

Rhode Island Transit Master Plan

STATE OF THE SYSTEM April 2019

TRANSIT FORWARD 2040 

Acknowledgments

Transit Forward RI will establish a vision to enhance and further develop Rhode Island's passenger transportation network to better meet the near- and long-term mobility needs of our state's residents, workers and visitors. The project is a collaboration between the Rhode Island Public Transit Authority (RIPTA), the Rhode Island Department of Transportation (RIDOT), and the Rhode Island Division of Statewide Planning.

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Table of Contents

1	Introduction.....	5
2	Rhode Island’s Transit Service	11
3	The Market for Transit in Rhode Island.....	55
4	Issues and Opportunities.....	93



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3 Warwick Ave
92 WEST RIC/Federal Hill

92 FEDERAL HILL

RTA
PUBLIC TRANSIT AUTHORITY



① Introduction

Transit in Rhode Island Today

Transit Forward RI 2040

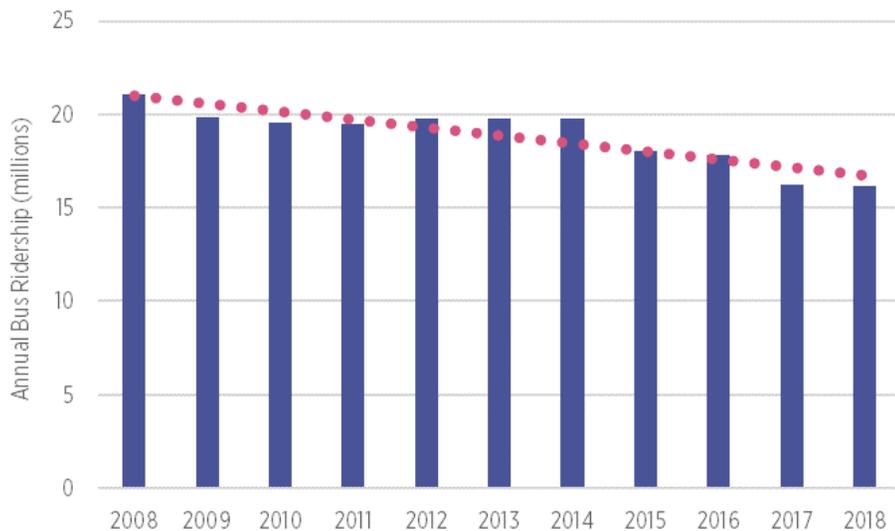
About the State of the System

Transit in Rhode Island Today

Rhode Island is a small state with a robust network of bus, commuter rail, intercity rail, and ferry services. RIPTA provides nearly 17 million bus passenger trips per year, and RIDOT, through a partnership with Boston's MBTA, serves approximately 1.1 million commuter rail passenger trips a year at Providence, TF Green, and Wickford Junction Stations. Seasonal ferry service contracted through RIDOT provides an additional 43,000 passenger trips between Providence and Newport.

Since the end of the Great Recession, transit ridership across most of the United States has been in decline. New travel options such as Uber and Lyft have entered the market, providing people with greater choice. These ride-sharing services can be more convenient than taxis or transit, and are cost competitive in many situations. The expansion of bicycle and pedestrian facilities, combined with bike and scooter share, are also providing new options. Over the same period, transit has generally been in a period of retrenchment and is still recovering from the recession. While a strengthening job market drove a 25% increase in Rhode Island's MBTA ridership between FY2016 and FY2018, RIPTA's ridership declined by 23% between 2008 and 2018, as shown below. Overall, transit utilization in the state is about half the national average.

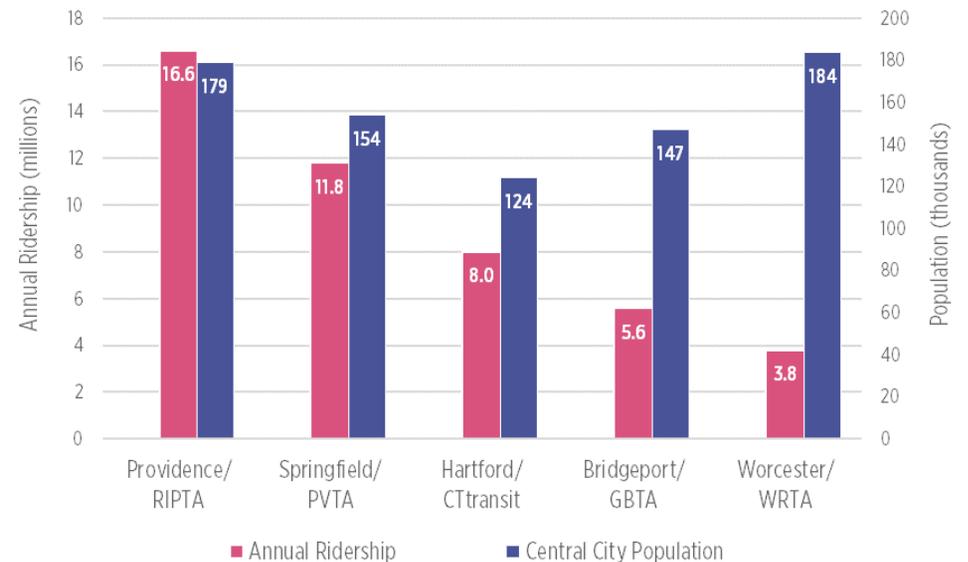
Annual RIPTA Bus Ridership



In spite of these challenges, transit is the second most popular way for people to get around in Rhode Island, and continues to be the most efficient, cost-effective and climate-friendly way to move large numbers of people within urbanized areas. Transit is key to making Rhode Island an even more attractive place to live and work, helping the state attract businesses, connect residents with jobs, retain younger residents, and attract new talent.

Transit Forward 2040 is designed to determine the steps that Rhode Island should take to realize its transit potential and to improve relative to other transportation options. The state starts from a strong position: RIPTA already provides better transit service than most other comparable cities, and MBTA commuter rail and Amtrak services provide excellent connections to Boston and New York City. Providence is the third largest city in New England, broadly similar to Worcester, Hartford, Springfield, and Bridgeport. In terms of bus ridership, RIPTA carries 41% more riders than Springfield's PVTA and 338% more riders than Worcester's WRTA. RIPTA also serves more riders than the transit systems in many larger urban areas, including Kansas City, MO, Nashville, TN, and Indianapolis, IN.

Annual Bus Ridership of Neighboring Agencies



Rhode Island is also served by some of the highest levels of intercity rail service in the United States. MBTA's Providence Line has the highest ridership in its commuter rail system, and Providence Station is consistently among the highest ridership stations outside of Boston. There were nearly 740,000 Amtrak trips at Providence Station in 2017, the 11th highest among 532 Amtrak stations nationwide. These two services provide a foundation for even better regional ties with Boston.

Transit Forward RI 2040



RIPTA and RIDOT desire to refine their transit services for continued relevance and competitiveness in these changing times. Emerging technologies and cultural and policy shifts are challenging transit providers to evolve. Transit Forward is a commitment by RIPTA and RIDOT to be both responsive and proactive in addressing the opportunities of a dynamic transit market.

Transit Forward features four elements to help improve transit service today and in the coming decades:



Vision and Goals

The plan will establish a vision and goals, and define a framework for future transit investments.

Strategies

The plan will identify promising transit corridors and projects, and make recommendations ranging from enhancements to existing bus and rail, to potential new types of service.

Policy Guidance

The plan will offer transit policy guidance to state agencies, municipalities, developers, and other decision-makers who support transit service and are important stakeholders in creating a strong and successful transit system.

Plan for Action

The plan will result in an implementation guide laying out short, mid, and long-term action steps, including funding strategies and recommended phasing of proposed projects.

Transit is critical for Rhode Island both today and in the future because it...



1 MAKES RHODE ISLAND A BETTER PLACE TO LIVE, WORK, AND VISIT



2 ATTRACTS TALENT AND MAKES RHODE ISLAND MORE COMPETITIVE



3 SUPPORTS SUSTAINABLE GROWTH



4 BOOSTS THE STATE'S ECONOMY



5 CONTRIBUTES TO ACTIVE, HEALTHY LIFESTYLES



6 SUPPORTS A HEALTHY ENVIRONMENT



7 SUPPORTS ACCESSIBILITY, AFFORDABILITY, AND MOBILITY BEYOND THE AUTO



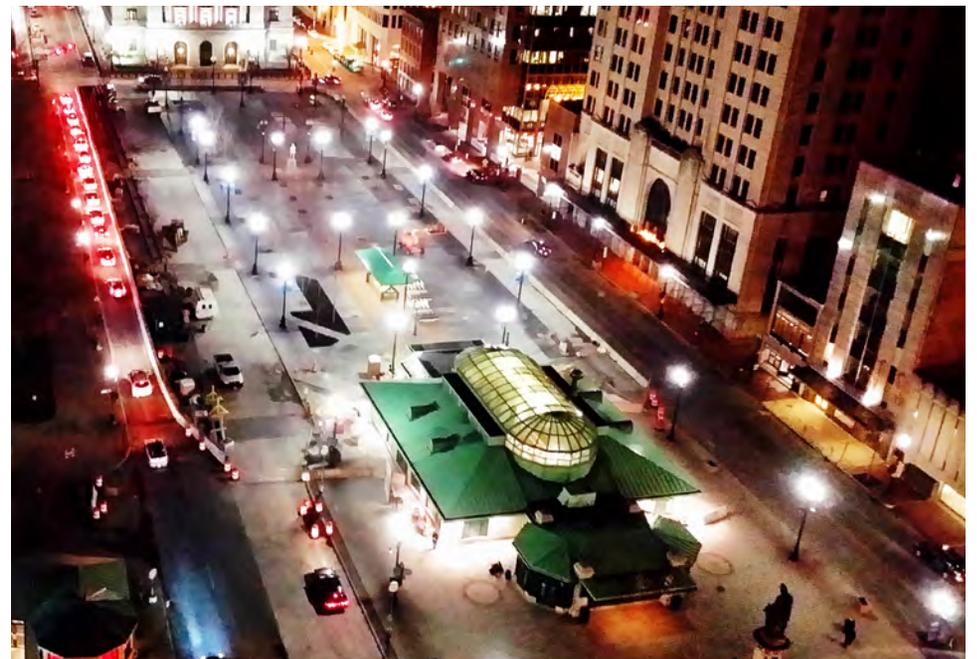
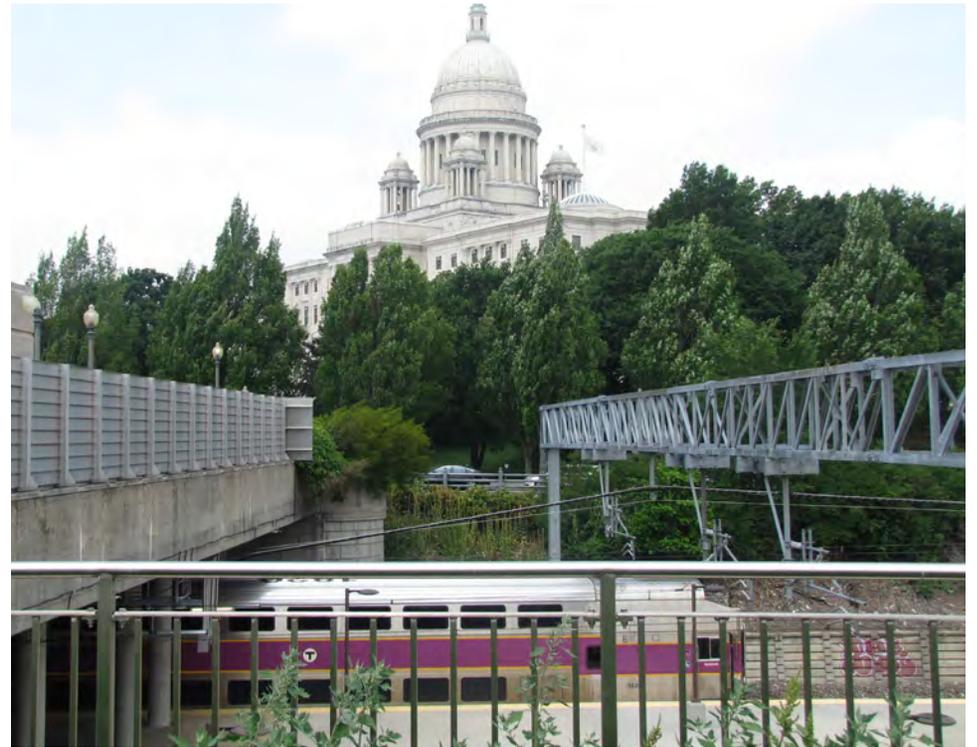
8 HELPS PEOPLE LIVE INDEPENDENT LIVES

About the State of the System



This State of the System report provides a starting point for Transit Forward, the effort to develop a Transit Master Plan for Rhode Island. It provides an overview of:

- Current transit services and operating characteristics
- Major transit facilities
- Current ridership levels by service type, route, and stop, as well as recent ridership trends
- A market analysis that examines the underlying demand for transit service through 2040
- A “gaps analysis” that examines how well existing transit services meet current and future demand
- A description of issues, opportunities, and next steps



222 PONTIAC AVE

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ospital, Newport Hospital



KNEELING



RAMP





② Rhode Island's Transit Service

- Service Network Overview
- Transit Facilities
- Transit-Oriented Development
- Ridership
- Transit Funding in Rhode Island

Service Network Overview

Rhode Island is home to 1.05 million people and nearly 450,000 jobs, and relies on a strong transit network to connect people with opportunities across the state and in regional centers like Boston. Today, Rhode Islanders are served by a public transportation network that includes bus, commuter rail, and ferry services. The following chapter provides an in-depth look at the services, facilities, and performance of the myriad transit services that connect people, jobs, and destinations across Rhode Island.

The Rhode Island Public Transit Authority (RIPTA) operates a network of fixed-route bus service across the state, in addition to "Flex Service" zones and paratransit service. The Rhode Island Department of Transportation (RIDOT) partners with the Massachusetts Bay Transportation Authority (MBTA) to provide commuter rail service in Rhode Island, with daily service to Providence Station and weekday service to T.F. Green Airport in Warwick and Wickford Junction Station in North Kingstown. In 2016, seasonal ferry service between Providence and Newport was launched with funding support from RIDOT. In addition, regional and intercity transportation options are provided by Amtrak's Northeast Regional and Acela services and by several intercity bus operators.

- 53 Bus Routes
- 7 Flex Service Zones
- 1 Commuter Rail Line
- ▶ Amtrak Northeast Corridor Service
- 1 Publicly Supported Ferry Route
- ▶ Statewide Paratransit Service
- ▶ Intercity Bus Connections



Network Design

Transit services in Rhode Island are predominantly oriented toward serving trips to and from Providence. RIPTA's fixed-route network is mostly designed as a hub-and-spoke system, with service oriented toward its central transit hub at Kennedy Plaza in downtown Providence. Of the system's 53 fixed routes, only 11 do not travel to downtown Providence, including one Key Corridor route and 10 Local routes. Instead, these routes provide connections between outlying hubs and provide "crosstown" service in communities including Pawtucket, Newport, Warwick, Woonsocket, and parts of South County. Routes that do not operate to downtown Providence include:

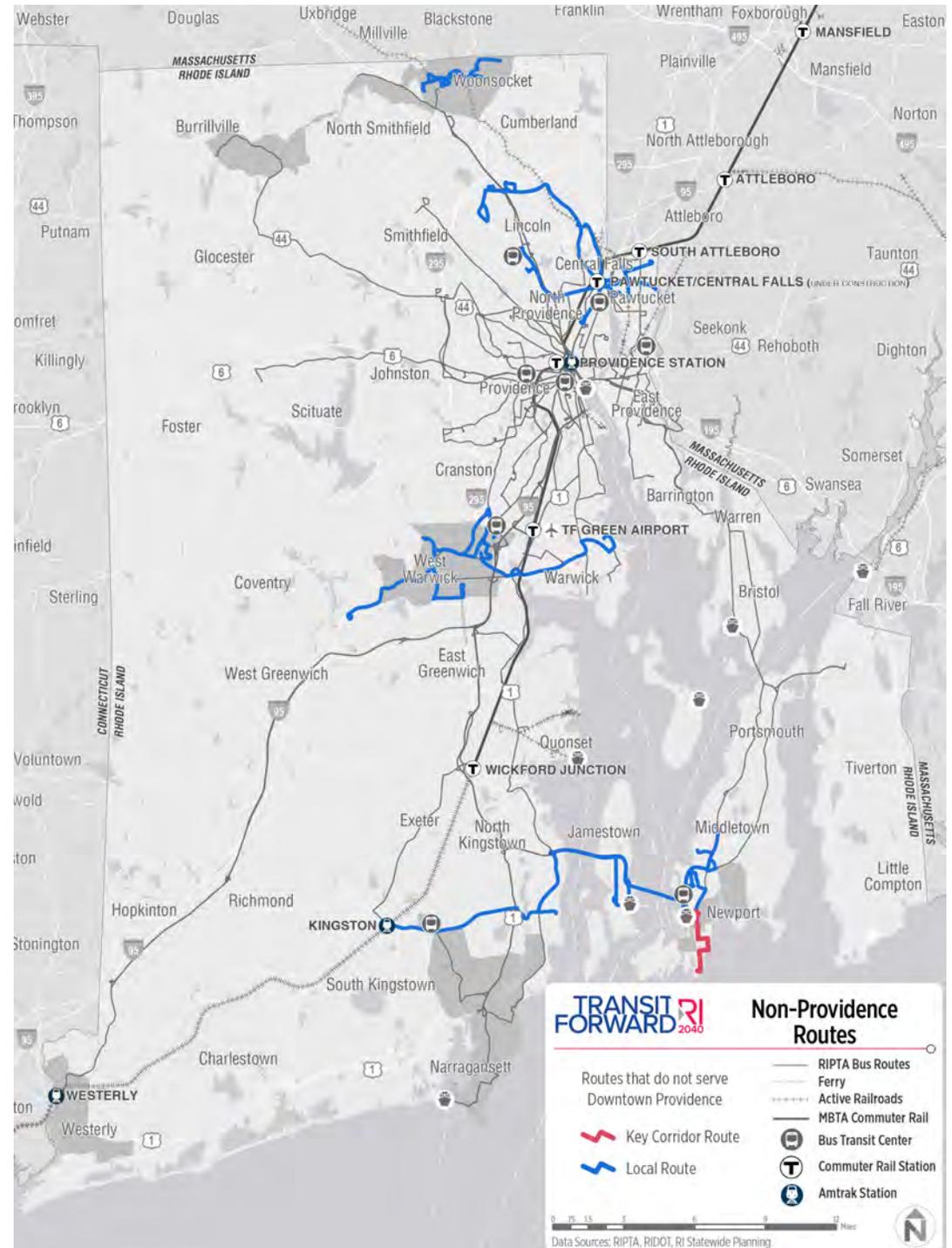
- 13 Coventry - Arctic - Warwick Mall
- 29 Coweset - Kent County
- 63 Broadway - Middletown Shops
- 64 Newport - URI Kingston
- 67 Bellevue - Salve Regina University (*Key Corridor route*)
- 71 Broad Street - Pawtucket Avenue
- 73 Mineral Spring - Twin River - CCRI
- 75 Dexter Street
- 76 Central Avenue
- 80 Armistice Boulevard
- 87 Fairmount - Walnut Hill

MBTA commuter rail is oriented towards serving Boston. Service stops at Providence Station, at T.F. Green Airport in Warwick, and Wickford Junction in North Kingstown. Passengers can transfer between select RIPTA routes at these locations.

Bus Service

RIPTA operates 53 fixed routes and seven Flex routes that serve communities across the state. The map to the right shows RIPTA's bus services across the state; more detail of the Providence metro area is shown on the following page. Six types of services are provided:

- Rapid Bus (1 route)
- Key Corridor (9 routes)
- Local (30 routes)
- Regional (5 routes)
- Express (8 routes)
- Flex (7 routes)



Rapid Bus

The R-Line is RIPTA's first and only branded Rapid Route. A combination of the previous Routes 11 and 99, the R-Line serves the high-ridership corridor of Broad Street and North Main Street through Providence and Pawtucket, via Kennedy Plaza, Providence Station, and the Pawtucket Transit Center. The route operates every 10 minutes during the day and every 20 minutes into the evening, and runs from 5:00 AM until 1:00 AM.

RIPTA commits to frequent and fast service on its R-Line Rapid Bus route:

THE R-LINE: ALWAYS THERE

R-Line buses come so often, you don't need a timetable. Just show up to your closest R-Line stop and a bus will arrive shortly to take you on your way. You don't need to rely on a schedule or worry about catching a particular trip.

- Service at least every 10 minutes during the busiest morning, mid-day, and evening travel hours.
- 20 minute service during nights and 15-20 minutes during weekends
- Full service seven days a week!

SIMPLE AND EASY TO USE

- The bus always follows the exact same route coming and going, just like a train.
- R-Line Buses and Stops include large maps of the routes showing all the stops and destinations.

MOVE MORE, STOP LESS

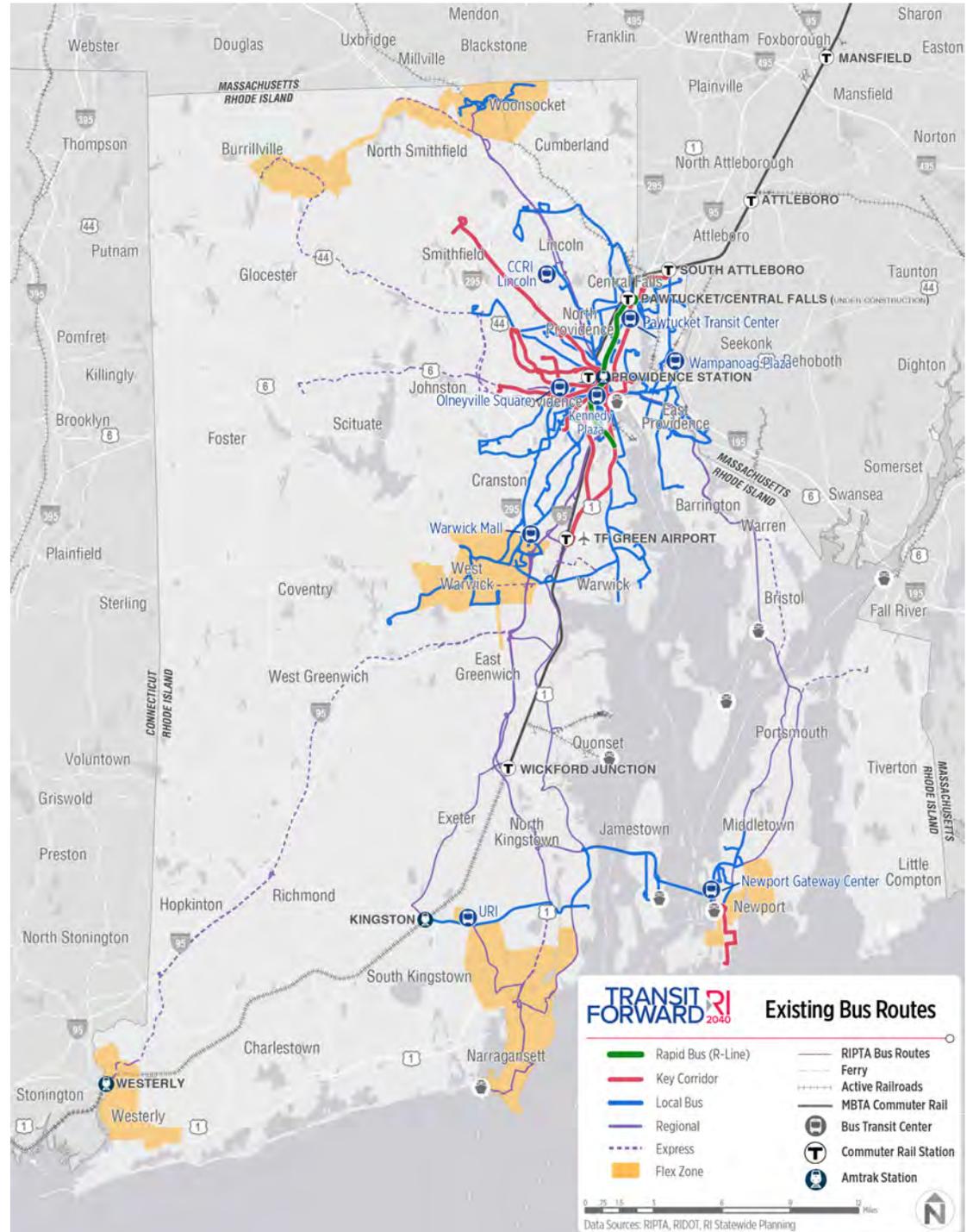
R-Line stops are being placed where most riders gather, within easy walking distance along the corridor. RIPTA worked with the neighborhoods along the lines to choose the best places for stations.

