of taps equals the cost of a day pass, all additional trips that day are free. Once the number of taps equals the cost of a monthly pass, the passenger may ride free for the rest of the month.

Another innovative fare pricing method is call “Guaranteed last ride or negative balance. This method guarantees a ride regardless of the remaining value in the account. This will allow a passenger to ride if the fare reader reveals that the passenger has insufficient value for that trip. A negative balance up to the value of a single ride is permitted. The next time the passengers loads funds into the account, the amount owed for that ride is deducted.
6. Recommendations

A regional goal is that the transportation providers in the Northeast Florida continue to coordinate their services, service delivery, and create a formalized coordinated transportation service and regional fare. The providers recognize that fare collection is a necessary aspect of operating a public transit system. However, there must be a way to make fare collection more convenient for our passengers and less costly for the providers. The recommended steps to develop a regional fare system including service cost sharing program are included below:

6.1. Implement a Governance Structure and Agreements

The most important aspect for a successful program was found to be fostering trust among the transportation providers. In the case of Northeast Florida, the participating entities have an established excellent working relationships and trust. The transit agencies should build from the existing relationship as a Regional Transit Coordinating Committee and establish a governance committee. This committee structure should allow for equitable participation in developing a regional fare, cost sharing framework and associated technologies.

As the largest transit agency in the region and as the agency with a fully staffed information technology team, the JTA should be named as the Lead Transit Agency for the fare collection project. The governance committee should support the JTA in this project by assisting in the creation of the Memorandums of Understanding which describes service cost, revenue sharing and other aspects of the program. The agreement, the cost sharing model and provider shares should be reviewed annually with respect to actual costs and revenues as determined based on the previously conclude operating year. The cost sharing model should be revised to reflect a balance of both real-world costs and targets for revenues and costs for the next operating year. The goal, after a period of 1-3 years of operating history, should be to identify a regionally accepted cost basis for services and revenue sharing of applicable funding, including a fair allocation of regional fares based on ridership and other relevant operational factors not otherwise covered via service cost reimbursement.

6.2. Develop Cost-Sharing Model

The transportation providers should utilize a cost-sharing model to identify costs of current services and determine the percentage of services provided by county served. It is recommended that administration, reservations, dispatch, and billing costs be included in the reimbursement rates.

The cost-sharing model needs to recognize the requirement to balance the shared costs and benefits associated with the regional trip. The proposed cost-sharing model recognizes the role of the rider and cost sharing for “home county” service provider and “non-home county” service provider. The basis for the cost-sharing model is an 80/20 split of the operating costs incurred to provide the service based on and generated by the scheduling system (this is how official costs and billings are generated). The cost allocation would assign 80% of the cost of the operating
the trip to the county operating the service and 20% to the county that booked the trip. The functional elements for the agency-to-agency revenue/cost-sharing model is described below:

**Proposed Regional Cost Sharing Model:**

**Fixed/flex route cost sharing**
- Agency providing the trip retains fare
- Proceeds of regional fare passes (if any) sold by a transit provider will be held by the transit provider and credited against sums due to the transit provider in reconciliation
- Each participating agency pays portion of unfunded program costs (credit card processing fees, application fees, etc.) based on percentage of total usage/ridership

**Paratransit cost sharing when transporting non-“home” county rider**
- Rider pays “home county” fare (same as today) by using cash or the new fare technology
- Fare is retained by service provider
- The “home county” provider reconciles trip and bills the applicable funding source
- System generates monthly service delivery and reconciliation reports
- Service provider receives 80% of the operating cost of each “non-home” county trip it provided
- “Home county” provider retain 20% of the operating cost to cover efforts associated with trip booking, scheduling, post trip back office reconciliation and billing

### 6.3. Coordinate Fare Policies

The review of peer systems validates that coordination on fare policy was essential prior to the adoption of a regional fare system. While the back-end processing was shown to accommodate varying fare structures, marketing an inequitable fare program is problematic.

It is recommended that the transit agencies simplify and coordinate fare policies. This does not mean that all fares must be the same rate. Only that the policies should be established in a consistent manner. For example, the categories and definitions of discounted fares should be similar as well as the definition and treatment of transfers.

The coordinated policies should include provisions for innovative pricing such as fare capping and loyalty programs once the technology is in place to facilitate it.

The proposed policies will be presented to local coordinating board, agency boards and members of the public before they are adopted. This should occur prior to the implementation of technology.