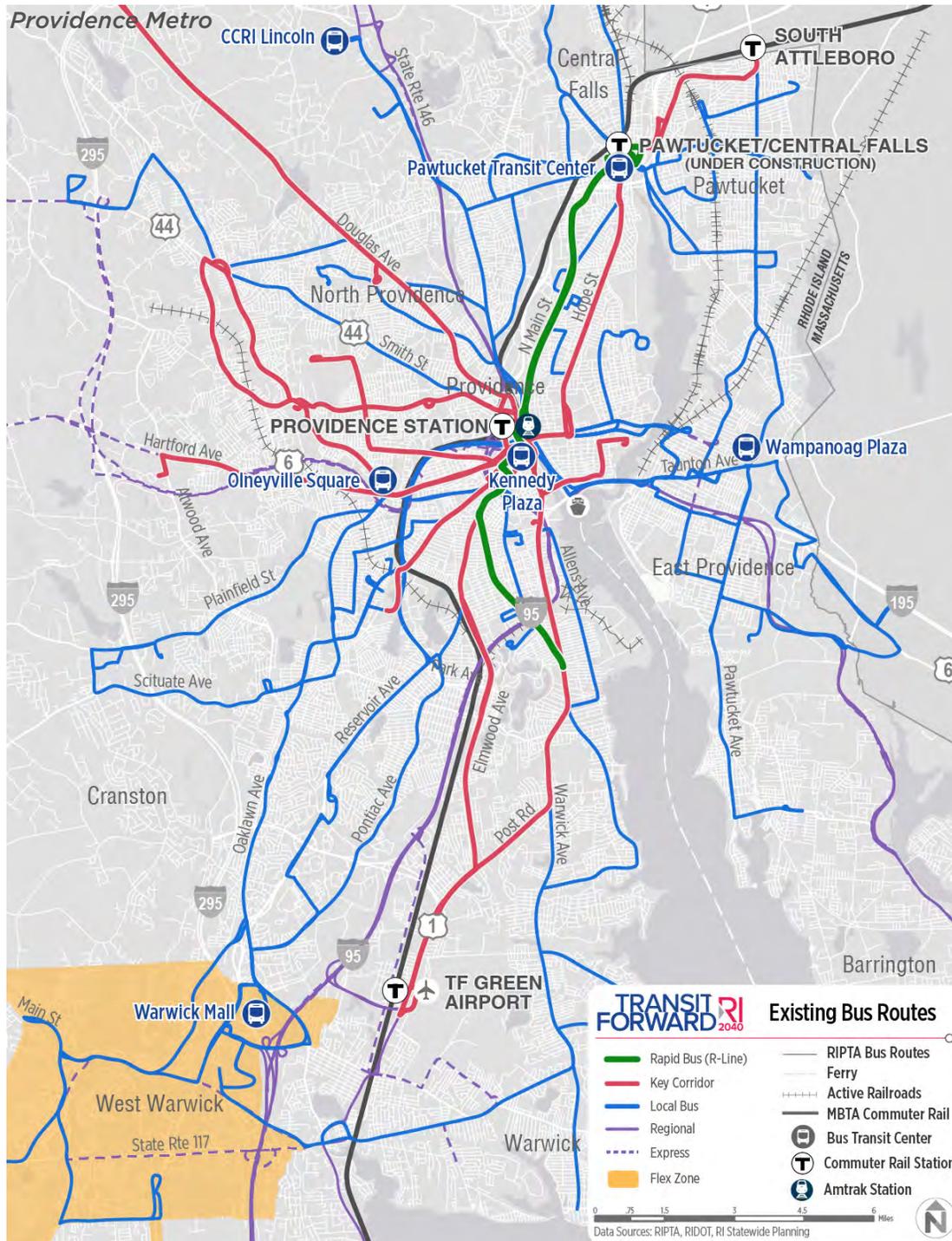
- Roadway improvements such as bus striping and queue jumps keep buses moving, even in heavy traffic.
- R-Line buses send signals to traffic lights, so green lights stay green longer or red lights switch to green faster.

Key Corridor

Nine routes are currently designated as Key Corridor routes. These routes are generally RIPTA's highest ridership and/or most productive routes and form the "backbone" of the RIPTA system, operating along major corridors and offering simple, straight, and direct service. Key Corridor routes generally have frequent service (20 minutes or better) during the core part of the service day from 6:00 AM to 6:00 PM. These routes are:

- 1 Hope - Eddy
- 20 Elmwood Avenue - T.F. Green Airport
- 27 Broadway - Manton
- 28 Broadway - Hartford
- 31 Cranston Street





- 50 Douglas Avenue
- 56 Chalkstone Avenue
- 67 Bellevue - Salve Regina University
- 92 RI College - Federal Hill - East Side

Local

Just over half of RIPTA's fixed route network consists of local routes. These 30 routes operate on both major corridors and local streets, and provide a range of service levels in terms of both frequency and service span. Most local routes are concentrated in the Providence metro area, although local service also operates in Woonsocket, Newport, and parts of South County. Ten local routes do not connect to Kennedy Plaza in downtown Providence. RIPTA's local routes are:

- 3 Warwick Avenue
- 6 Prairie Avenue - Roger Williams Park Zoo
- 13 Coventry - Arctic - Warwick Mall
- 17 Dyer - Pocasset
- 18 Union Avenue
- 19 Plainfield - Westminster
- 21 Reservoir - Garden City
- 22 Pontiac Avenue
- 29 Coweset - Kent County
- 30 Arlington - Oaklawn
- 32 East Providence - Wampanoag
- 33 Riverside
- 34 East Providence
- 35 Rumford - Newport
- 40 Butler - Elmgrove
- 49 Camp Street - Miriam Hospital
- 51 Charles Street
- 55 Admiral - Providence College
- 57 Smith Street
- 58 Mineral Spring - North Providence
- 63 Broadway - Middletown Shops
- 64 Newport - URI Kingston

- 71 Broad Street - Pawtucket Avenue
- 72 Weeden - Central Falls
- 73 Mineral Spring - Twin River - CCRI
- 75 Dexter Street
- 76 Central Avenue
- 78 Beverage Hill Avenue - East Providence
- 80 Armistice Boulevard
- 87 Fairmount - Walnut Hill

Regional

Regional routes provide service between Rhode Island's major regional centers, such as Woonsocket-Providence, Newport-Providence, and URI-Providence. These are longer-distance routes that serve to tie much of the state together, and most of these routes operate during most of the regular service day on weekdays and on weekends. RIPTA currently operates five Regional routes:

- 14 West Bay
- 54 Lincoln - Woonsocket
- 60 Providence - Newport
- 62 URI
- 66 URI - Galilee

Express/Commuter

RIPTA operates eight Express routes, which are designed primarily to provide commuter service to and from downtown Providence. Express routes typically make stops at designated areas such as park-and-ride facilities and regional transit centers, then travel non-stop to downtown Providence via highways. These routes generally operate on weekdays only, and many operate only a small number of trips during peak periods. Express routes include:

- 8X Jefferson Boulevard Park-n-Ride
- 9X Pascoag Park-n-Ride
- 10X North Scituate
- 12X Arctic / 117 Express Park-n-Ride
- 59X North Smithfield - Lincoln Mall
- 61X Tiverton - East Bay Park-n-Ride



- 65X Wakefield Park-n-Ride
- 95X Westerly Park-n-Ride

Flex

RIPTA's Flex service generally serves low-density and rural areas. Passengers can catch the bus at a number of scheduled time points within each zone or they can call RIPTA in advance of a trip to request a pick-up time and location. Flex vehicles do not travel outside of their designated zone, but do connect with regular fixed-route services for travel outside of zones. Designated Flex zones include:

- 203 Narragansett Flex
- 204 Westerly Flex
- 210 Kingston Flex
- 231 South Aquidneck Flex
- 242 West Warwick - Coventry Flex
- 281 Woonsocket Flex
- 282 Pascoag - Slatersville Flex

Paratransit

The RIde Program is Rhode Island's federally-mandated ADA paratransit service. This is a demand-response service operated by RIPTA within three quarters of a mile of all fixed routes. Approximately 325,000 trips were scheduled and dispatched through RIPTA's RIde call center in 2017.

Commuter Rail

The Massachusetts Bay Transportation Authority (MBTA) operates commuter rail service across the Boston metropolitan region. MBTA's Providence/Stoughton Line connects Providence, T.F. Green Airport, and Wickford Junction to Boston, with stops at South Station in downtown, at Back Bay Station, and at Ruggles Station, which has bus and shuttle connections to Boston's Longwood Medical Area.

On weekdays, 20 round trips operate from 5:00 AM until 1:10 AM. Half of these trips operate between Wickford Junction and Boston, and also serve T.F. Green Airport and Providence Stations. The other half only operate between Providence and Boston. On Saturdays, service to Providence runs from 6:35 AM until 12:15 AM, operating nine round trips. On Sundays, service runs from 11:00 AM until 12:15 AM with seven round trips. Service does not operate to T.F. Green Airport or Wickford Junction on weekends.

Amtrak

Amtrak serves three stations in Rhode Island. Providence Station is served by both the Northeast Regional and Acela Express routes. The Northeast Regional travels from Boston to Virginia Beach, VA, via New York City and Washington, DC, with the majority of southbound trips terminating in Washington. The Acela Express provides express service between Boston and Washington, and operates on a faster timetable than the Northeast Regional.

Kingston Station in South Kingstown and Westerly Station located in Westerly are served by Amtrak's Northeast Regional service only.



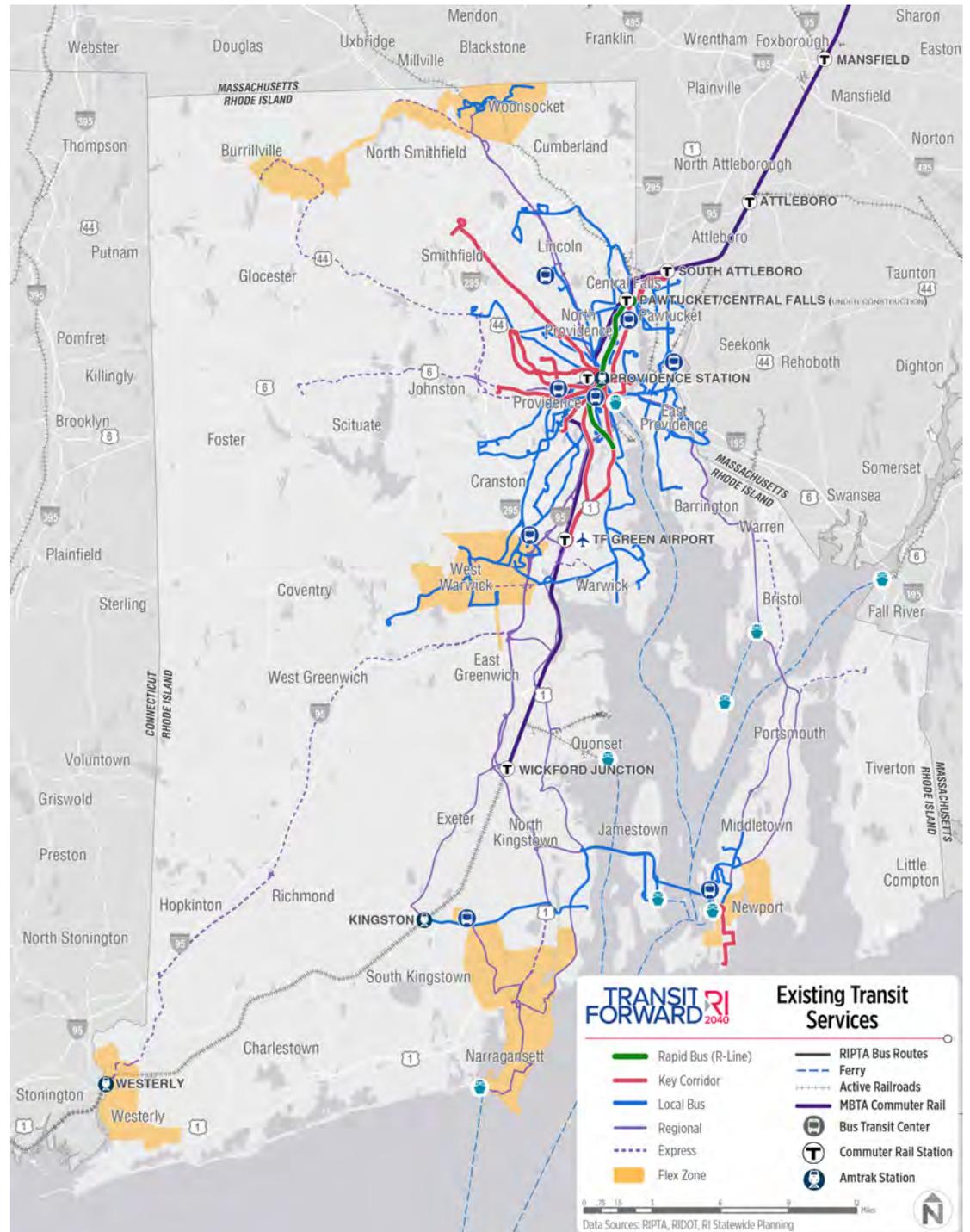
Water Transportation

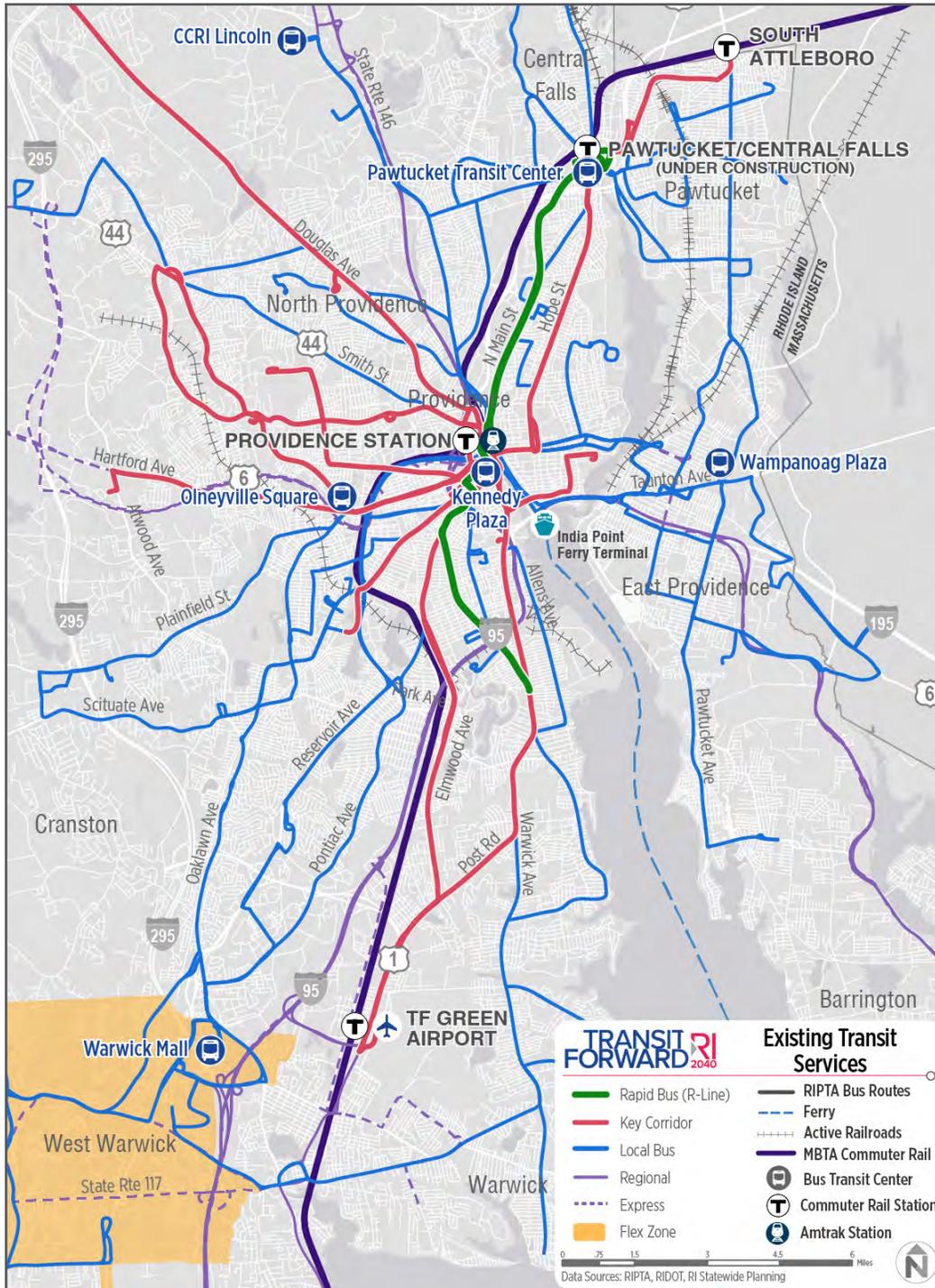
Publicly-Supported: Providence–Newport

Publicly-supported seasonal ferry service began operating between Providence and Newport in the summer of 2017, operating between the India Street ferry terminal in Providence and Perrotti Park in Newport. The season was extended for the 2018 season, operating from May 25 (Memorial Day weekend) through October 8 (Columbus Day).

During the peak of the season (mid-June through early September), service operates three round trips Monday-Wednesday, four inbound trips (to Providence) and five outbound trips (to Newport) on Thursday and Sunday, and five round trips on Friday and Saturday. During the rest of the season, service operates two daily round trips Monday-Friday, and three daily inbound trips and two outbound trips Saturday and Sunday.

RIDOT supports operating costs for the service using federal transit funds. The service is currently operated by SeaStreak.





RIPTA provides nearly 17 million bus passenger trips per year, and RIDOT, through a partnership with Boston's MBTA, provides approximately 1.1 million commuter rail passenger trips a year at Providence, TF Green, and Wickford Junction Stations. An additional 43,000 passenger trips are provided by seasonal ferry service contracted through RIDOT.

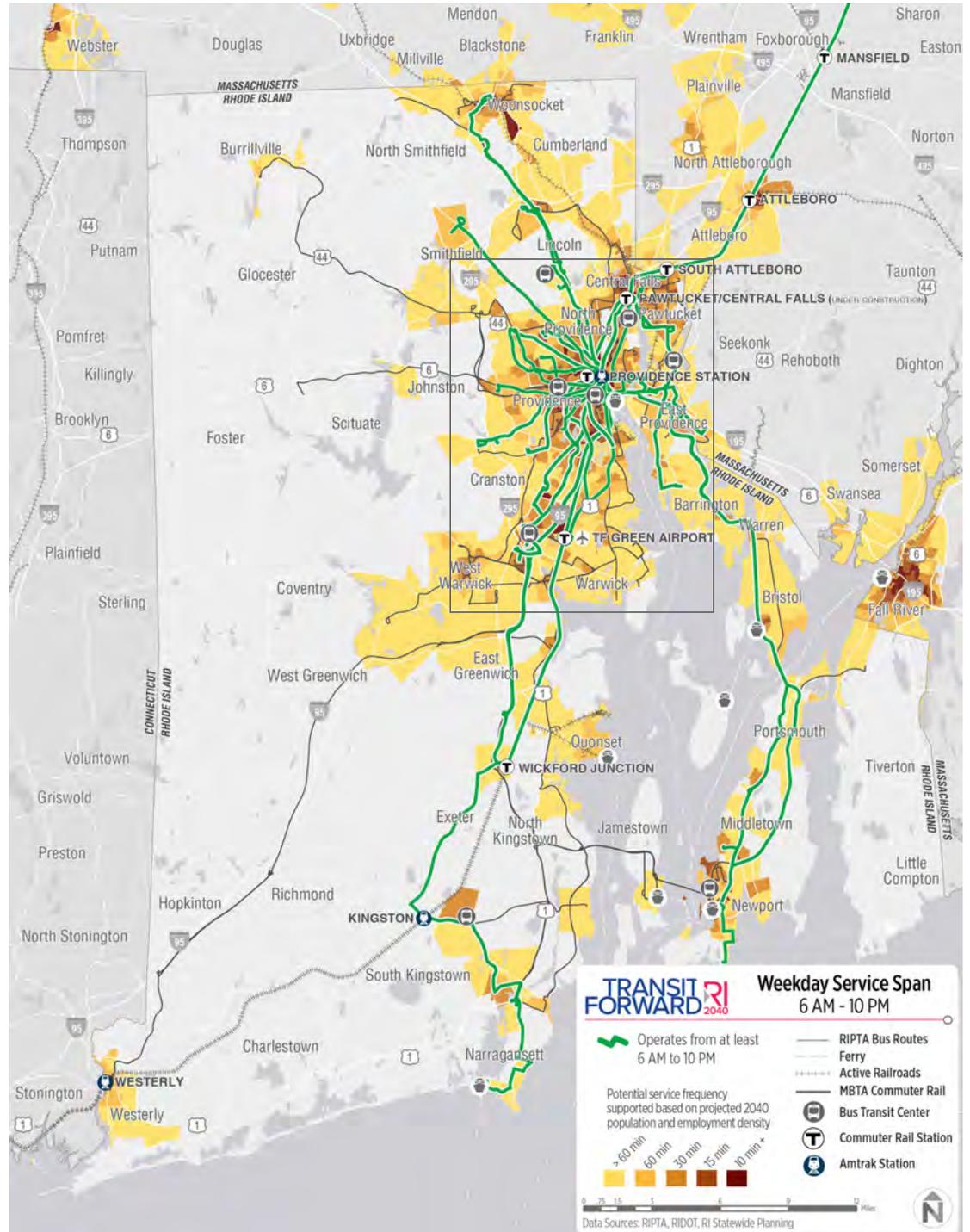
Some Routes Operate for Long Hours, But Most Do Not

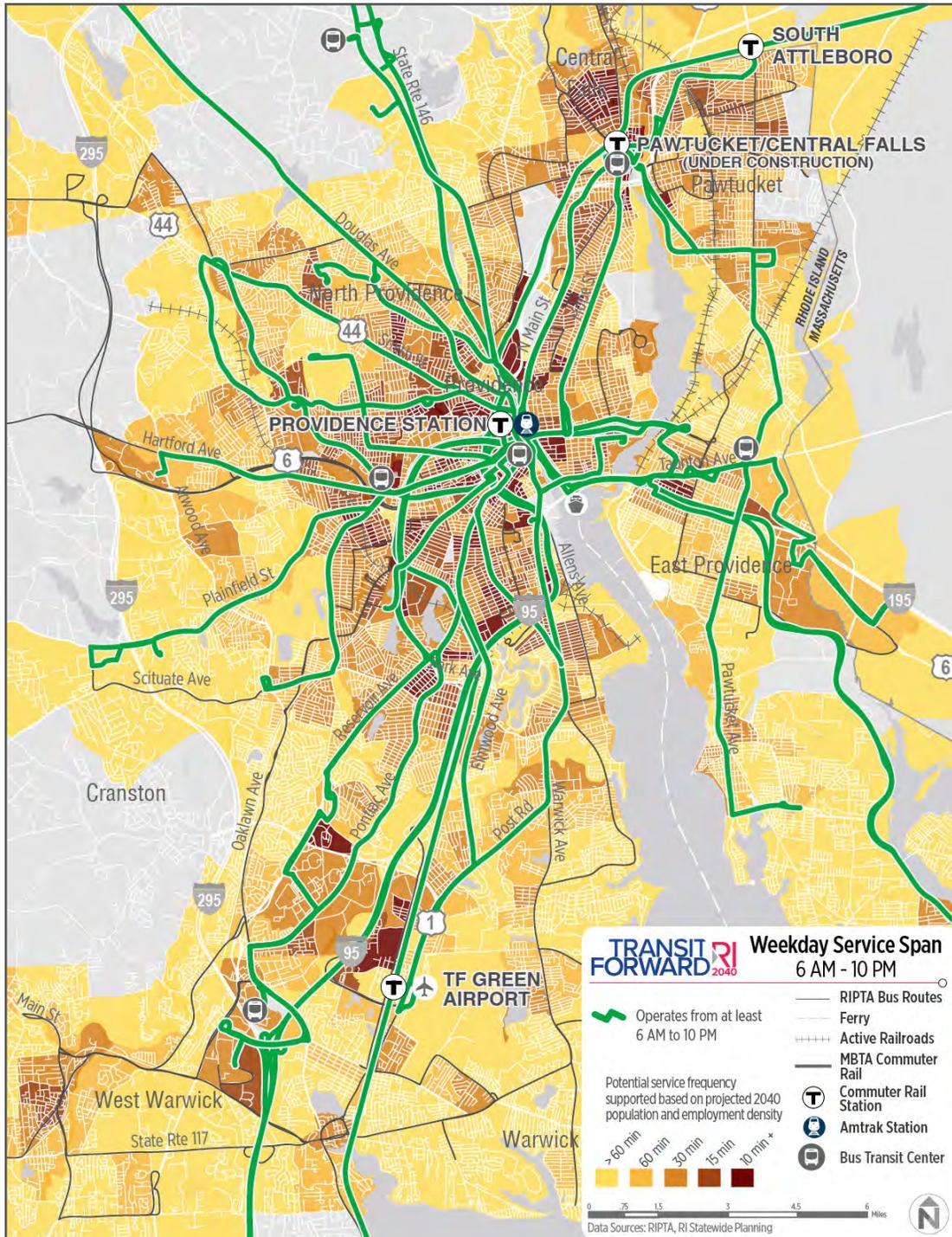
The span of service – the hours that a service operates during the day – is a major factor that strongly influences the convenience of a transit system. Service that runs for a longer span is more convenient, allowing people to travel when they want.

On weekdays, only 22 routes – or 42% of RIPTA's fixed-route network on weekdays – run from at least 6:00 AM to 10:00 PM, providing a minimum span of service for riders. This minimum network includes the R-Line, eight of the nine Key Corridor routes, and three Regional routes, in addition to regular local services. The routes providing a minimum span of service are:

- The R-Line
- 1 Hope-Eddy
- 17 Dyer-Pocasset
- 19 Plainfield-Westminster
- 20 Elmwood Ave-T.F. Green
- 21 Reservoir-Garden City
- 22 Pontiac Avenue
- 27 Broadway-Manton
- 28 Broadway-Hartford
- 31 Cranston Street
- 33 Riverside
- 34 East Providence
- 50 Douglas Avenue
- 51 Charles Street
- 54 Lincoln-Woonsocket
- 55 Admiral-Providence College
- 56 Chalkstone Avenue
- 57 Smith Street
- 60 Providence-Newport
- 66 URI-Galilee
- 78 Beverage Hill Avenue-East Providence
- 92 RI College-Federal Hill-East Side

Note: Potential 2040 service frequency is derived based on forecasted 2040 population and employment density adjusted by socioeconomic characteristics.





22 RIPTA routes and MBTA commuter rail operate from at least 6:00 AM until 10:00 PM on weekdays.

Few Routes Have Very Early Morning Service

Four RIPTA routes run during the entirety of the very early morning period, beginning service at or before 5:00 AM:

- The R-Line
- 13 Coventry - Arctic - Warwick Mall
- 14 West Bay
- 60 Providence - Newport

In addition, MBTA service begins operating during the very early morning period: the first inbound departure from Wickford Junction is at 4:45 AM, and the first inbound departure from Providence is at 5:00 AM.

The majority of RIPTA routes begin service between 5:00 AM and 6:00 AM, with a significant share of the network operating during the early morning and all routes operating during the AM peak.

Few Routes Operate Until Midnight

Five RIPTA routes run until at least midnight. These routes include:

- The R-Line
- 1 Hope - Eddy
- 54 Lincoln-Woonsocket
- 60 Providence-Newport
- 66 URI-Galilee

Service runs the latest on Route 60 Providence - Newport, whose last scheduled trip ends in Providence at 1:48 AM. No local routes operate past midnight.

MBTA serves Providence (but not T.F. Green Airport or Wickford Junction) until the last arrival from Boston at 1:10 AM. However, after 9:10 PM, only outbound service is available at T. F. Green Airport and Wickford Junction, limiting the usefulness of late-night rail service south of Providence.

4 RIPTA routes and MBTA commuter rail begin service at or before 5:00 AM.

5 RIPTA routes and MBTA commuter rail end service after midnight.

BEFORE 5 AM



Very Early Morning Service
Begin at or before 5 AM

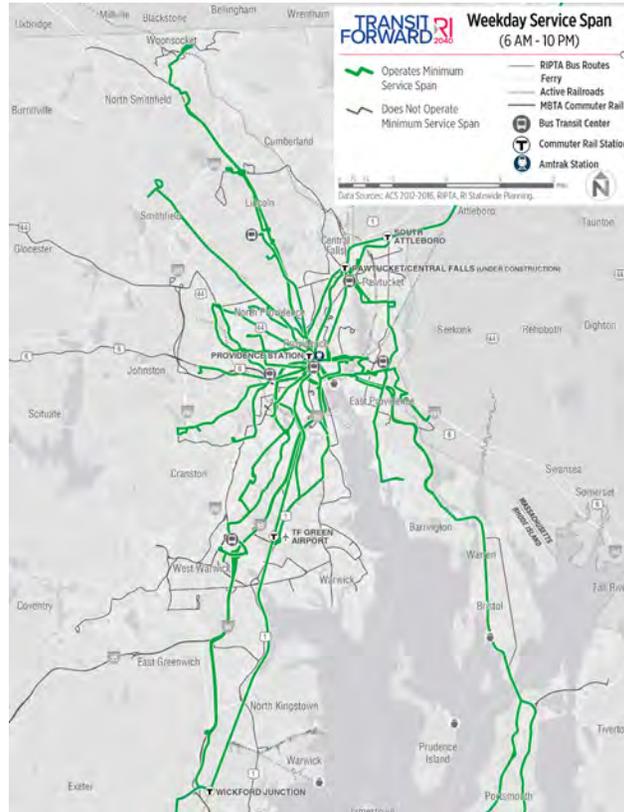


4 of RIPTA's 53 routes begin service at or before 5:00 AM on weekdays, providing very early morning service.

6 AM



All-Day Service
Run at least 6 AM - 10 PM



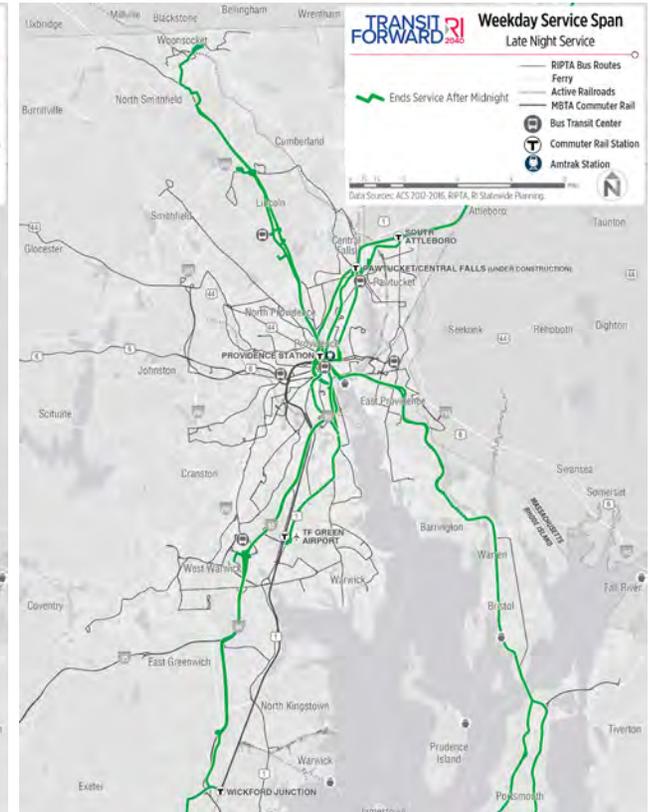
22 out of 53 routes operate throughout the day from at least 6:00 AM until 10:00 PM.

10 PM

AFTER 12 AM



Late Night Service
End at midnight or later



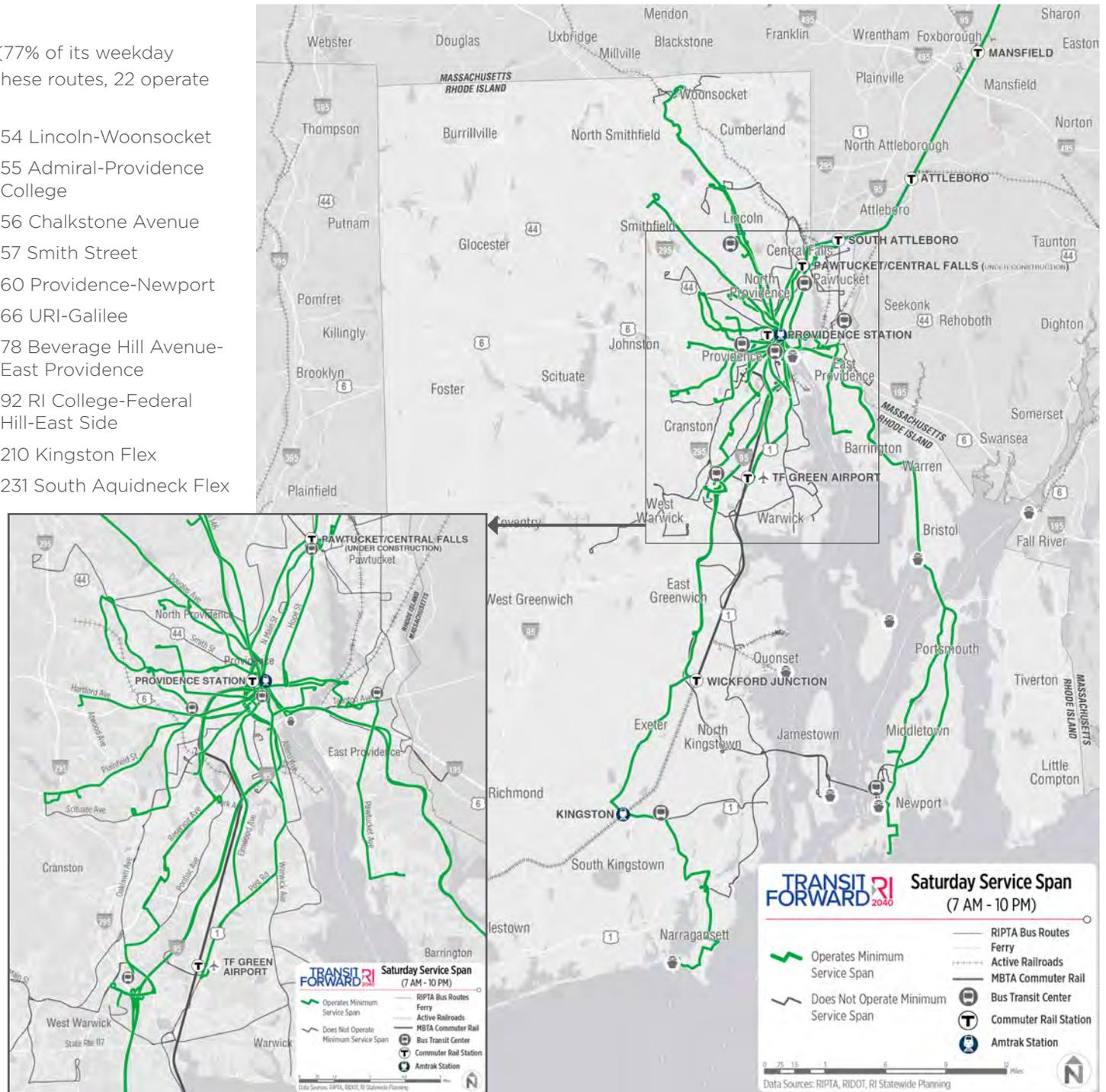
5 out of 53 routes operate until at least midnight on weekdays, providing a limited network of late night service.

Saturday Service

RIPTA operates 41 routes on Saturdays (77% of its weekday network), including two Flex zones. Of these routes, 22 operate from at least 7:00 AM through 9:00 PM:

- The R-Line
- 1 Hope-Eddy
- 13 Coventry-Arctic-Warwick Mall
- 17 Dyer-Pocasset
- 19 Plainfield-Westminster
- 20 Elmwood Ave-T.F. Green
- 21 Reservoir-Garden City
- 27 Broadway-Manton
- 28 Broadway-Hartford
- 31 Cranston Street
- 33 Riverside
- 34 East Providence
- 50 Douglas Avenue
- 51 Charles Street
- 54 Lincoln-Woonsocket
- 55 Admiral-Providence College
- 56 Chalkstone Avenue
- 57 Smith Street
- 60 Providence-Newport
- 66 URI-Galilee
- 78 Beverage Hill Avenue-East Providence
- 92 RI College-Federal Hill-East Side
- 210 Kingston Flex
- 231 South Aquidneck Flex

In addition, MBTA operates rail service to Providence on Saturdays, but does not serve T.F. Green Airport or Wickford Junction on weekends. Service to Providence also operates from at least 7:00 AM through 9:00 PM on Saturdays, with the first trip departing Providence at 6:35 AM and the last trip arriving in Providence at 12:15 AM.

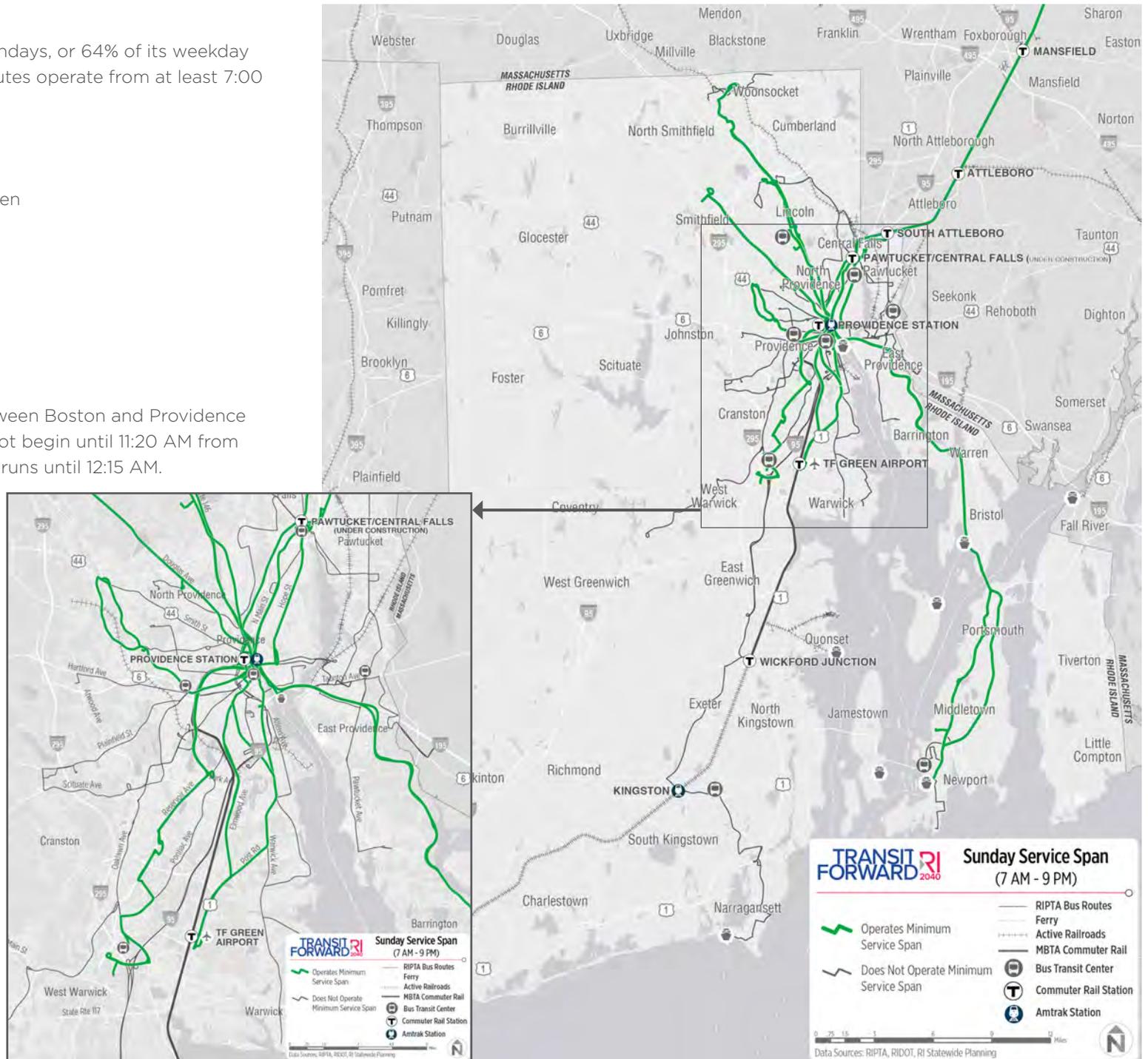


Sunday Service

34 RIPTA routes operate on Sundays, or 64% of its weekday network. Of these, only nine routes operate from at least 7:00 AM through 9:00 PM:

- The R-Line
- 1 Hope-Eddy
- 20 Elmwood Ave-T.F. Green
- 21 Reservoir-Garden City
- 27 Broadway-Manton
- 50 Douglas Avenue
- 51 Charles Street
- 54 Lincoln-Woonsocket
- 60 Providence-Newport

MBTA operates rail service between Boston and Providence on Sundays, but service does not begin until 11:20 AM from Providence. Service on Sunday runs until 12:15 AM.



Service Frequency



Frequent service is one of the most important factors in making transit a convenient choice for riders. Increased frequencies improve the flexibility and predictability of transit and increase the overall convenience of service, making transit a viable option for more people. Frequent service allows transit to better compete with the convenience of the personal vehicle, making it more attractive to people who have other options.

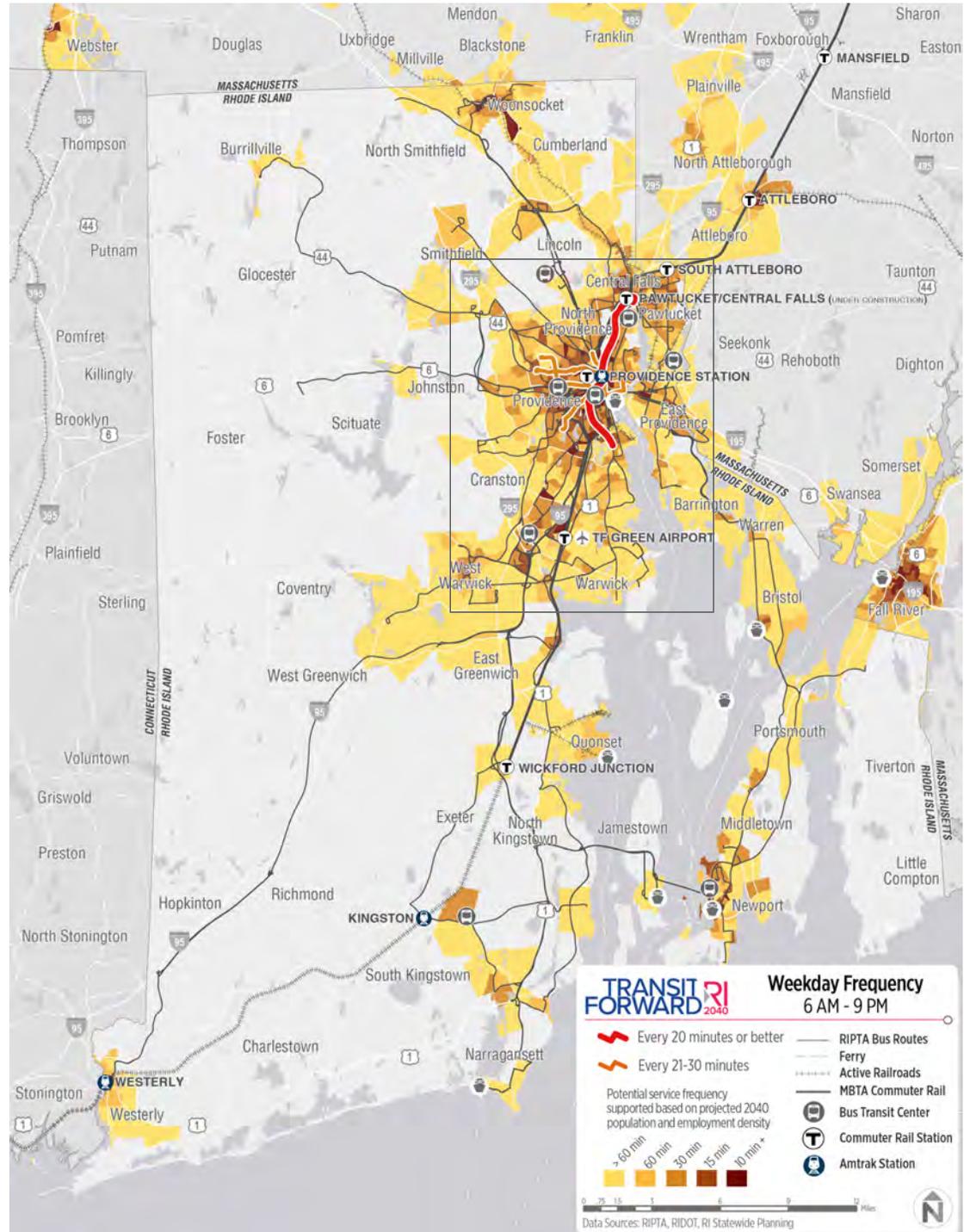
On weekdays, only one route (the R-Line) provides frequent service (20 minutes or better) from at least 6:00 AM to 9:00 PM. The R-Line operates every 10 minutes from the beginning of its service day (5:00 AM) until 6:00 PM, and then every 20 minutes through the end of service (1:00 AM).

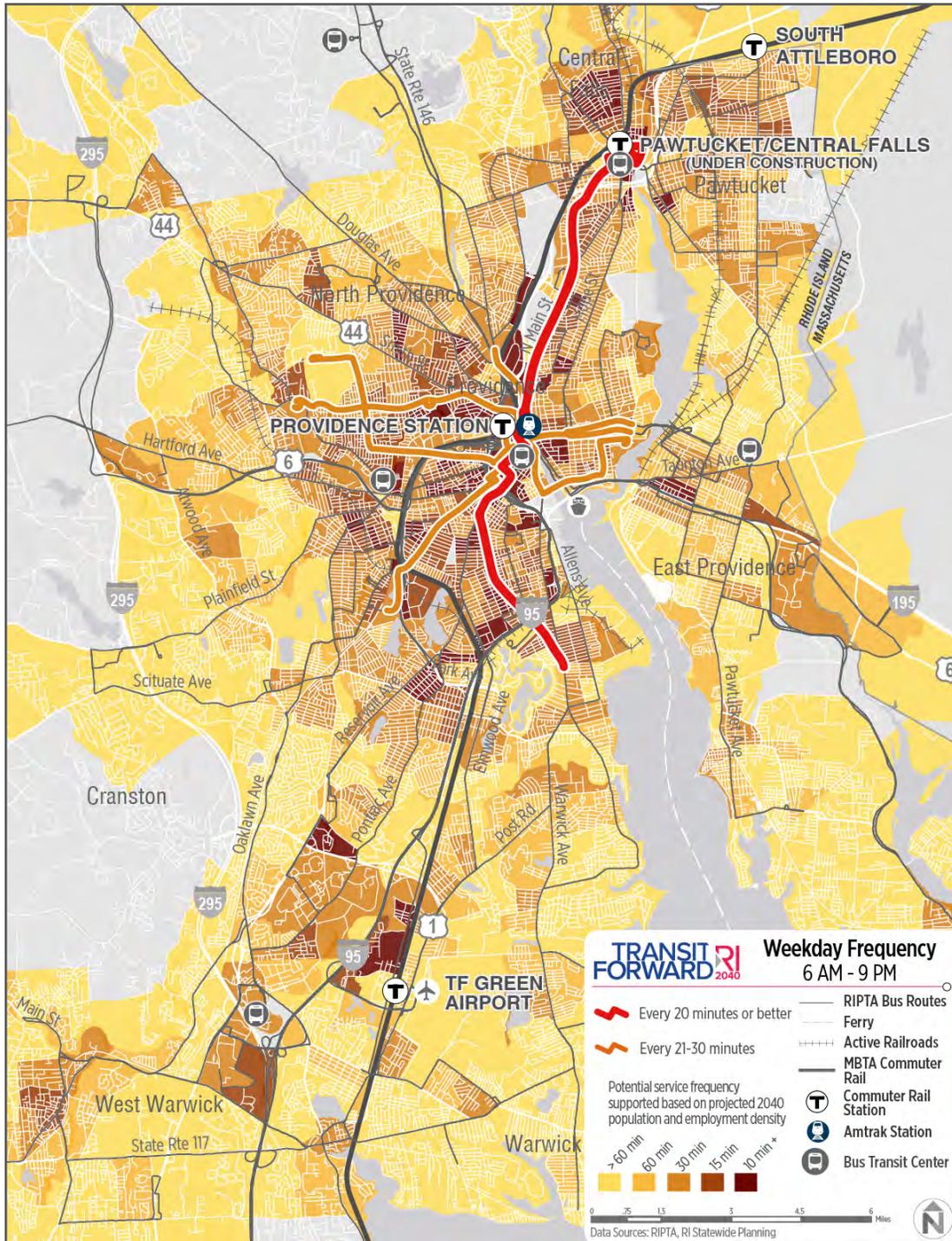
An additional three routes operate every 30 minutes or better throughout the day. Route 31 Cranston Street, Route 56 Chalkstone Avenue, and Route 92 RI College - Federal Hill - East Side operate service frequencies between 15 and 20 minutes from 6:00 AM until 6:00 PM, and then every 25 to 30 minutes in the evening until at least 9:00 PM.