### 6.4. Procure Emerging Technology while Utilizing Existing Technology

Account-based ticketing in a “all-in-one” smart phone application will provide the region with the highest degree of flexibility and convenience while remaining the most economical for each of the partners. The technology should utilize the existing technologies shared in the region such as the TransPortal regional trip planning application and the Trapeze paratransit and flex route
scheduling software. Ultimately, it should also link to real-time passenger information and other modes of transportation services.

The JTA should lead the procurement process for the new technology. The RFP should be fare media agnostic to allow companies to provide the latest technology and open the project up to innovation and the latest tools.

The major transfer hubs across the region should be equipped with charging stations and free WiFi for passengers and for the fare validators to update their apps.

6.5. Implement the new Fare Collection System

Integration into the coordinated fare collection system should occurred incrementally to minimize risk of disruption and improve potential for a smooth and successful start-up. A phased approached should be taken by:

- Extensively marketing the program throughout the implementation process
- Testing the technology at the JTA with their team of Information Technology staff
- Expanding the testing to a select group of passengers
- Implementing the technology with a second provider
- Testing with that provider’s select group of passengers
- Analyze test results, data, reimbursements and other aspects of the multi-agency program
- Recalibrate or renegotiate the program rules, policies or procedures, if necessary
- Implement the technology with third provider and passengers, test and recalibrate if necessary
- Continue until all providers in the region have been brought onboard

*Figure 5: Coordinated Regional Fare Payment*
7. Appendix A: Definitions of Terms

**Account Based Ticketing (ABT):** is a system in which the ticket or fare card value is no longer stored on the fare media. The card or device becomes simply a user identifier which is matched to an account in a centralized system.

**Back-end:** the process in which the central computer system processes any fare calculation, fare collection, and/or fare payment transactions.

**Card-based:** a transit fare payment system in which fare value is carried on the fare media itself.

**Central agency computers:** the transit agency computer system that manages its fare payment system. The central computers collect and process data from front-end devices to manage all aspects of fare calculation, fare collection, and fare payment. They also exchange information with front-end devices about authorized and/or unauthorized fare media, system health and other aspects of system operation. The central agency computers may also collect ridership data from front-end devices.

**Closed payment (closed loop) system:** a transit fare payment system that uses fare media that can only be used within a single transit system or partnership of transit systems. All proprietary fare payment systems are closed loop systems.

**Fare media:** The instruments (cash, token, ticket, fare card, mobile device, etc.) accepted by a transit system to grant riders access to transit services.

**Front-end:** the transit system devices (card readers, fare boxes, fare gates, validators, barriers) that interact with a transit rider and a rider’s fare medium and/or payment medium at the point of-entry into the transit system. Ticket vending machines and other ticket sales mechanisms such as internet websites are generally considered front-end devices.

**Interoperability:** the capability of a transit fare payment system and its components (such as fare media, card readers, etc.) to work with or use the parts or equipment of another system. Interoperability includes the capacity to exchange information.

**Mobile application:** a software application developed specifically for use on small, wireless computing devices such as a smartphone, rather than desktop or laptop computers. Mobile applications typically require a wireless connection for full functionality.

**Mobile payments:** a point-of-sale payment transaction made through a mobile device (such as a smartphone, “smart watch,” or other smart device), in which the mobile device functions as a contactless payment card.

**Mobile ticketing:** a process whereby a transit rider can order, pay for, obtain and validate a transit ticket using a mobile device such as a smartphone, “smart watch”, or other mobile device. Mobile ticketing is a separate function from mobile payment.
**Open payment (open loop) system:** an account-based transit fare payment system that is able to accept third-party payment media such as bank cards and mobile device as its fare media. All open payment systems are both standards- and account-based systems.

**Smartcard (or smart card):** a transit fare card, bankcard, or identification card or other credential that includes an embedded computer chip and antenna.

**Smartphone:** a mobile phone that can connect to the internet, and receive, download, and transmit data. Most smartphones allow users to download applications (“apps”), and many are equipped with near field communications technology.

**Stored value fare card:** a prepaid fare card that can be programed or “loaded” with a specific dollar value or other prepaid fare options that is then decremented with use.

**System architecture:** the organization of the components of a transit fare payment system, their relationship to each other, and the rules and processes governing their interaction.

**Unbanked household:** a household that does not currently have a checking or savings account (as defined by the FDIC).

**Underbanked household:** a household that has a checking and/or a savings account and had used non-bank money orders, non-bank check cashing services, non-bank remittances, payday loans, rent-to-own services, pawn shops, or refund anticipation loans in the past 12 months (as defined by the FDIC).