As shown on the following pages, RIPTA operates the most frequent service during the AM peak period. **Between 7:00 AM and 9:00 AM, eight routes operate every 20 minutes or better.** Most of these operate every 15 minutes, and one runs every 10 minutes. These include the R-Line, five Key Corridor routes, Regional Route 60 between Providence and Newport, and Express Route 65X to Wakefield Park-and-Ride in South Kingstown.

What is Frequent Service?

RIPTA considers services that operate at least every 20 minutes throughout the day and into (at least) the early evening as frequent. However, most branded frequent service networks operate at least every 15 minutes for most of the day. A frequency of **15 minutes or better** is generally accepted as the threshold for which people will use transit service without consulting the schedule (“walk-up service”).





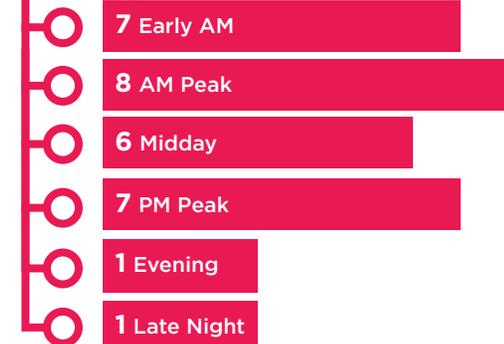
Before the AM peak, seven of the eight routes listed above operate frequent service between 6:00 AM and 7:00 AM. Six routes operate frequently during the midday, including the R-Line and five of RIPTA's nine Key Corridor routes. During the PM peak, seven routes run frequently, including Regional Route 60 to Newport.

RIPTA's network shrinks after the PM peak, and frequent service also drops off significantly. **Only one route — the R-Line — operates frequently after 6:00 PM.** An additional four routes run every 25-30 minutes during the evening, with service focused on major corridors in Providence and the immediately surrounding area. Of the seven RIPTA routes that run until at least midnight, all but the R-Line run hourly or less frequent service.

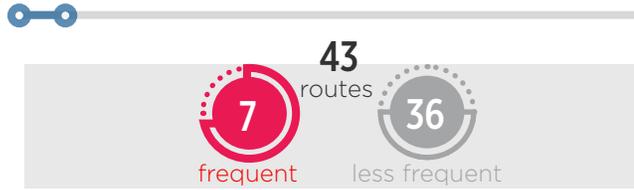
Commuter rail, like commuter bus, often has much greater frequency during peak times, although some larger systems are able to maintain hourly off-peak frequency. Currently, Providence-Boston commuter rail operates every 30 minutes on average in the peak direction at peak times, which is typical in the US. Service only runs every two hours during some of the midday/evening and on weekends. Service between Providence and Wickford Junction is hourly during peak periods, with very limited weekday off-peak service and no weekend service.

53 Fixed Routes

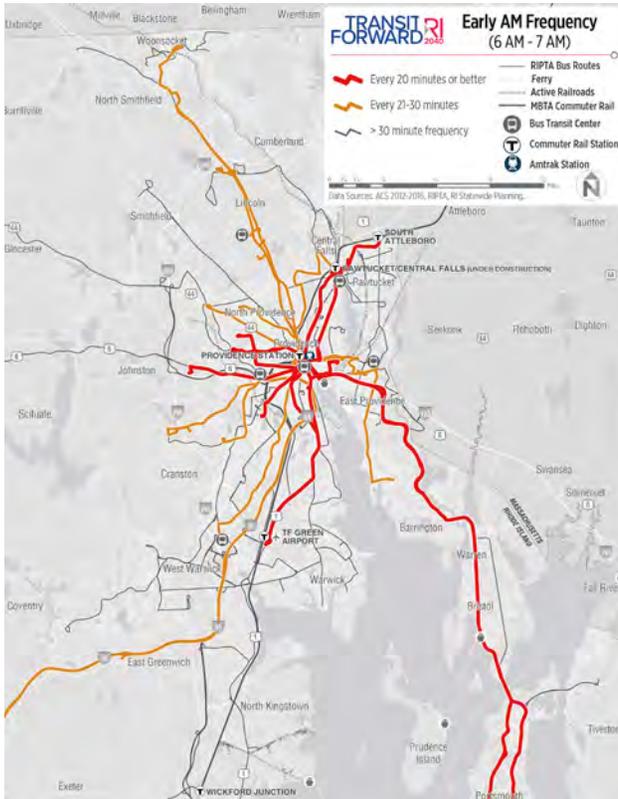
Only 1 route provides all day frequent service



6 AM 7 AM



Early Morning Frequency
6 AM - 7 AM

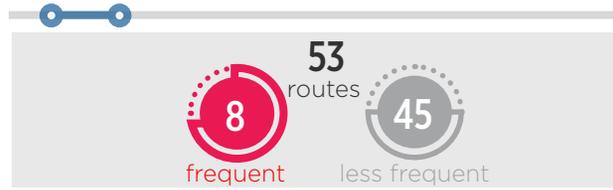


44 RIPTA routes operate during the early morning period, and nearly one-fifth of these routes operate every 20 minutes or better.

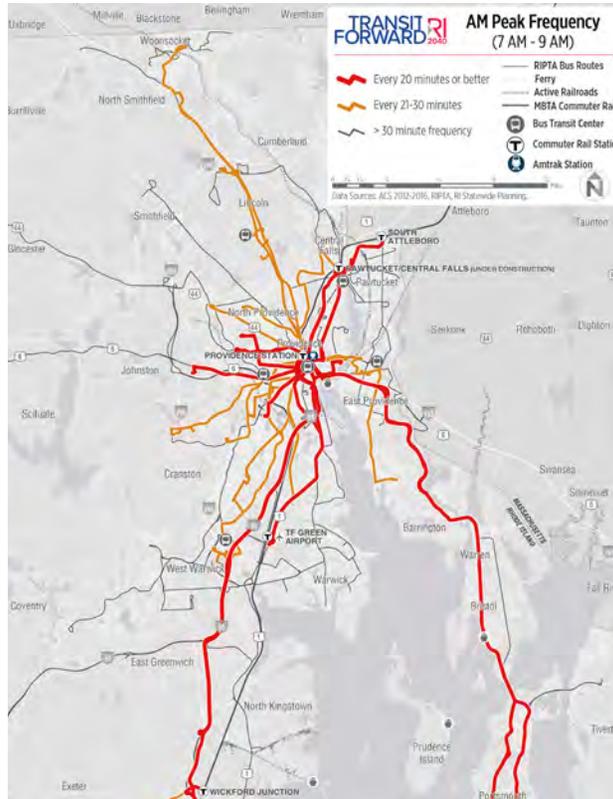
- 43 total routes
- **7 routes provide frequent service**
- 10 routes provide moderately frequent service

MBTA commuter rail serves Providence every 25-55 minutes, and serves Wickford Junction and T.F. Green Airport every 50-60 minutes.

7 AM 9 AM



AM Peak Frequency
7 AM - 9 AM

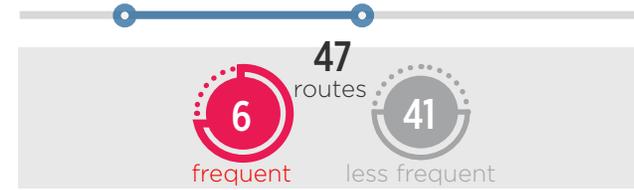


All RIPTA routes operate during the AM peak, and eight routes operate every 20 minutes or better.

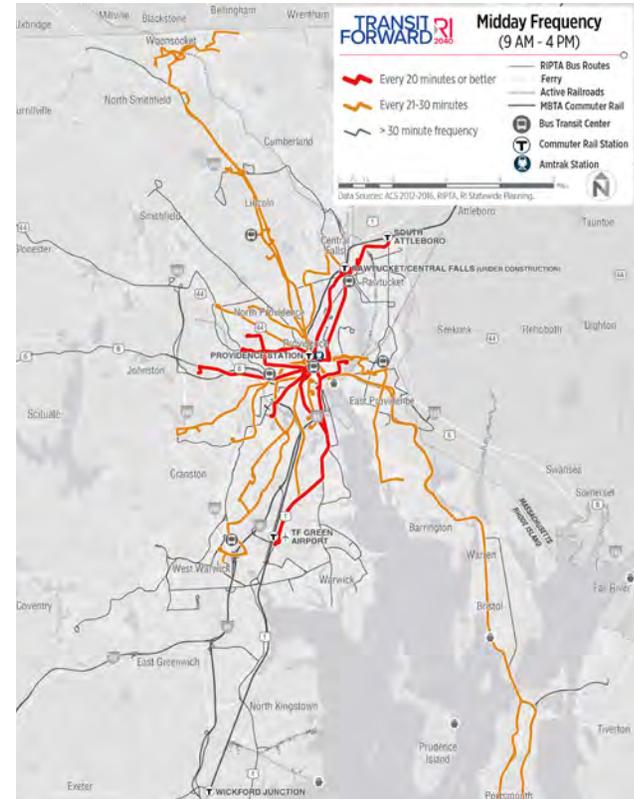
- 53 total routes
- **8 routes provide frequent service**
- 15 routes provide moderately frequent service

MBTA service to Providence runs every 15-60 minutes during the AM peak, and serves T.F. Green Airport and Wickford Junction every 70 minutes.

9 AM 4 PM



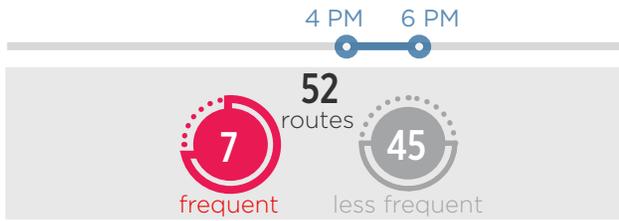
Midday Frequency
9 AM - 4 PM



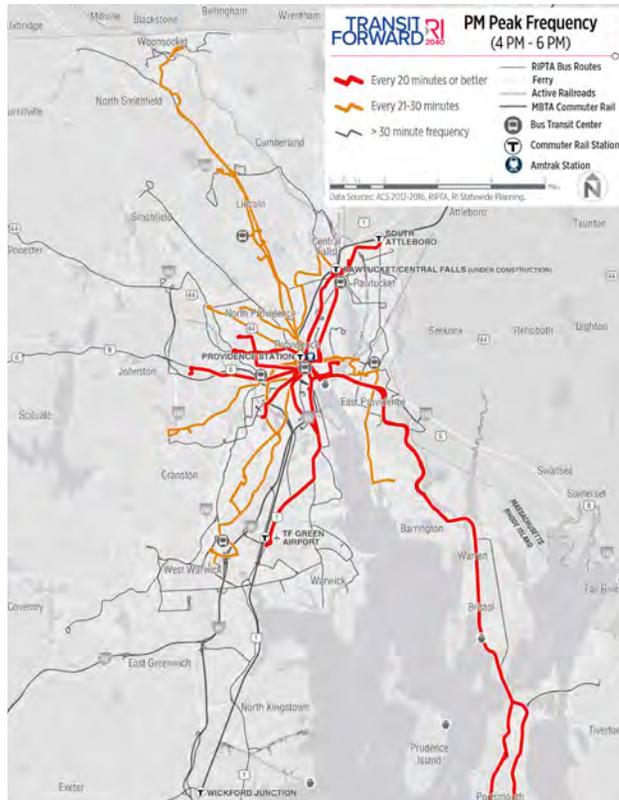
47 routes operate during midday, and six operate every 20 minutes or better.

- 47 total routes
- **6 routes provide frequent service**
- 16 routes provide moderately frequent service

During midday hours, MBTA serves Providence every 50-80 minutes. Two inbound trips and one outbound trip serve T.F. Green Airport and Wickford Junction during these hours.



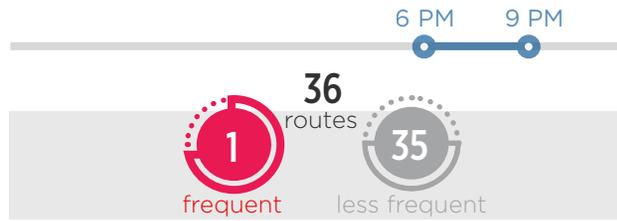
PM Peak Frequency
4 PM - 6 PM



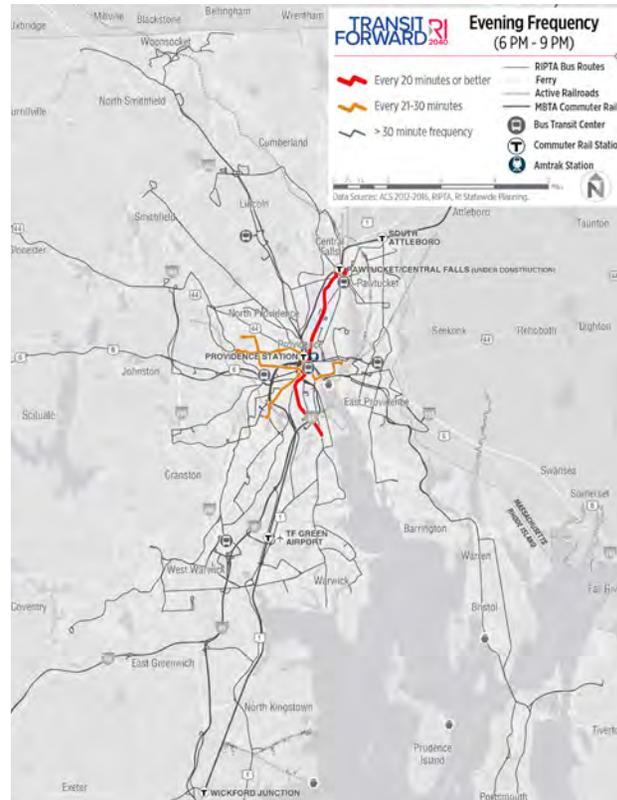
Nearly all RIPTA routes operate during the PM peak, and seven routes operate every 20 minutes or better.

- 52 total routes
- **7 routes provide frequent service**
- 12 routes provide moderately frequent service

MBTA service to Providence runs every 30-40 minutes during the PM peak, and to T.F. Green Airport and Wickford Junction every 70-75 minutes.



Evening Frequency
6 PM - 9 PM



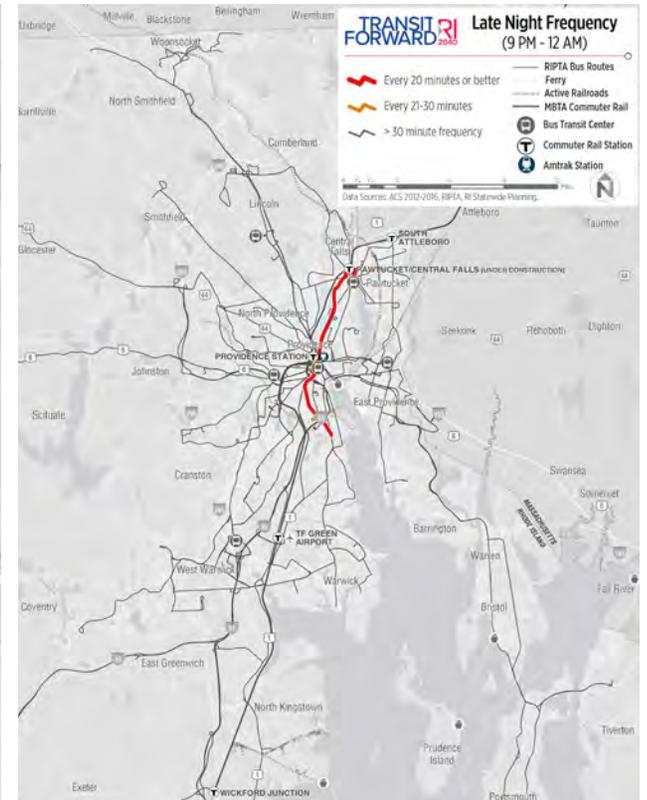
36 routes operate during the evening, and only one route operates every 20 minutes or better.

- 36 total routes
- **1 route provides frequent service**
- 4 routes provide moderately frequent service

In the evening, MBTA serves Providence every 30-60 minutes, and serves T.F. Green Airport and Wickford Junction every 50-80 minutes.



Late Night Frequency
9 PM - 12 AM



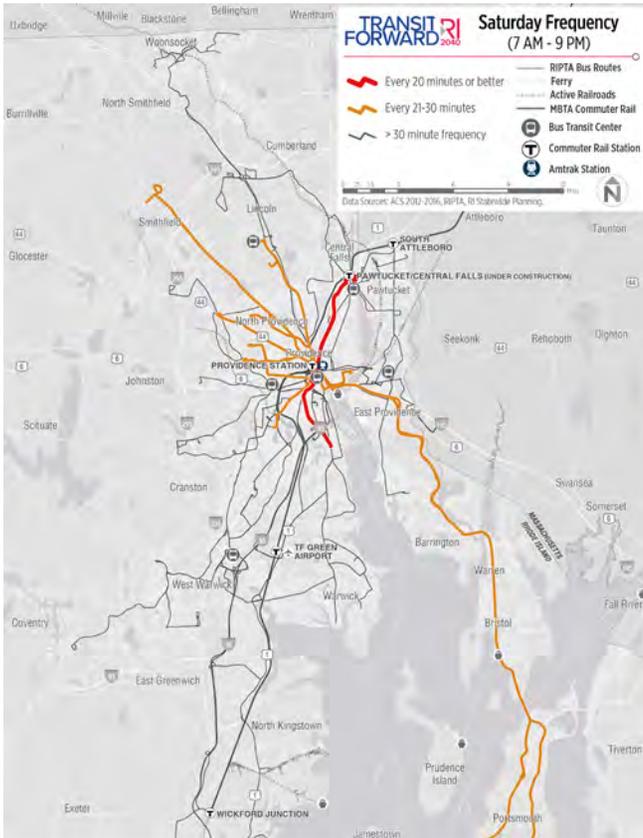
Only seven routes operate through the late night period, and just one route operates every 20 minutes.

- 7 total routes
- **1 route provides frequent service**
- All other routes operate infrequent service

Providence is served by one inbound trip and two outbound trips between 9:00 PM and 12:00 AM. MBTA serves T.F. Green Airport and Wickford Junction are served only by one outbound trip.



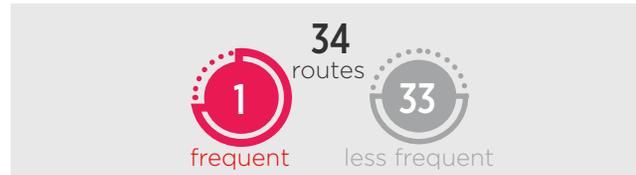
Saturday Frequency
7 AM - 9 PM



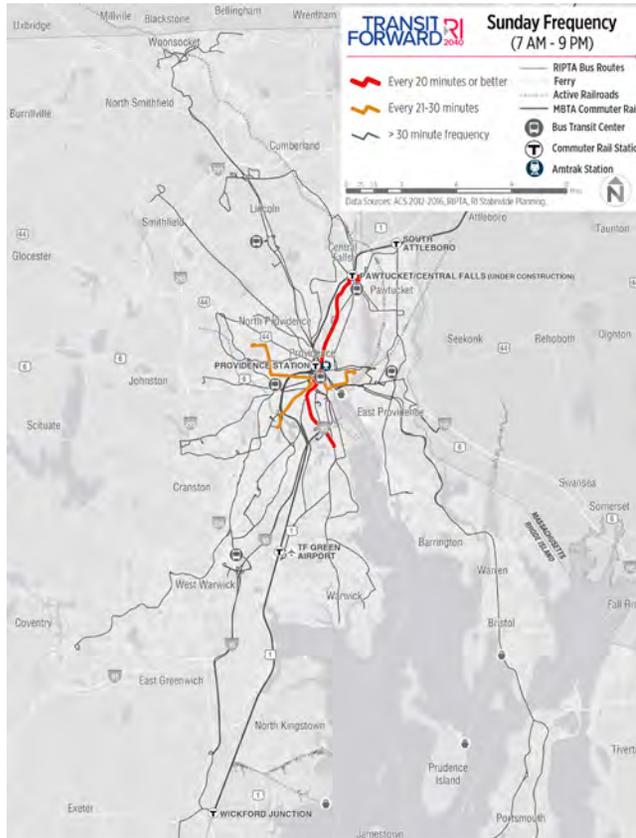
41 routes operate on Saturdays, and only one route operates every 20 minutes or better during the day.

- 41 total routes
- **1 route provides frequent service**
- 9 routes provide moderately frequent service

MBTA service to Providence operates approximately every two hours, with frequency varying from 68 to 165 minutes throughout the day.



Sunday Frequency
7 AM - 9 PM



34 routes operate on Saturdays, and only one route operates every 20 minutes or better during the day.

- 34 total routes
- **1 route provides frequent service**
- 3 routes provide moderately frequent service

MBTA service begins later on Sunday (11:20 AM), but operates with the same service frequency as on Saturday, approximately every two hours.

Similar to weekdays, all-day frequent service is limited on Saturdays and Sundays.

RIPTA operates 41 routes on Saturdays, but only one route - the R-Line - operates frequently throughout the day, running every 15 minutes during the daytime and every 20 minutes in the evening. Another nine routes run every 25-30 minutes throughout the day, including five Key Corridor routes.

On Sundays, the R-Line is the only route operating frequently throughout the day. Three additional routes operate every 25-30 minutes throughout the day, all of which are Key Corridor routes,

Only 1 route provides frequent service on both Saturdays and Sundays.

Transit Facilities



RIPTA and RIDOT operate and maintain many transit facilities designed to provide places to connect with transit and between transit services. These include major bus hubs, 3,500 bus stops, train stations, and ferry terminals.

Bus Facilities

Kennedy Plaza

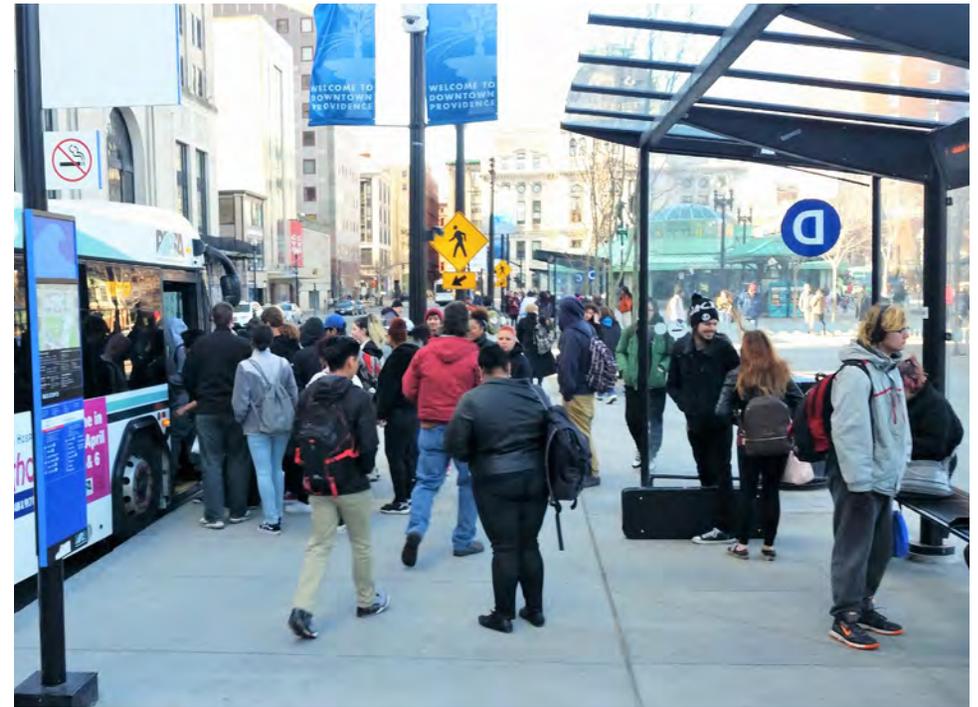
Kennedy Plaza is RIPTA's primary hub where connections can be made to travel to 34 different Rhode Island communities by bus. Situated in the center of downtown Providence between Exchange and Dorrance streets, the Plaza is served by 42 of RIPTA's 53 fixed routes, including the R Line Rapid Bus and 8 Park-Ride express routes. The Route 91 seasonal ferry shuttle also stops at Kennedy Plaza.

Buses stop at on-street berths located on Washington Street, Fulton Street, Exchange Terrace and East Approach. Eleven of the routes serving the Plaza are through-routes that do not terminate, part of a strategy to reduce bus layover at this location. Passenger amenities at Kennedy Plaza include:

- An indoor passenger terminal with public restrooms and bus schedule information, open daily from 6:00 AM to 7:00 PM.
- A customer service and ticket window, open Monday to Friday 7:00 AM to 6:00 PM, and Saturday 9:00 AM to 5:00 PM.
- Ticket vending machines, accessible 24 hours a day.
- Bicycle racks and lockers. A bike share docking station is located adjacent to City Hall, across from the Plaza.

Enhancements made in cooperation with the City of Providence in 2015 reduced the number of bus berths from 16 to 12, enlarged the Plaza for pedestrian safety, and installed new shelters with real time bus arrival signage. Additional improvements are currently planned, as described later in this chapter.

The City of Providence, working closely with RIPTA, is planning additional improvements in the Kennedy Plaza area to enhance transit, increase pedestrian safety, and revitalize the surrounding public spaces. Construction will occur in 2019 to coincide with DTC construction in the area in 2019. Improvements will include:



- Conversion of Washington Street between Dorrance and Exchange streets to serve two-way bus traffic only
- Continuous bus-only lanes in both directions between Kennedy Plaza and the East Side Bus Tunnel near the intersection of Waterman and North Main streets
- Removal of vehicular traffic (including bus) from East Approach
- Consolidation of bus boarding activity to Washington and Fulton streets, between Dorrance and Exchange streets; once bus layover is provided at the future Providence Station Intermodal Transportation Center, further consolidation will focus all bus boarding onto Washington Street
- Raised pedestrian crosswalks, conversion of Fulton Street to two-way auto traffic and other roadway improvements

Pawtucket Transit Center

The Pawtucket Transit Center (PTC) is located within the Blackstone Valley Visitors Center on Roosevelt Avenue in downtown Pawtucket. The PTC is served by nine RIPTA routes, (R Line and Routes 1, 71, 72, 73, 75, 76, 78 and 80) which offer connections to Providence, the South Attleboro MBTA Station, Central Falls, Lincoln and East Providence. Seven terminating routes layover on-street.

An indoor passenger waiting area is provided in the Visitors Center building; it is open daily, but there is no customer service, ticketing or RIPTA personnel present. There are public restrooms in the Visitor Center, but passengers must exit and enter the building through a separate entrance.

In 2020, RIPTA will relocate this transit center to a new Pawtucket Intermodal Transit Center being constructed about a half-mile to the west (described later in this chapter).

Newport Gateway Transportation and Visitors Center

The Newport Gateway Transportation and Visitors Center on America's Cup Avenue is served by RIPTA Routes 14, 60, 63, 64, and 67, and 231 Flex. There are four off-street bus berths and one on-street berth available for RIPTA's use.

Connections can be made to Providence, T.F. Green Airport in Warwick, the University of Rhode Island, and other locations on both the East and West Bays. Connections to the Providence-Newport Ferry may be made at Perrotti Park, just two blocks to the south. Passenger amenities at Gateway Center include an indoor waiting area, public rest rooms,



real-time bus arrival information, and an information booth. Paid parking is available in an adjacent garage and surface lot.

CCRI Warwick Hub

Over the past few years, RIPTA has directed additional service to CCRI's Knight Campus off of East Avenue (Route 113) in Warwick; five RIPTA routes now serve this location. Passengers currently board buses at a makeshift bus stop in the parking lot. A more formal boarding area with shelters and other amenities is envisioned.

Other Key Transfer Locations

There are additional locations where three or more RIPTA services meet, but no passenger amenities (or only bus shelters) are provided. These transfer locations are listed in the table to the right.

Bus Stops

There are 3,529 bus stops in the RIPTA system. Today, about 375 shelters and 20 free standing benches are provided at bus stops across the state, representing less than 10% of stops. These include large glass shelters at Kennedy Plaza, custom designed R-Line and TransArt shelters, and smaller advertising shelters.

Waiting for the bus is a significant part of nearly every transit trip. Well designed bus stops enhance the transit experience, decrease perceived wait times for transit services, and can contribute to increased ridership. Conversely, poorly designed bus stops can decrease customer satisfaction, make transit less attractive to potential new customers, and make waiting at stops unsafe for riders. Investing in high quality bus stops is often a low-cost, high-reward strategy for transit agencies.

In 2017, RIPTA and RIDOT published Rhode Island Bus Stop Design Guidelines. These guidelines establish clear guidance on how to consider and better integrate transit into the roadway network throughout the State and provide design guidance that will improve bus operations and the passenger experience at bus stops. In order to comply with Title VI requirements, the guidelines ensure there will be an equitable distribution of passenger amenities between Title VI and Non-Title VI areas. Going forward, the guidelines will be used to introduce more consistent shelter design and installation specifications.

Transfer Location	RIPTA Routes Served
Thayer Street, Providence	1, 32, 33, 34, 40, 49, 61X
South Main Street, East Side Bus Tunnel	1, 32, 33, 34, 35, 40, 49, 60, 61X, 78
Warwick Mall, Warwick	13, 21, 22, 29, 30, 242 Flex
Olneyville Square, Providence	17, 19, 27, 28
CCRI Lincoln/Twin River Casino	51, 54, 73
Wampanoag Plaza, East Providence	33, 34, 78
Centerdale, North Providence	27, 57, 58
Wakefield Mall, South Kingstown	65X, 66, 203 Flex
North Providence Marketplace Plaza	50, 55, 58
Main Street, Woonsocket	54, 87, 281 Flex



Passenger Rail Stations/Intermodal Centers

Providence Station

Providence Station, located in downtown Providence, is served by MBTA commuter rail, Amtrak intercity rail service, RIPTA's R-Line, and Routes 50, 51, 55, 56, 57, 58, 62, 66 and 72. The Route 91 seasonal ferry shuttle also serves the Station. MBTA operates 20 daily round trips on weekdays that serve Providence Station, with service running from 5:00 AM until 1:00 AM. The station is served

by nine round trips on Saturdays and seven round trips on Sundays. Amtrak operates approximately 20 round trips that serve the station on weekdays, 13 round trips on Saturdays, and 16 round trips on Sundays.

Amtrak owns the station building, which offers an indoor waiting room, public restrooms, Amtrak customer service and ticketing, a café (with MBTA ticketing), gift shop, and real time train arrival signage. In close proximity to the building are bike racks, a bike share docking station, a taxi stand and Zip Car parking. There are several private parking garages and surface lots in the area, including the 330 space Providence Train Station garage directly adjacent to the station.

RIDOT, in collaboration with RIPTA, is planning a new Intermodal Transportation Center near Providence Station. As envisioned, this facility would provide berths for RIPTA buses, as well as public restrooms, real time bus arrival information, customer service and other amenities.

T.F. Green Airport/Warwick

This MBTA commuter rail station is connected to the T.F. Green Airport terminal via the Interlink, a 1/4-mile overhead enclosed walkway. The station is directly served by RIPTA Route 8x; four additional routes (Routes 1, 14, 20 and 66) directly serve the airport terminal. MBTA rail service operates 10 daily round trips to the station on weekdays.

The rail station is owned by the Rhode Island Airport Corporation (RIAC). The Interlink Parking Garage, also owned by RIAC, has 458 commuter spaces currently priced at \$5 per day. The garage also hosts the airport rental car facility and a free electric vehicle (EV) charging station. Restrooms are available at the rental car center.

Wickford Junction

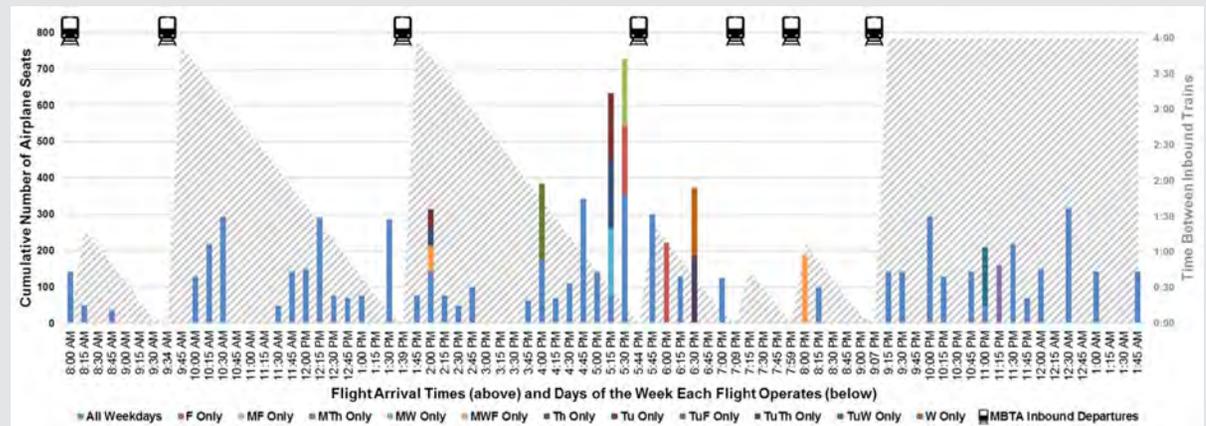
Wickford Junction is the southern terminus of the MBTA's Providence commuter rail line. The station is located near the interchange of State

Service to T.F Green Airport

T.F. Green Airport station is served by MBTA with 10 daily round trips on weekdays. The first inbound trip (towards Providence and Boston) departs at 5:00 AM, while the first outbound trip (from Providence) arrives by 5:14 AM. At the end of the day, the last inbound trip departs at 9:07 PM, and the latest trip of the day, traveling outbound towards Wickford Junction, departs at 11:27 PM. There is no weekend MBTA service to the Airport, but it is well served by RIPTA, with Routes 1, 8X, 14, 20, and 66 effectively providing service as frequent as every 15-20 minutes on weekdays and every 20-30 minutes on weekends.

Air passenger volumes are represented with vertical bars in the above chart, symbolized by the day of the week service operates. The highest volumes of air passenger weekday arrivals¹ occur between 5:15 PM and 5:30 PM, reaching a total of approximately 700 arriving passengers during this time, depending on the day. However, the closest scheduled train traveling inbound to Providence departs the T.F. Green station

T.F. Green Airport Weekday Airline Arrivals and MBTA Inbound Trips



at 5:44 PM (represented by the train icon at the top of the chart), which leaves very little time for arriving passengers to deplane, retrieve any luggage, and travel from the airport terminal to the train platform. After the last inbound train departs at 9:07 PM, flights continue to arrive every 15 to 30 minutes until 1:00 AM, with the last air passengers arriving at 1:45 AM.

RIPTA Routes 1 and 66 continue to serve the airport after the end of rail service, but bus service ends well before the last flights arrive to the airport. The last inbound (to Providence) weekday trip on Route 1 departs T.F. Green at 10:34 PM, and the last inbound trip on Route 66 departs at 11:40 PM.

¹ Based on 2017 T.F. Green scheduled weekday arrivals.



Highways 4 and 102. It is served by RIPTA Routes 62, 65X, and 66. MBTA rail service operates 10 daily round trips to the station on weekdays.

The station includes amenities which anticipate future transit-oriented development, including an adjacent 1,100 space parking garage owned by RIDOT, a small indoor passenger lobby and public restrooms. There is currently no charge to park at this facility. Ten EV charging stations are available at no cost, as well as bike parking outside the facility.

Kingston Station

Kingston Station is located in South Kingstown, and is served by Amtrak and RIPTA Routes 64 and 66. Amtrak operates the RIDOT-owned station building, which provides a passenger waiting room, public restrooms, and an Amtrak ticket window. Both RIPTA routes provide service between the station and the nearby URI campus.

There are 214 parking spaces available at no charge, as well as short-term parking and taxi service. The South County Bike Path terminates at this parking lot; bike racks are available at the station.

Westerly Station

The Westerly Amtrak Station is served by Amtrak, and RIPTA Routes 95X and 204 Flex. The station building is owned by RIDOT, and was occupied by an Amtrak ticket agent until 2016. It reopened in 2018 as an art gallery under a lease that preserves access for the traveling public to the indoor waiting area and restrooms. A surface lot adjacent to the station provides 47 parking spaces at no charge.



Pawtucket/Central Falls Intermodal Center

In November 2018, the state initiated construction of a new intermodal transportation center off Pine Street in Pawtucket, near the Central Falls border. Together, RIDOT and RIPTA are constructing a new MBTA commuter rail station and adjacent bus hub with high platforms and an overhead pedestrian bridge, as well as a transfer facility real time bus arrival signage.

The RIPTA bus facility is anticipated to open by the end of 2020; with commuter rail service anticipated to start in mid-2022. Public parking will be available at nearby municipal lots.

Public Water Transportation Terminals

India Street Terminal, Providence

This state-owned terminal is served by RIDOT's Providence-Newport seasonal ferry, as well as RIPTA's seasonal Route 91 ferry shuttle. Additional RIPTA services are within walking distance.

A ticketing window and public restrooms are available, along with free surface parking with 100 parking spaces. Connections to the East Bay Bike Path and Blackstone River Bikeway are nearby, and bike share docking stations are within a few blocks.

Perrotti Park Terminal, Newport (Perrotti Park)

The Providence-Newport seasonal ferry also serves Newport's Perrotti Park. A ticketing window and public restroom are provided at this location which also serves local water taxis and a Block Island ferry.

This terminal is just a few blocks from Gateway Center where parking is available and connections to RIPTA buses and intercity bus services can be made. Parking can also be found at surface lots throughout downtown.

Park-and-Ride Facilities

A statewide network of 15 publicly-owned park-and-ride lots served by transit provides the capacity for about 1,000 vehicles. Recent utilization counts by RIDOT found these lots to be about 60% occupied, with five of the lots more than 70% occupied. The state owns an additional three park-and-ride lots that are not served by RIPTA, but can be used by carpools or vanpools.

Three large publicly owned garages, at the Gateway Transportation Center facility (owned by the City of Newport), the Interlink garage at the T.F. Green/Warwick MBTA Station (owned by the RI Airport Corporation), and the Wickford Junction Garage (owned by RIDOT), provide an additional 2,142 parking spaces at locations served by transit.

There is a no fee charged to park at most of these facilities. However, a \$5 daily fee is charged at the Interlink garage. At Newport’s Gateway Transportation Center, parking for RIPTA riders is \$2 per day in the summer and free the rest of the year.

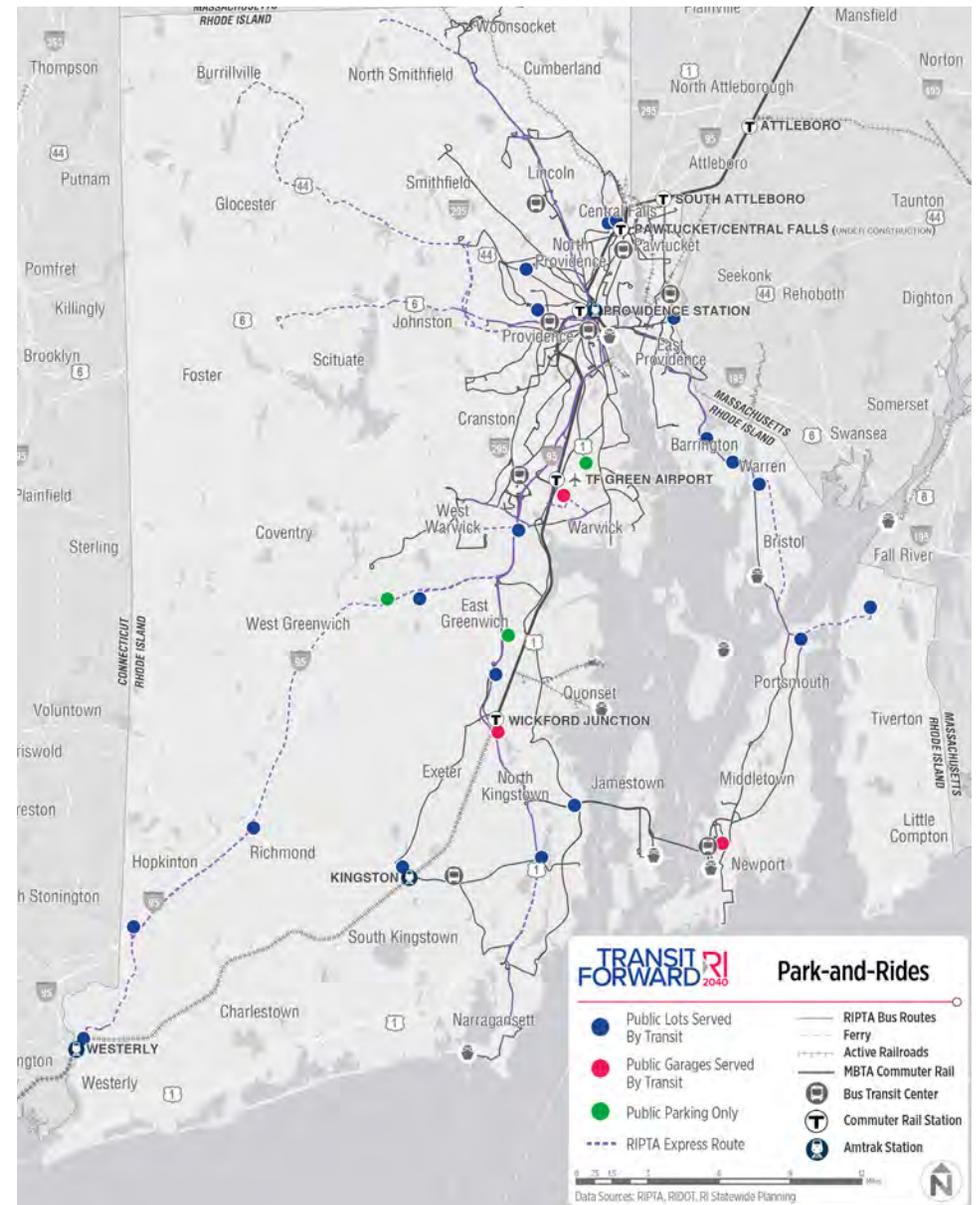
In addition, there are a number of municipally- or privately-owned facilities that allow parking by daily transit users and are marketed on RIPTA’s statewide transit map. It is estimated that these lots provide about 1,000 additional informal park-and-ride spaces around the State. None of the lots marketed by RIPTA charge a daily parking fee.

Approximately 1,520 patrons board each day at park-and-ride stops, with most destined for downtown Providence.

Other Transit Facilities and Technologies Also Enhance Transit Service

Downtown Transit Connector (DTC)

RIPTA has started construction on the Downtown Transit Connector (DTC), a high frequency bus corridor connecting key activity centers along a 1.5 mile spine in downtown Providence. Six paired stations will offer seating, lighting, and customer information displays. Large shelters will be provided at seven locations, with only bench seating offered at three space-constrained locations.



The DTC will introduce new dedicated bus lanes:

- At all station stops
- On Exchange Street between Washington Street and Park Row West
- On Washington Street between Exchange and Dorrance streets (Kennedy Plaza)

- On Dorrance Street southbound, between Clifford and Dyer streets
- Dyer and Eddy Streets between Dorrance and South streets

Other elements of the DTC include bike lanes and signals on Exchange Street, curb bump-outs, crosswalks, and transit signal priority.

There will be a new off-street bus layover facility at the southern terminus near RI Hospital. A second off-street layover at the northern terminus will be built as part of the planned Providence Station Intermodal Center (see below). There will be temporary stops and layover in the Station area until the new intermodal center is open.

Existing bus services (Routes 3, 6, 50, 51, 58, 62, and 72) will be extended along the DTC corridor to create 5-minute service frequency. Construction is anticipated to be complete in 2019, with full service starting in January 2020.

College Hill/East Side Bus Tunnel

Built in 1914 to allow trolleys to climb College Hill in Providence, the 1/3-mile tunnel is used by seven RIPTA routes. Running between South Main Street and Thayer Street, the dedicated bus facility provides fast, direct service between downtown Providence and the East Side. A large passenger shelter is provided at the bottom of the tunnel, off South Main Street, in the eastbound direction only. The tunnel is currently the only dedicated bus right-of-way in Rhode Island.

RIPTA is planning to make repairs and needed safety, drainage and lighting improvements to the East Side tunnel. Design is currently underway, and will include passenger amenities and shelter improvements at both South Main and Thayer streets.



DOWNTOWN TRANSIT CONNECTOR



Transit Signal Priority

RIPTA worked with RIDOT and the cities of Providence and Pawtucket to install Transit Signal Priority (TSP) at 59 locations on the R-Line Rapid Bus corridor in 2014. On-board transponders are detected by traffic signal controllers and extend green signals when buses approach. This system resulted in an estimated 8% savings in both passenger travel time and operational costs along the eight-mile corridor. With approximately 8,500 R-Line boardings in 2018, TSP provided a total time savings of 1,400 hours for passengers. TSP is now being installed along the Downtown Transit Connector.

In addition, RIPTA is proposing to work with RIDOT and local municipalities to install TSP in other high performing bus transit corridors. RIPTA's Transit Signal Priority Expansion Plan (2017) evaluated the statewide bus system to identify corridors with high ridership and traffic congestions, and the greatest potential for travel time and operational cost savings.

Transit Signal Priority on RIPTA's R-Line

- ▶ Roundtrip travel time reduced by **10 minutes**
- ▶ Faster travel time for passengers by **8%**
- ▶ Operating costs reduced by **8%**
- ▶ Annual travel time savings for riders of **1,400 hours**

Five priority corridors have been identified for TSP expansion:

- **Routes 27/28:** Broadway/Hartford Avenue from Providence to Atwood Avenue in Johnston
- **Route 1:** Eddy Street from Point Street in Providence (connecting to the DTC) to Warwick Avenue in Warwick
- **Route 20:** Elmwood Avenue from Providence (connecting to the R Line) to Post Road in Warwick
- **Route 60:** West Main Road in Portsmouth and Middletown
- **Route 60:** East Main Road in Portsmouth and Middletown

The installation of TSP along these corridors would involve about 93 intersections. Full implementation would save 3,490 hours each year of bus operations, resulting in both passenger travel time savings and operational cost savings.

Ticket Vending Machines

RIPTA has two ticket vending machines installed at Kennedy Plaza and one at the Newport Gateway Transportation and Visitors Center. These machines accept credit cards and offer single ride tickets and ten ride passes.

Fare Equipment Upgrades

RIPTA will introduce a new account based fare collection system in 2019. This system will allow passengers to purchase stored value smart cards on-line, at RIPTA ticket outlets and at retail point of sale locations

throughout Rhode Island. The system will incorporate the mobile ticketing application introduced by RIPTA in the spring of 2018. The new fare payment method is anticipated to increase convenience and speed boarding on buses.

The MBTA is also introducing account based fare collection that will be used throughout their system, including commuter rail. Although the RIPTA and MBTA systems are provided through different vendors, open interfaces will provide potential opportunities for future fare integration.

Transit-Oriented Development (TOD)



Transit-oriented development (TOD) is development located near transit stations or stops that includes a mixture of housing, office, retail, and sometimes other amenities integrated into a walkable neighborhood. TOD leverages the access transit provides to regional destinations and focuses development in close proximity to those places. The benefits of TOD include:

- Increased transit ridership and fare revenue
- Fewer trips made by car
- Improvements to air quality and reduced greenhouse gas emissions due to fewer miles driven
- Walkable communities that accommodate healthier and active lifestyles
- More sustainable and efficient use of land, energy, and resources
- Improved access to jobs and economic opportunity for low-income people and working families
- Concentrated development and activity that allows for community reinvestment

Rendering of Future Pawtucket/Central Falls TOD District Development



Transit-Oriented Development Near Providence Station



Credit: Boston Society of Architects/Nick Caruso

Implementing TOD

Implementing TOD requires at least three elements, and often four:

1. **High quality transit service, around which TOD is located.** TOD is usually located around stations, but can also be developed on a corridor basis for some services with closely spaced stations such as streetcar. The transit service needs to be high quality and operate frequently for long hours. Frequent Rail and BRT services are proven drivers of TOD, while successes with other modes of transit, such as Rapid Bus, are much less common.
2. **Local zoning and policies that enable TOD.** Among other characteristics, TOD is often denser and has much less parking than more common types of development, and local zoning must accommodate these differences.
3. **Underlying market demand.** Transit can stimulate development, but can rarely create demand where little or none exists to start with. Put more simply, if some level of development is already occurring,

high quality transit can bring more, but if there little or no market demand, transit cannot create it.

4. **Incentives.** In areas where there is little or no market demand, but TOD is desired for policy reasons, it can be spurred by providing development incentives. Common incentives that communities provide to stimulate TOD include cash subsidies repaid through Tax Increment Financing, tax abatements and credits, expedited permitting, reduced fees, financing assistance, parking reductions, and capital improvements in the TOD area.

TOD in Rhode Island

The best example of TOD in Rhode Island today is the new development that is occurring around Providence Station, which is anchored by MBTA commuter rail, Amtrak, and RIPTA bus services. Improvements planned as part of the Providence Intermodal Transportation Center (PITC) will make this location an even stronger anchor for TOD.

To encourage and enable TOD, four communities have implemented special district zoning and other provisions:

- **Providence** requires transit supportive design in the Capital Center district surrounding Providence Station, and in two Transit Oriented Development overlay zones along the R-Line Rapid Bus corridor (Trinity Square and Upper South Providence). The City has no minimum parking requirements in its downtown zone, and offers height and density bonuses for transit supportive development.
- **Warwick** created the City Centre Warwick special development district surrounding the T.F. Green/ Warwick commuter rail station. A master plan and design guidelines support development of a dense, walkable district with a mix of transit supportive uses. There, much new development has been occurring, but most of this development has been driven more by the airport and airport-related activities than by transit.
- **Pawtucket and Central Falls** created the Conant Mill Thread district in the area surrounding the new Pawtucket/Central Falls Station, which will be served by MBTA commuter rail and bus service. A joint planning commission has also been created to implement a master plan and new zoning for transit oriented development.
- **Wickford Junction** station is surrounded by a TOD zone that allows developers to build densely provided they also purchase other land nearby that remains undeveloped in order to protect the groundwater.

A starting point for TOD at additional locations will be the development of new high quality transit services that will be able to anchor TOD.

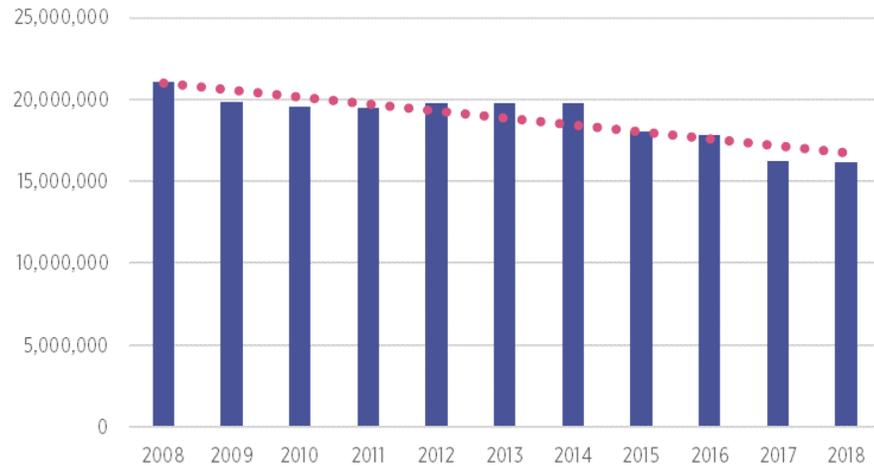
Ridership



Today, RIPTA Passengers Make Over 16 Million Trips per Year

RIPTA ridership has gradually declined over the last decade. Annual ridership reached 21 million passenger trips in 2008. However, ridership fell below 20 million passenger trips in the wake of the Great Recession, and has declined every year since 2013. A slow recovery from the Great Recession, low gas prices, and competition from new mobility options have all posed challenges to transit service in recent years. Overall, annual RIPTA ridership has declined by 23% from 2008 to 2018.

Annual RIPTA Bus Ridership



RIPTA ridership declined 23% between 2008 and 2018.

MBTA Commuter Rail Passengers Make 1.1 Million Trips per Year

MBTA commuter rail serves about 1.1 million passenger trips annually in Rhode Island. From 2015 to 2018, ridership at all three Rhode Island stations has increased from almost 3,700 average daily passenger trips to 4,700 passenger trips, an increase of 29%.

Average Daily MBTA Ridership



Average daily commuter rail ridership in Rhode Island rose 29% from 2015 to 2018.

Summertime Providence-Newport Ferry Service Carries 43,000 Passengers

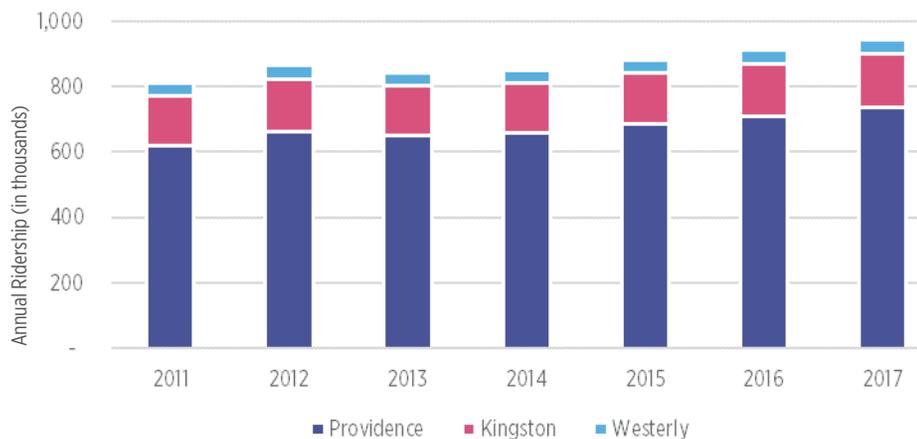
Ferry ridership increased from about 33,000 passenger trips in 2016 to 43,000 in 2018, or an increase of **30%**. However, the season was expanded from 65 to 93 service days in 2017 and then 136 days in 2018, and average daily ridership decreased by **37%**.



Amtrak Transports 943,000 Passengers per Year to and from Rhode Island

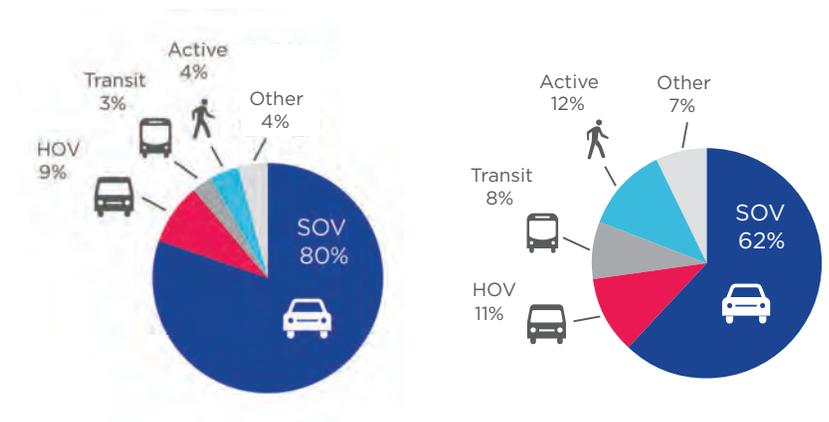
Ridership at Amtrak stations in Rhode Island increased by **16%** between 2011 and 2017. The largest growth has been at Providence Station, where ridership increased by **19%**, while growth was more modest but still significant at Kingston Station (**7%**) and Westerly Station (**5%**). Providence Station served nearly 740,000 total passenger trips in 2017, ranking as Amtrak's 11th busiest station in the United States.

Annual Amtrak Ridership



3% of Rhode Island Residents Use Transit to Get to Work

In most of the country, single occupancy vehicles dominate the way people move. The majority of those who work in Rhode Island use a private vehicle to commute (80%), while only 3% take transit, 9% carpool, and 4% walk or bike. Of those workers who live in Providence, which is the urban center of the state and where transit service is most heavily concentrated, more sustainable modes of transport jump--transit to 8%, 11% carpool, and 12% walk or bike. However, even among residents of Providence, 62% of workers drive alone to work. Making transit an attractive, reliable, and convenient way to travel to work and for all types of trips, is reliant on concentrating viable and high quality transit options where there is appropriate demand.



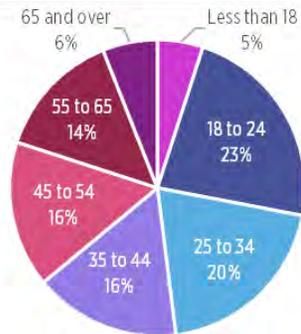
How Rhode Island Residents Commute

How Providence Residents Commute

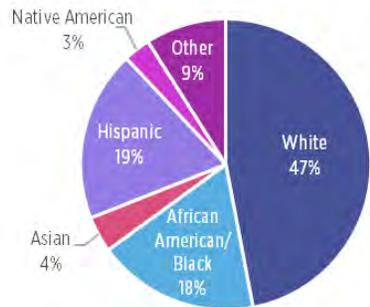
Source: 2012-2016 American Community Survey 5-Year Estimates

A Wide Spectrum of Rhode Islanders Use RIPTA's Services

RIPTA riders are relatively evenly distributed across age groups. The largest share of riders (**23%**) are between 18 and 24.



Just under half (**47%**) of RIPTA riders are White. An additional **19%** are Hispanic, and **18%** are African American/Black.



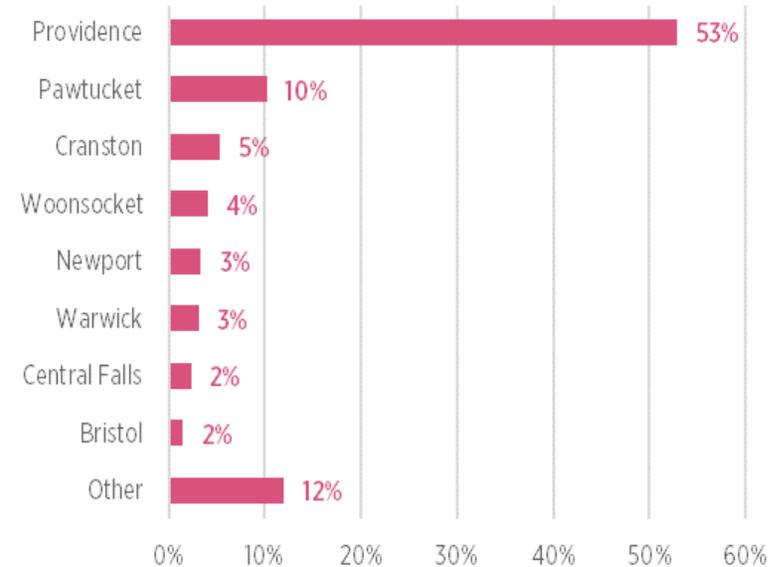
39% of RIPTA riders have a household income less than \$10,000 a year.



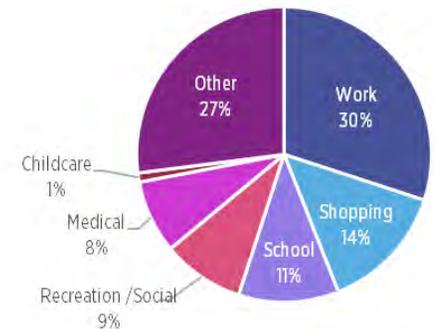
81% of RIPTA riders do not have access to a vehicle.



53% of RIPTA riders live in Providence, and another **10%** live in Pawtucket.

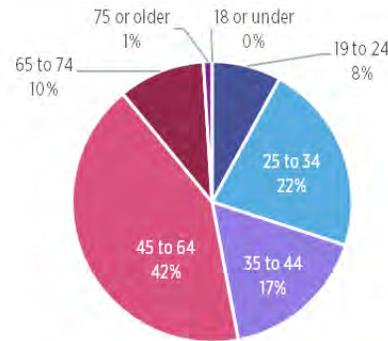


Riders use RIPTA services for various trip purposes - **not just commuting** to work.

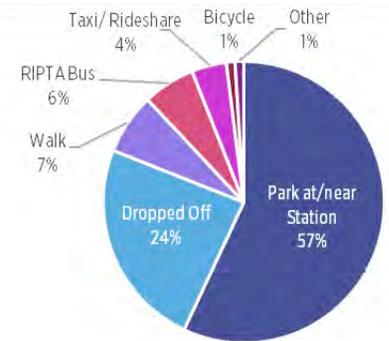


Most Commuter Rail Riders are Traveling to and from Work in Boston

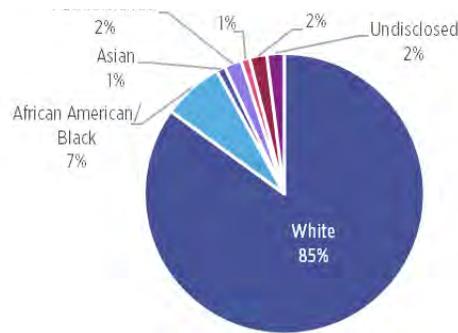
42% of commuter rail riders are between the ages of 45 and 64. Nearly **one quarter** are between 25 and 34.



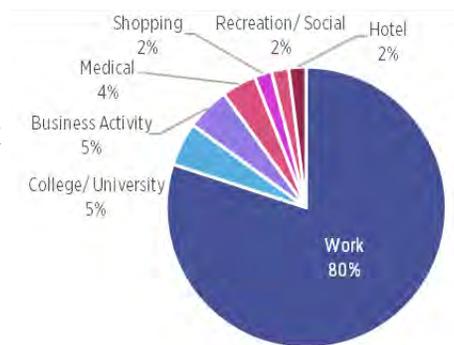
Most riders reach their boarding station by car, by either parking at or near a station (**57%**) or getting dropped off (**24%**).



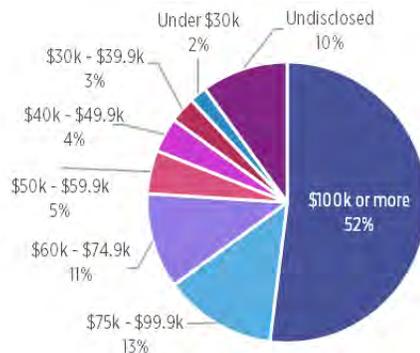
The overwhelming majority of commuter rail riders (**85%**) are White.



Riders use rail service almost exclusively for **work or work-related trips**.



52% of riders have an annual household income over \$100,000.



Where do Rhode Island passengers alight?

- 50%** South Station
- 32%** Back Bay Station
- 8%** Ruggles Station
- 6%** Providence Station
- 4%** Other

94% of commuter rail riders have at least one vehicle in their household; nearly three-quarters have two or more vehicles.



Top 3 Destination Cities

- 77%** Boston, MA
- 8%** Cambridge, MA
- 6%** Providence, RI

Most RIPTA Ridership is in the Providence Metro Area

RIPTA services carry over 52,500 daily passenger trips on weekdays. Reflecting the hub-and-spoke design of RIPTA's service network, ridership is largely focused along major radial corridors, particularly within Providence, and at major transit hubs across the state. The highest ridership stop locations in the system with over 1,000 daily passenger trips are:

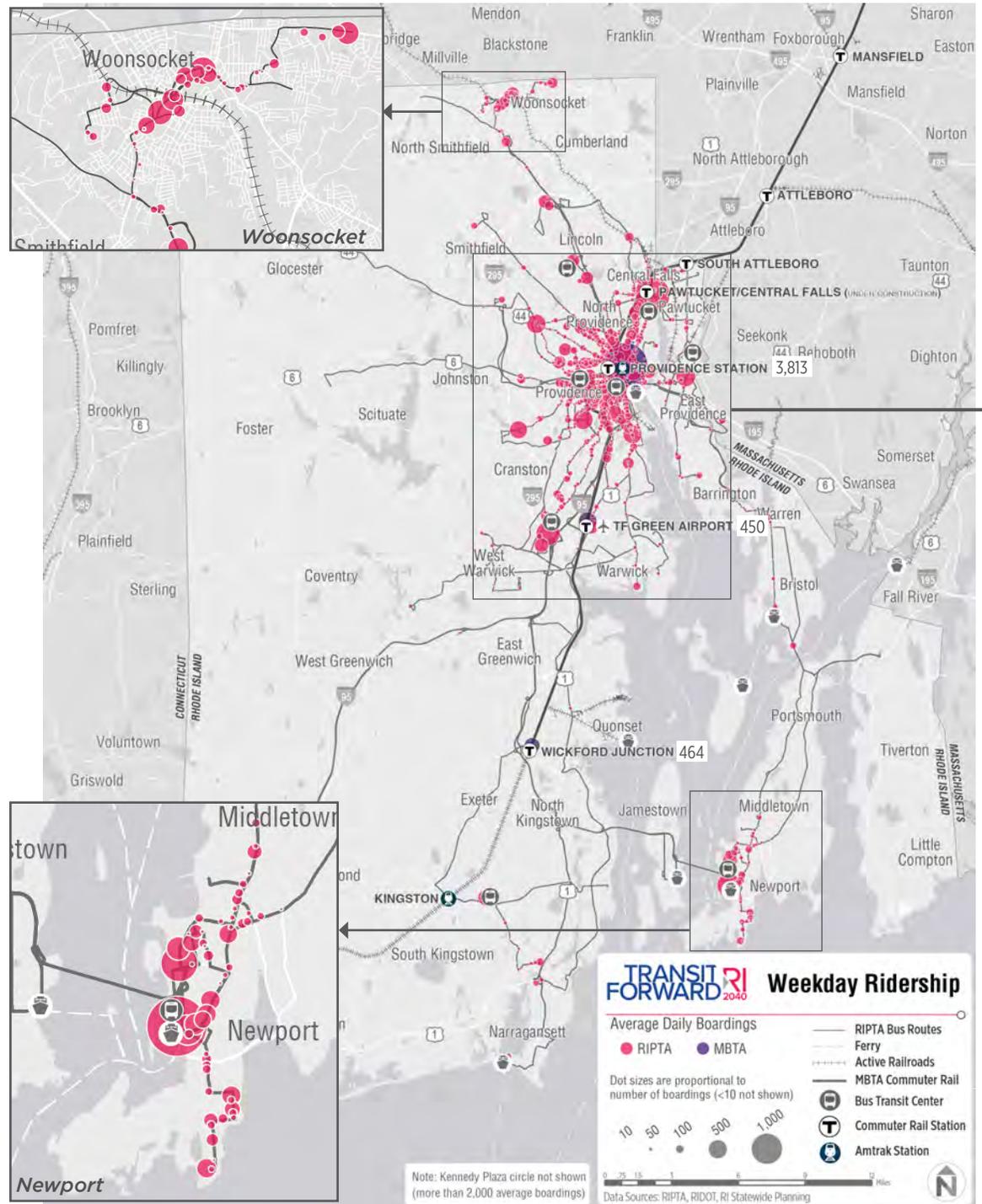
- Kennedy Plaza
- Pawtucket Transit Center
- College Hill/East Side Bus Tunnel at Thayer Street
- Warwick Mall

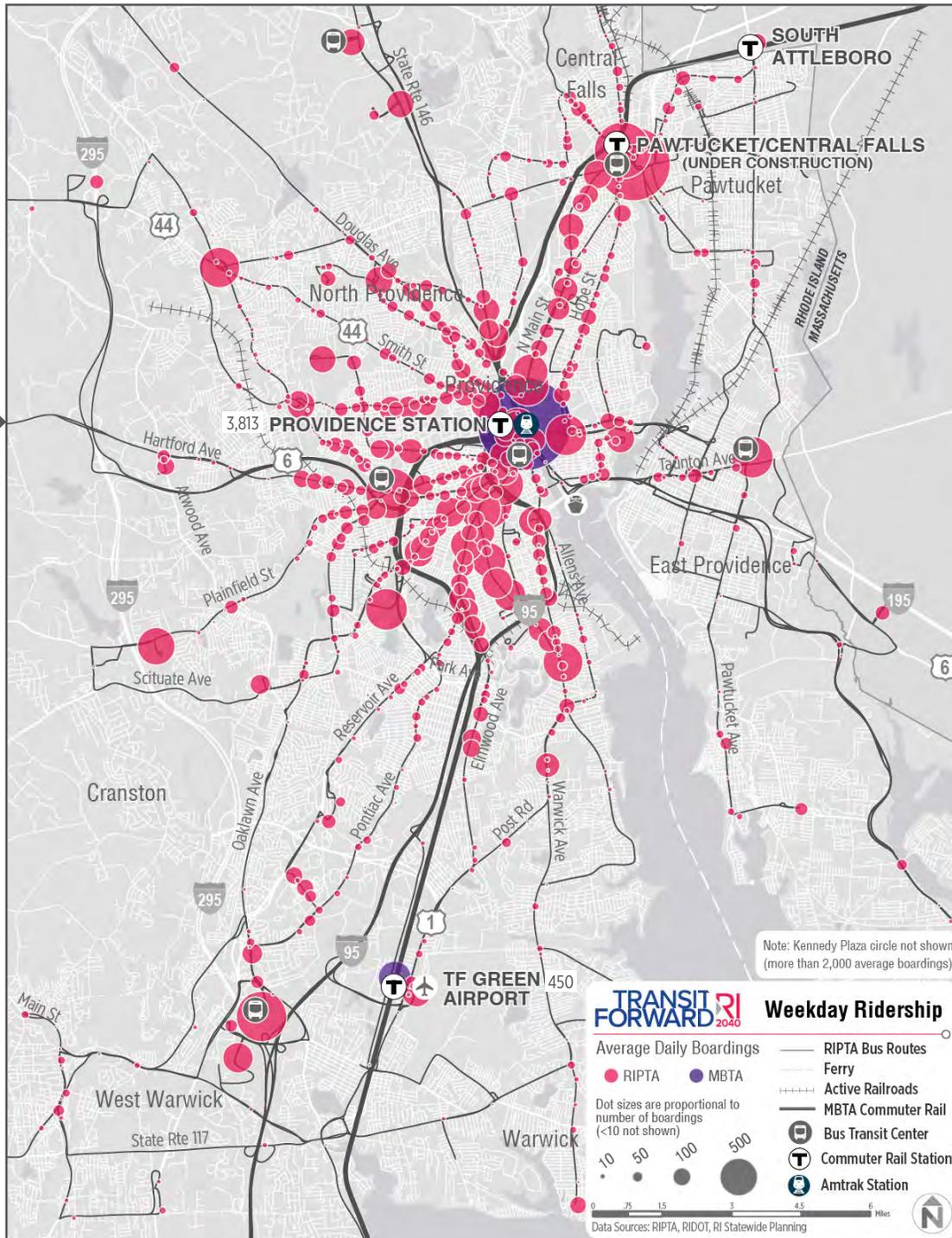
Additional high ridership stops have more than 500 daily passenger trips, including:

- Olneyville Square
- URI Kingston
- Providence Station
- Rhode Island Hospital
- Newport Gateway Center
- Wampanoag Plaza
- East Side of Providence at Eastside Marketplace
- T.F. Green Airport
- CCRI
- Rhode Island College
- Woonsocket

Within Providence, ridership is focused along major corridors radiating from downtown Providence, including:

- Broad Street from downtown Providence to Vermont Avenue/Eddy Street
- Cranston Street within Providence
- Eddy Street south to I-95
- Elmwood Avenue from Broad Street south to I-95
- Atwells Avenue west of Route 6
- Charles Street from Admiral Street north to Branch Avenue





- Main Street between downtown Providence and Pawtucket

Other high-ridership locations within Providence include:

- Olneyville Square
- Providence Station
- Rhode Island Hospital
- East Side of Providence at Eastside Marketplace
- Rhode Island College

Northeast of Providence, Pawtucket also represents a major hub of RIPTA ridership. The highest ridership volumes are concentrated at Pawtucket Transit Center (the second-highest ridership hub in the system) and on Goff Avenue.

Outside of Providence and Pawtucket, ridership is generally focused in a few concentrated locations around the state:

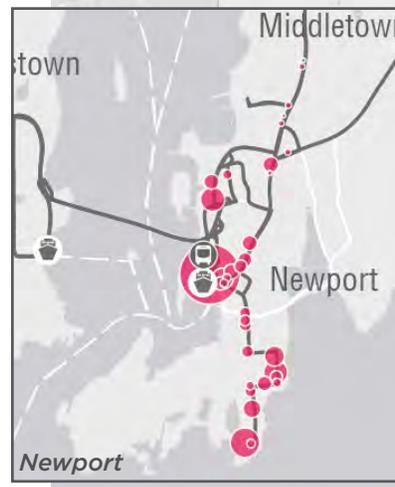
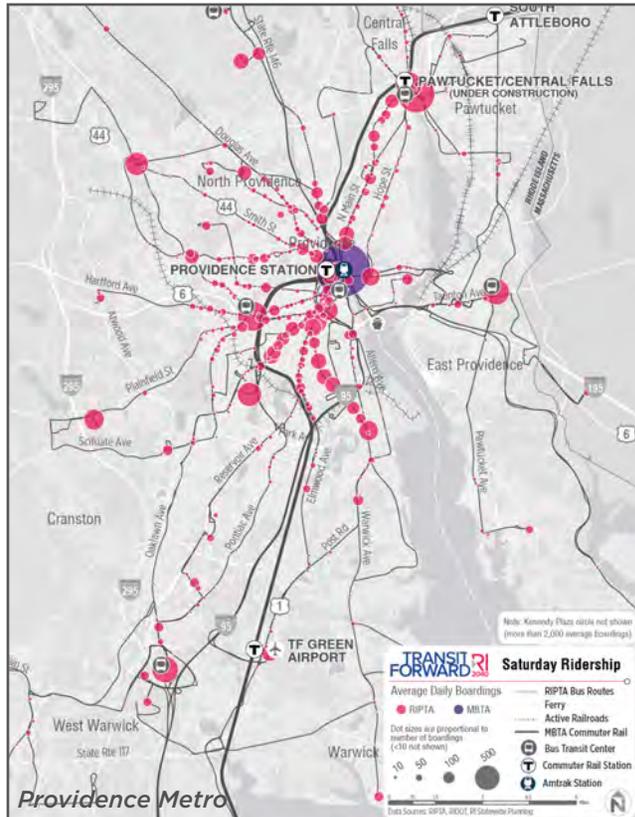
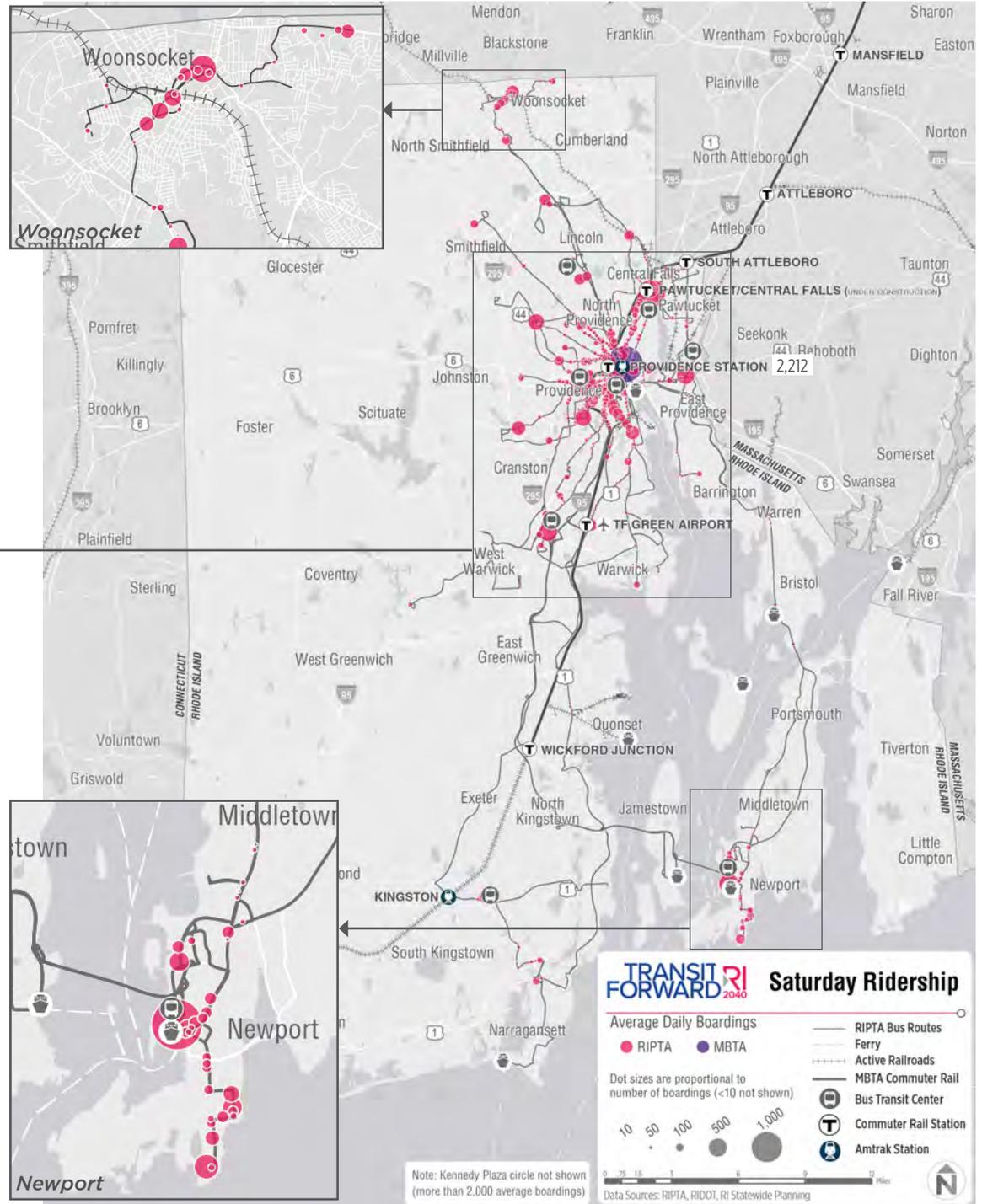
- In Warwick, one of the highest ridership stops in RIPTA's system is at Warwick Mall. Ridership is also very high at the CCRI campus and at T.F. Green Airport.
- In Newport, ridership is highest at the Newport Gateway Center, along Broadway in central Newport, and at Newport Towne Center.
- In Woonsocket, ridership is focused along Social Street and South Main Street.

Providence Station is the busiest commuter rail station in Rhode Island, with 3,813 average weekday passenger trips in 2018, or 82% of the state's weekday rail ridership. Commuter rail ridership is generally lower at the other two rail stations, both of which opened within the last decade and are immediately surrounded by smaller population and job markets. TF Green Airport Station had an average of 450 weekday commuter rail passenger trips in 2018, while Wickford Junction had an average of 464 passenger trips.

Saturday Ridership is 54% of Weekday Ridership

RIPTA carries 28,300 passenger trips on Saturdays. Volumes at most stops are generally lower across the system on weekends, although they largely follow the same patterns and corridors as weekday ridership. Similar to weekdays, the largest volumes on Saturdays are concentrated in downtown Providence and along major corridors in Providence, as well as Pawtucket, Warwick, Newport, and Woonsocket. However, Saturday ridership is similar to or higher than weekday ridership levels at several locations, particularly commercial or tourism destinations, including Warwick Mall, Wampanoag Plaza, Olneyville, Newport Gateway Center, and Stop & Shop in Cranston.

The MBTA Providence Line carries about 2,200 passenger trips on Saturdays.



TRANSIT FORWARD RI 2040 Saturday Ridership

Average Daily Boardings

- RIPTA (red)
- MBTA (blue)

Dot sizes are proportional to number of boardings (<10 not shown)

10 50 100 500 1,000

- RIPTA Bus Routes
- Ferry
- Active Railroads
- MBTA Commuter Rail
- ⊕ Bus Transit Center
- ⊕ Commuter Rail Station
- ⊕ Amtrak Station

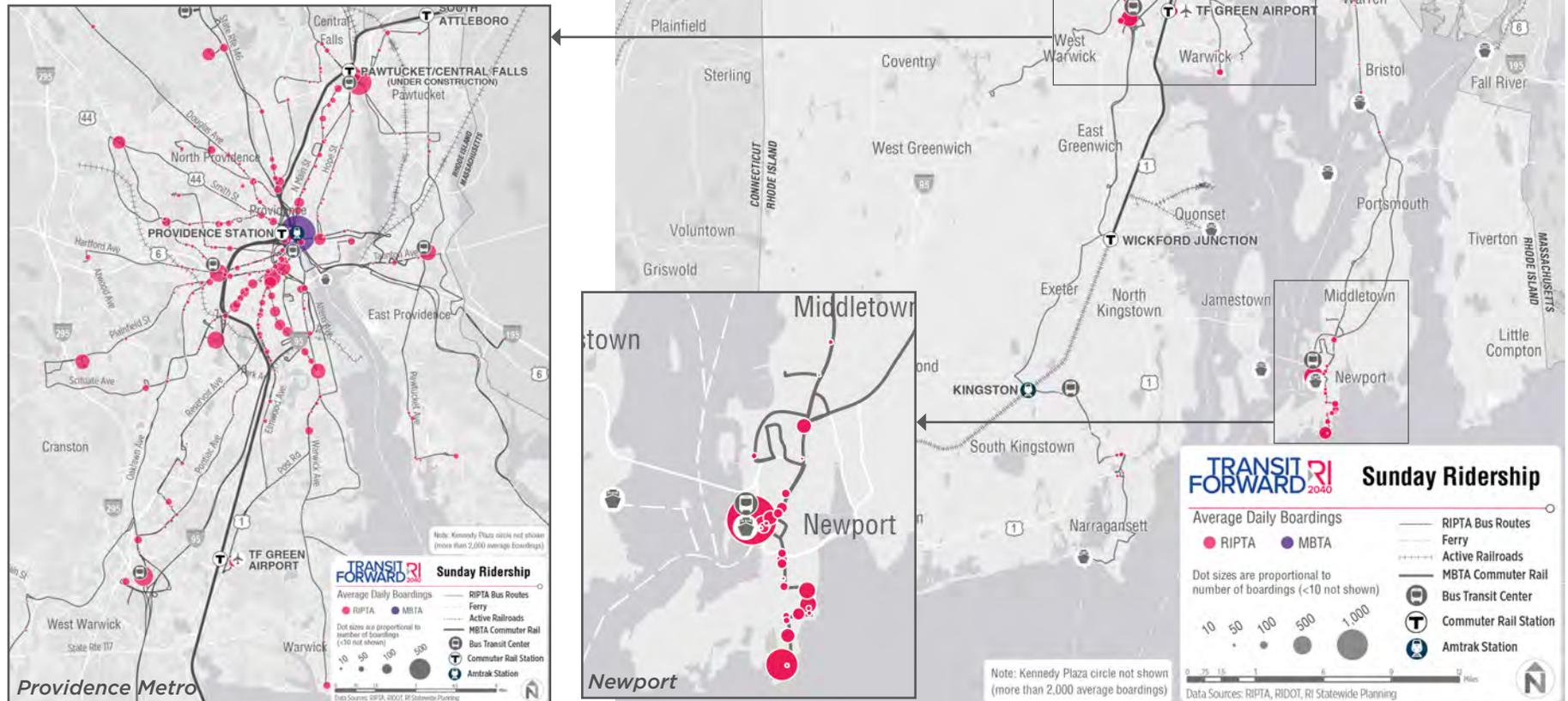
Note: Kennedy Plaza circle not shown (more than 2,000 average boardings)

Data Sources: RIPTA, RIDOT, RI Statewide Planning

Sunday Ridership is 27% of Weekday Ridership

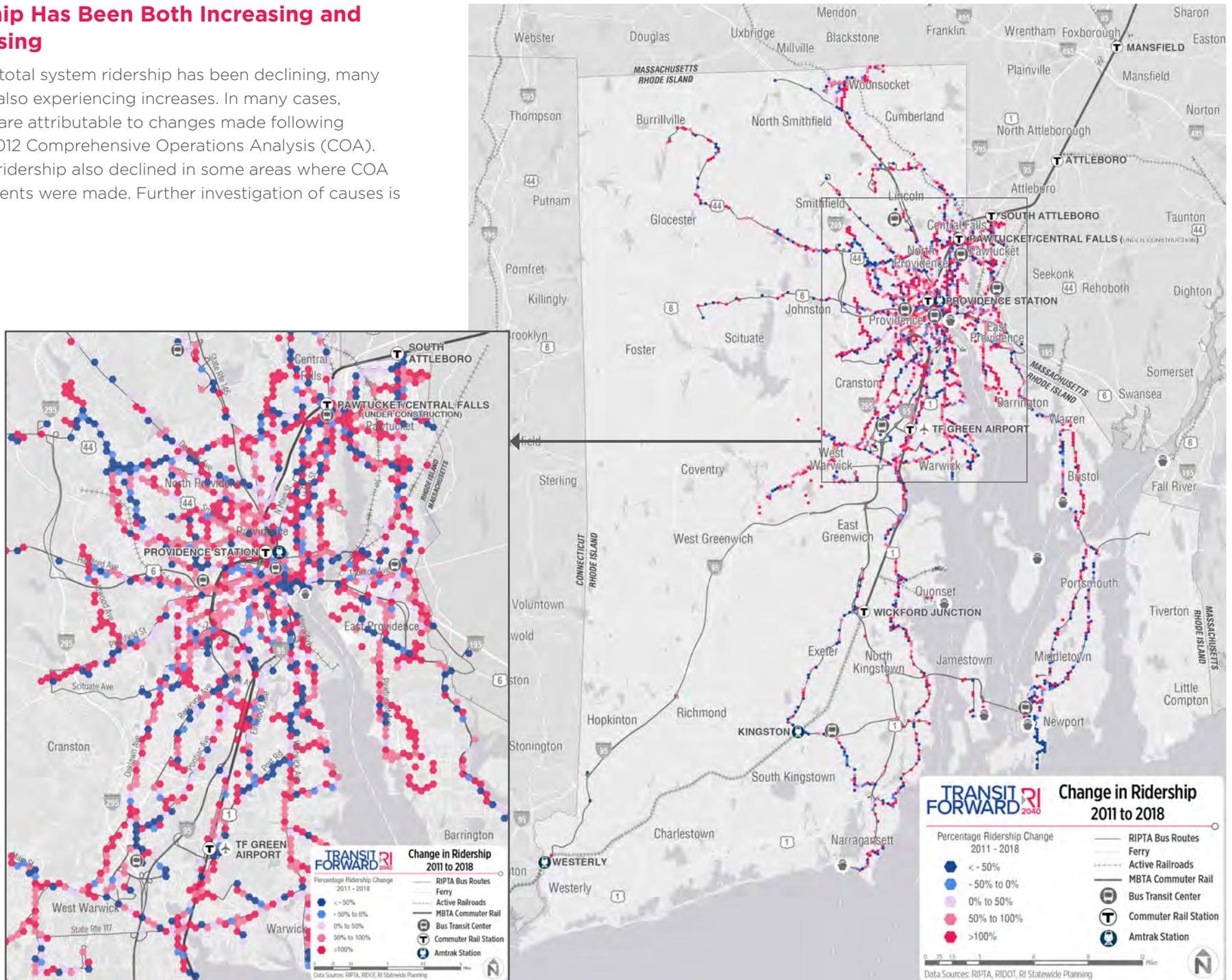
RIPTA carries 14,400 passenger trips on Sundays. Stop-level ridership contracts more sharply on Sundays, and is focused in the core areas of Providence along major corridors, particularly to the south along Broad Street and Cranston Street, and north along Main Street to Pawtucket. Ridership also continues to be high at destinations such as Warwick Mall, Wampanoag Plaza, Stop & Shop in Cranston, Newport Gateway Center, down Bellevue Avenue at the southern end of Newport, and in central Woonsocket.

The Providence Line carries nearly 1,900 passenger trips on Sundays.



Ridership Has Been Both Increasing and Decreasing

Although total system ridership has been declining, many areas are also experiencing increases. In many cases, increases are attributable to changes made following RIPTA's 2012 Comprehensive Operations Analysis (COA). However, ridership also declined in some areas where COA improvements were made. Further investigation of causes is needed.



Ridership by Route Ranges from Fewer than 20 to Over 8,100

The R-Line is the highest ridership public transit route in Rhode Island, carrying over 8,182 passenger trips on weekdays. Ridership is also generally higher on the Key Corridor routes, which operate along major corridors and many of which provide relatively frequent service during the day. Most of these routes carry between 1,000 and 4,000 daily passenger trips; Route 1 Hope - Eddy carries 3,964 weekday passenger trips, making it the second-highest ridership RIPTA route.

Local route ridership varies widely, carrying anywhere from 100 to nearly 1,500 daily passenger trips. The highest ridership Local route, Route 51 Charles Street, has 1,468 daily riders. Route 49 Camp Street - Miriam Hospital, which operates just five trips per day, has 24 passenger trips. The next-lowest ridership Local route is Route 80 Armistice Boulevard, with 103 passenger trips.

RIPTA's five Regional routes also have a wide range of ridership. Route 60 Providence - Newport has 2,223 weekday passenger trips, exceeding some Key Corridor routes and ranking as the fifth-highest ridership RIPTA route on weekdays. Route 54 Lincoln Woonsocket Route 66 URI - Galilee serves 770 daily passenger trips. Together with Route 62 URI, which also operates between Providence and URI Kingston, the two routes serve 1,181 weekday passenger trips.

Express routes generally carry between 50 and 100 daily passenger trips, with two exceptions. Route 65X Wakefield Park-and-Ride has 142 passenger trips, while Route 10X North Scituate, which operates one round trip per day, has 20 passenger trips.

Flex routes have relatively low ridership compared to fixed-route services, with four of the seven Flex routes carrying between 15 and 20 passenger trips. Route 281 Woonsocket Flex is the highest ridership Flex route with 87 passenger trips, followed by Route 204 Westerly Flex with 69 passenger trips.

Commuter rail service has 4,727 daily passenger trips in Rhode Island. If the line were a RIPTA route, it would rank 2nd in weekday ridership.

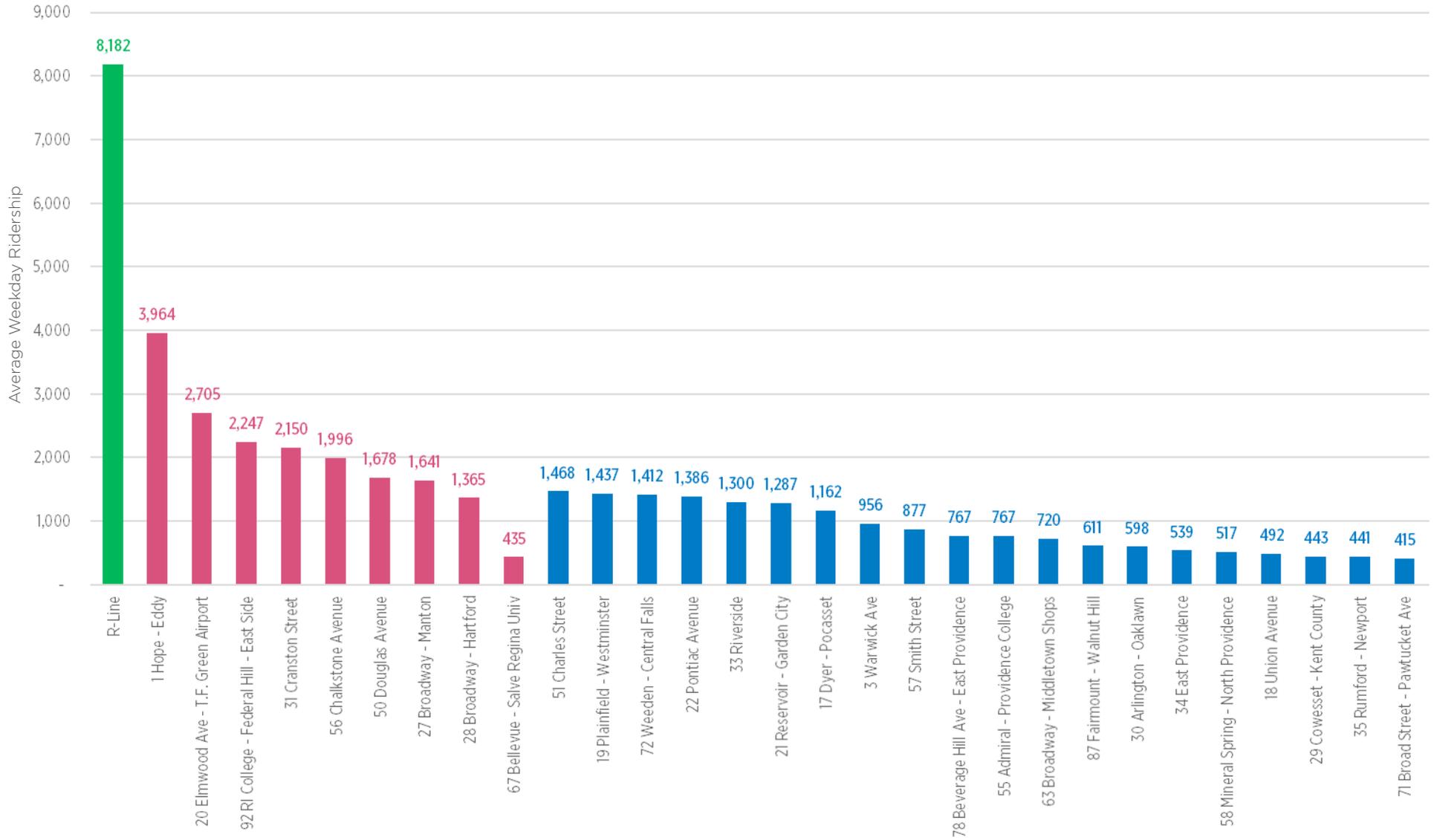
Top 10 Transit Routes in Rhode Island

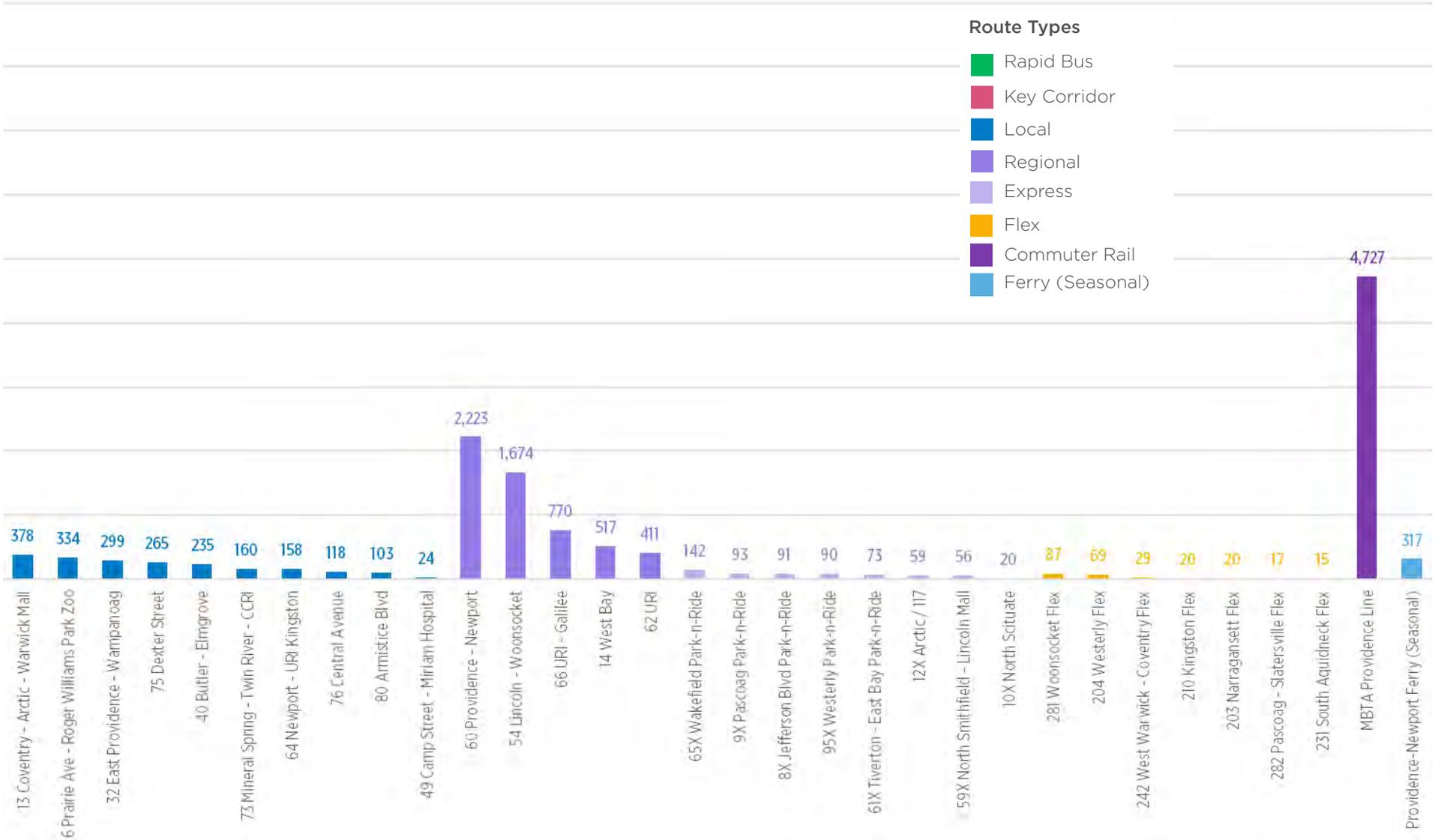
Average Weekday
Ridership

- R-Line Broad St - N Main St **8,182**
- MBTA Providence Line **4,727**
- 1 Hope - Eddy **3,964**
- 20 Elmwood - T.F. Green Airport **2,705**
- 92 RI College - Federal Hill - East Side **2,247**
- 60 Providence - Newport **2,223**
- 31 Cranston Street **2,150**
- 56 Chalkstone Avenue **1,996**
- 50 Douglas Avenue **1,678**
- 54 Lincoln - Woonsocket **1,674**

**2 RIPTA Regional routes —
60 Providence-Newport and
54 Lincoln-Woonsocket
— rank among the top 10
highest ridership routes.**

Average Weekday Transit Ridership by Route





Transit Funding in Rhode Island



Funding Sources

Funding for Rhode Island transit projects and programs comes primarily from a mix of federal and state sources, supplemented by other revenues such as passenger fares and local contributions. Together, these revenues support transit operations, as well as capital expenditures for asset repair, asset replacement and system enhancement.

Primary funding sources that support transit in Rhode Island include:

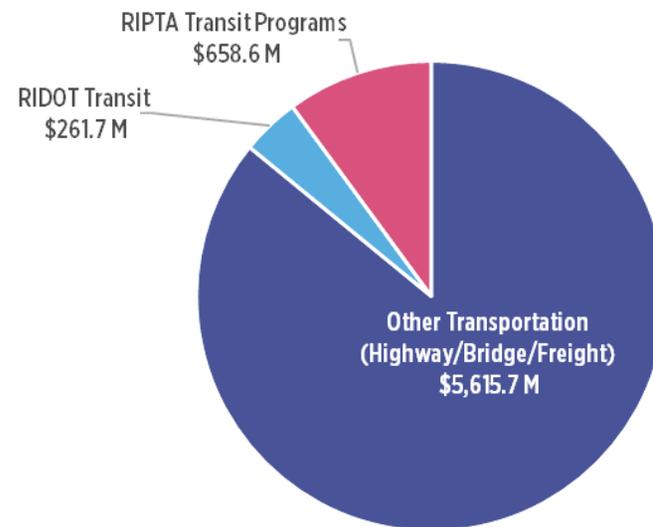
- **Federal Transit Administration (FTA)** funding for construction or maintenance of transit facilities, and operating support for certain services such as senior transportation, rural transit or paratransit. Federal funds typically require a 20% local match or greater.
- **Federal Highway Administration (FHWA)** funding that can be flexed to transit, bicycle or pedestrian projects.
- **Congestion Mitigation Air Quality (CMAQ)** funding for programs that help meet clean air goals.
- **Federal Discretionary Grants** including economic development grants and discretionary transit grants for bus facilities, ferry terminals and other projects.
- **RI State Gas Tax**, which is indexed to inflation, and currently set at 34 cents per gallon. A portion of the proceeds are directed to RIDOT (18.25 cents per gallon) and RIPTA (9.75 cents per gallon).
- **RI Capital Asset Program (RICAP)**, which captures state revenues to support capital projects (e.g. transit vehicle replacements) or to match federal funds.
- **RI Highway Maintenance Account**, which is funded through a portion of vehicle registration surcharges, driver license fees and vehicle inspection fees. It is used to match federal funds, with 5% annually used to support RIPTA operating expenses.
- **General Obligation Bonds**, formerly a primary source to match federal transit funds, have largely been replaced by the Highway Maintenance account. However, bonds may be approved via voter referenda for specific projects.

Other funding sources include passenger fares and service fees, advertising revenues and contributions from municipalities, private entities or partners such as Amtrak, private businesses, or universities.

RI Transit Program FY2018 - FY2027

A 10-year transportation program was set forth in the most recent State of Rhode Island Transportation Improvement Program (TIP), adopted in 2017. The TIP identifies all anticipated surface transportation revenues and programs these funds over a ten year period. Of the \$6.5 billion anticipated to be available for surface transportation programs in Rhode Island between FY2018 and FY2027, approximately \$920.3 million (or about 14.1%) is currently programmed for transit and alternative transportation programs. About \$658.6 million will be directed toward RIPTA managed programs and about \$261.7 million will be directed toward RIDOT transit and transportation alternative programs.

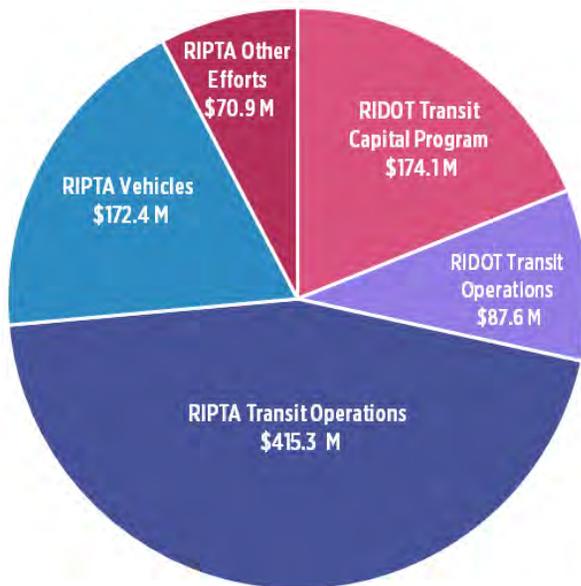
Rhode Island's 10-Year Transportation Program
FY2018 - FY2027



Source: State of RI Transportation Improvement Program (TIP).
Prepared by RI Statewide Planning Program, 2017; Amended October 2018.

A total of \$415.3 million over 10 years (or 45% of transit funding) is programmed for RIPTA operations, preventative maintenance, and administration. RIDOT's transit capital project development program and RIPTA's vehicle replacement program are each set to receive about \$170 million (19%). RIDOT transit operations (rail and ferry operations) will receive 10%. Other RIPTA efforts (capital program and other enhancements) are slated to receive about 8% of the total funding allocated.

10-Year Transit Funding by Program Area FY2018 - FY2027



Source: State of RI Transportation Improvement Program (TIP).
Prepared by RI Statewide Planning Program, 2017; Amended October 2018.

Fiscal Constraints

RIDOT's transit capital program and rail and ferry operations are predominately federally funded with a state match of about 20%. Commuter rail operations between South Attleboro and Providence are funded through an agreement with the MBTA that shares FTA rail capital funds in return for service. Rail service south of Providence is supported through CMAQ funding and FTA capital funds. The Providence to Newport Ferry is supported through CMAQ, but only through FY2020.

RIPTA's capital program is also nearly 80% federally funded, with local match provided through the operating budget or one-time project contributions from outside partners.

Most capital funding is programmed for the maintenance and regular replacement of buses and paratransit vans. There are limited funds available each year for other initiatives such as facility upgrades, passenger amenities, and fare and communications technologies.

In contrast, RIPTA's operating budget is predominately funded through state and local sources (75% to 80%), including state gas tax receipts, the Highway Maintenance Account, fare box revenue, contract revenue, advertising, and leases. Gas tax revenues are the primary funding source, but have been declining as vehicles generally become more fuel efficient. The state projects that this trend will continue, significantly impacting the long term sustainability of RIPTA operations. The state has also provided temporary support to maintain RIPTA's senior/disabled reduced fare program; however, this funding does not continue into FY2020, and continued operation of the program will put additional pressure on RIPTA's budget.

Labor costs, fuel volatility, and decreases in the revenue generated by the gas tax have occasionally created operating budget deficits, which leaves RIPTA unable to meet their established standards for service frequency and span, or to address many demands for new service.



RIPTA
RHODE ISLAND PUBLIC TRANSIT AUTHORITY

101
DOWNTOWN

101
DOWNTOWN



KNEELING

RAMP



3 The Market for Transit in Rhode Island

Underlying Local Transit Demand

Travel Patterns

Commuter Service Demand

Looking Forward to 2040

Underlying Local Transit Demand

Underlying transit demand is strongly related to six factors:



Population and Population Density: Since transit relies on having more people in close proximity to service, higher population density makes it feasible to provide higher levels of service.



Socioeconomic Characteristics: Different people have a different likelihood to use transit, with differences related to socioeconomic characteristics. For example, households with many cars are much less likely to use transit than those with one or none.



Employment and Employment Density: The location and density of jobs is also a strong indicator of transit demand, as traveling to and from work often accounts for the most frequent type of transit trip.



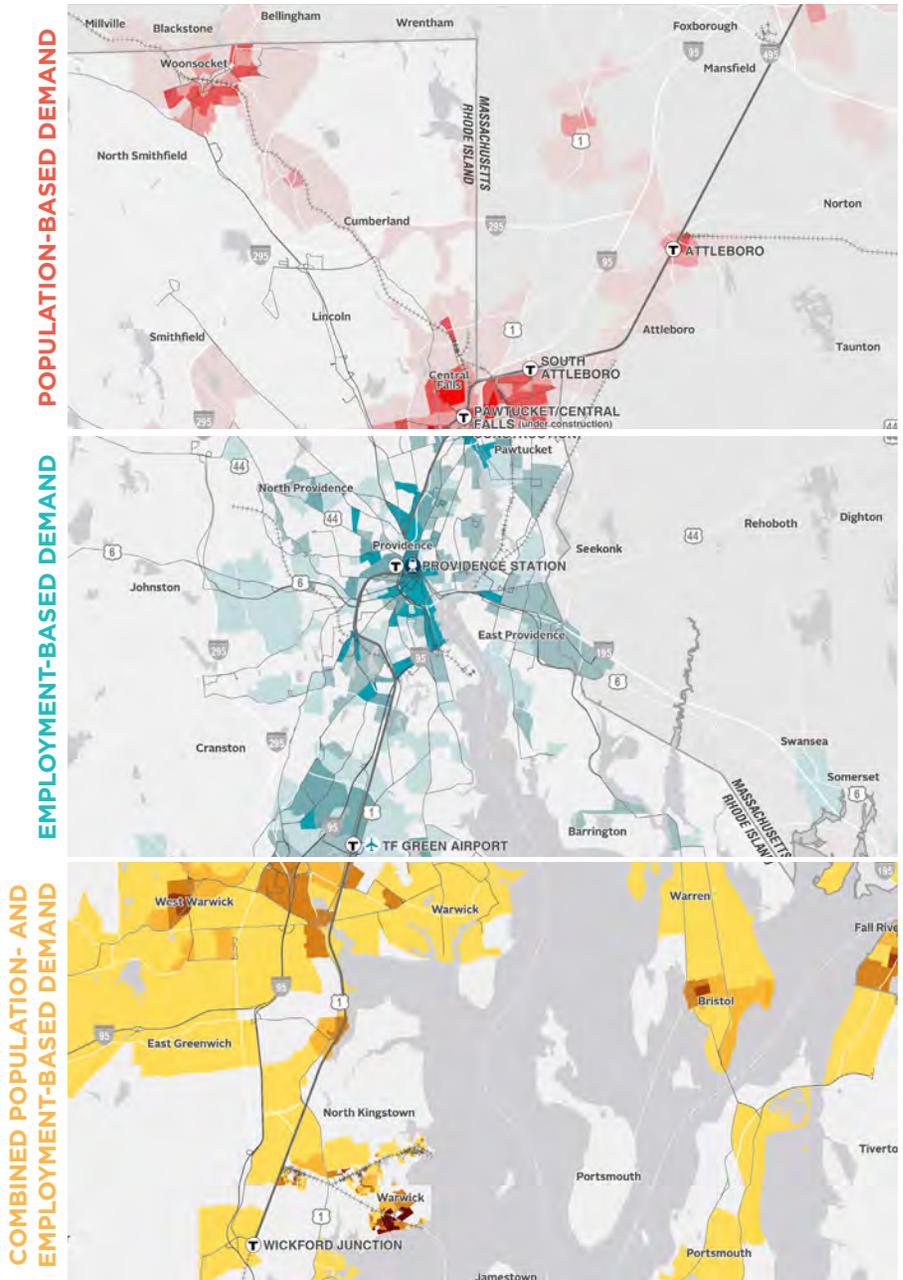
Development Patterns: In all cities, there is a strong correlation between development patterns and transit ridership. In areas with denser development, mixed-use development, and a good pedestrian environment, transit can become very convenient, making it attractive and well used.



Major Activity Centers: Large employers, universities, tourism destinations, and other high-activity areas attract large volumes of people and can generate a large number of transit trips.



Travel Flows: People use transit to get from one place to another. Major transit lines such as commuter rail and high frequency bus corridors are designed to serve corridors with high volume travel flows.



More than any other factor, **population and employment density** will determine the underlying demand for transit. This is because:

- The reach of transit is generally limited to within one-quarter mile of the bus stop or station. As a result, the size of the travel market is directly related to the density of development in that area.
- Transit service frequencies, in turn, are closely related to market size. Bigger markets support more frequent service, while smaller markets can support only less frequent service.
- To attract travelers who have other options, such as private automobiles, transit service must be relatively frequent and get riders to their destination in a time and at a cost competitive with a private vehicle.

Population and job densities also provide an indication of the underlying demand for transit in terms of the type and frequency of service that would be most appropriate. For example, to support 30-minute service, there generally must be at least 15 households per acre or at least 15 jobs per acre, or a combination thereof. However, these densities broadly indicate demand across contiguous and nearby areas. Clusters of density throughout an area or along a corridor are strong indicators of demand, while a dense but small block group in an isolated area would not produce sufficient demand in and by itself. Demand can also accumulate along corridors to produce demand for more frequent service than the densities alone would indicate. For example, long corridors where most block groups have the density to support 15- to 30-minute service will often produce accumulated demand for 15-minute or better service.

Areas that do not have at least 10 residents or five jobs per acre or a combination thereof, generally more sprawling communities made up of single family neighborhoods, do not provide an environment where fixed-route transit can succeed easily. New technologies are allowing for the use of microtransit in these areas, which tend to be demand-response services that can transport residents to fixed

routes or destinations in other low-density areas. Providing appropriate levels of service that match demand in different environments is more efficient and results in better service for residents. Instead of providing fixed-route service every few hours in low-density areas, using demand-response services in these areas provides more freedom for residents there, and can free up larger vehicles to run service where densities are higher.

LAND USE			TRANSIT	
Land Use Type	Residents per Acre	Jobs per Acre	Appropriate Types of Transit	Frequency of Service
 Downtowns & High Density Corridors	>45	>25	   	 10 mins or better
 Urban Mixed-Use	30-45	15-25	  	 10-15 minutes
 Neighborhood & Suburban Mixed-Use	15-30	10-15		 15-30 minutes
 Mixed Neighborhoods	10-15	5-10	 	 30-60 minutes
 Low Density	2-10	2-5	  	 60 mins or less or On Demand
 Rural	<2	<2	 	 On Demand

Source: Thresholds based on research by Nelson\Nygaard.

Population-Based Demand

Population Density

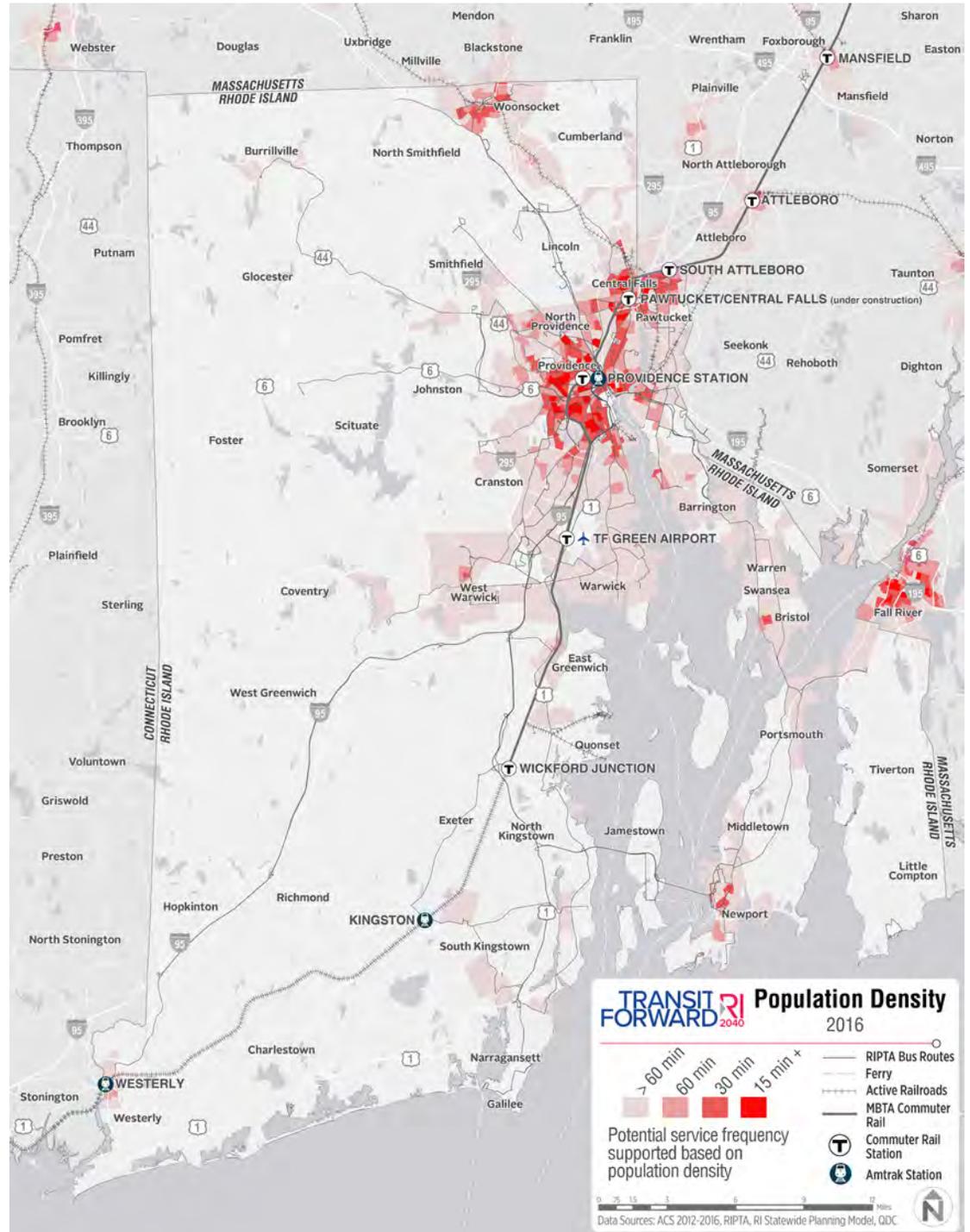
Population density is one of the most important factors in determining underlying demand for transit. Not only does density indicate where there are many people in close proximity, but also generally indicates land use types more suited for transit. Denser areas tend to be more walkable and less auto-oriented, with more limited access to parking and less reason and incentive to own a private automobile.

Rhode Island, as of 2016, was home to 1.05 million residents, with concentrations of the population varying greatly across the state. Different levels of density can translate into the level of transit service that a given area could support. Areas shown in red can support some level of fixed-route transit.

Areas with the highest population concentrations are within the urban areas of:

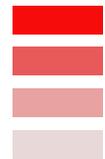
- Providence
- Pawtucket
- Central Falls
- East Cranston
- Woonsocket
- Newport
- Fall River and South Attleboro, across the border in Massachusetts

Currently, Providence and the bordering municipalities noted above have the most extensive transit service.



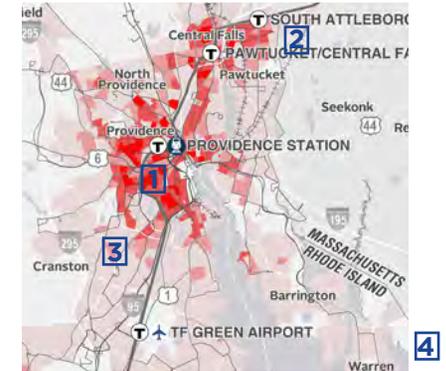
Visualizing Population Density

Visualizing density can be a helpful way to understand what different land uses look like as they relate to potential transit demand. More people in an area often means taller buildings packed more closely together, like the multi-family apartment buildings in the West End, as opposed to detached single-family units in Pawtucket, Cranston, and Bristol.



Transit Frequency
 <= 15 mins
 16 - 30 mins
 31 - 60 mins
 Microtransit

Population Density
 > 30 residents/acre
 15 - 30 residents/acre
 10 - 15 residents/acre
 < 10 residents/acre



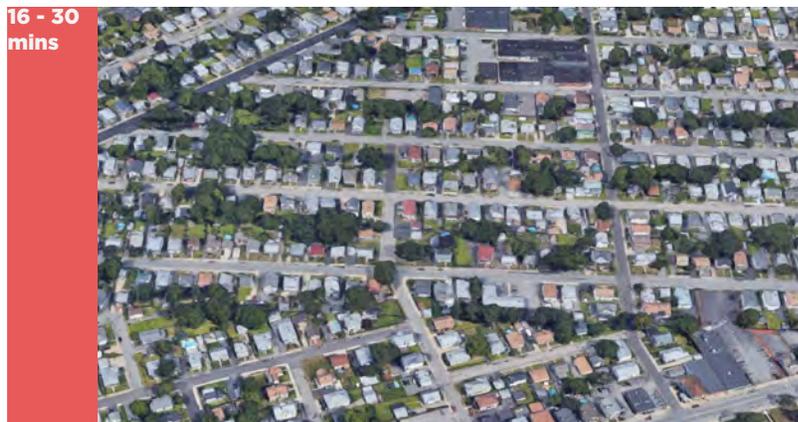
1 The West End, Providence - 33 Residents per Acre



3 Cranston - 12 Residents per Acre



2 Darlington/Pawtucket - 21 Residents per Acre



4 Bristol - 5 Residents per Acre



Socioeconomic Characteristics

In addition to population density, socioeconomic characteristics influence people’s propensity to use transit. National research shows that many population groups have a higher propensity for transit use than the overall population. Socioeconomic characteristics that are related to transit propensity include:

Race and Ethnicity: Minority residents generally have higher rates of transit use, and the provision of effective transit service to minority populations is also particularly important to the Federal Transit Administration and is a requirement under Title VI of the Civil Rights Act of 1964. Approximately 26% of Rhode Island’s population is made up of minority residents: 14% Hispanic or Latino/a, 5% Black, 3% Asian, and 3% of another race or races.

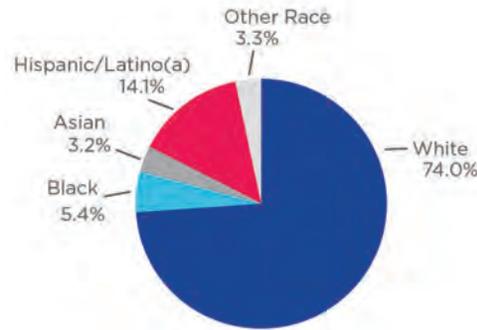
Vehicle Ownership and Access: Households with limited or no access to a personal vehicle, either by choice or by necessity, are more likely to rely on transit. Some living in areas of the urban core in Rhode Island may choose to live car-free because they can access jobs and other amenities via transit or by walking. Other residents may use transit for other reasons, such as cost or inability to drive. Other households have fewer cars than workers, and one-vehicle households also have higher rates of transit use. In the state, 10% of households do not own a vehicle, 37% own one vehicle, and 53% own two or more vehicles.

Immigrant Communities: Those who are foreign-born are more likely to use public transit than the general population. Immigrant communities are more likely to use transit because of the cost burden associated with arriving in a new country and obtaining a vehicle or a driver’s license, or of navigating different traffic laws. Also, in many other countries, transit use is more common among the general public. As a result, many foreign-born residents are more inclined to use transit when they arrive in the United States.

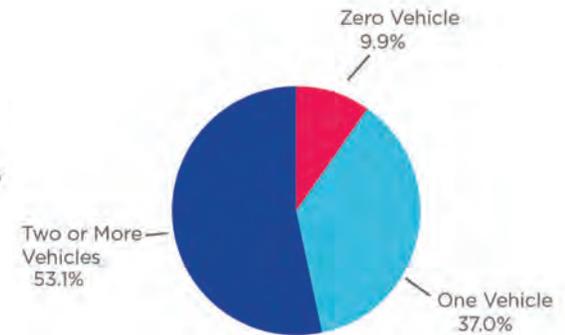
Income: Residents with lower incomes tend to use local transit to a greater extent because it is less expensive than owning and operating a personal vehicle, and many rely on transit as their primary mode of transportation. Members of households earning less than \$35,000 a year use transit to a greater extent than the general population. Rhode Island households are made up of 23% with incomes less than \$25,000, 9% with \$25,000 to \$35,000, and 68% over \$35,000.

Demographics of Rhode Island Residents

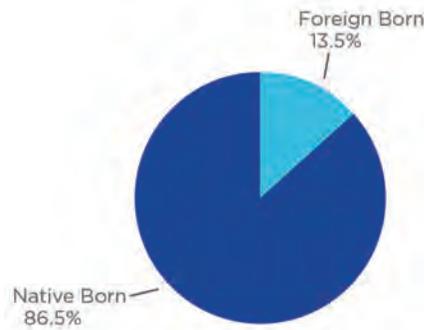
Race/Ethnicity



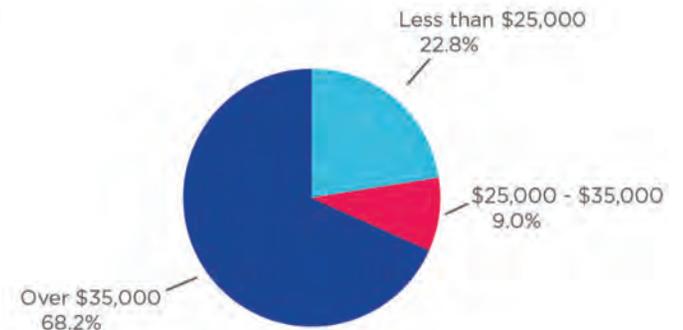
Household Vehicle Ownership



Country of Origin



Household Income



Source for all demographics: American Community Survey 5 Year Estimates 2012-2016

Demographics and Transit Propensity

When significant numbers of individuals and households from these high-transit propensity groups cluster together, they can influence the underlying demand for transit to an extent that is not captured when only considering total population. In a given location, groups of people from transit-supportive demographic groups may be too small individually to indicate significant demand for transit service, but their clustering may result in potentially high levels of transit use. Similarly, in a location where transit-supportive demographic groups have low representation, the level of potential transit demand may actually be lower than total population density alone would indicate.

To take this into account, a measure called the transit propensity adjustment factor was developed to measure relative demand for transit in different areas as compared to the region. This factor takes into account demographic characteristics for the population aged 16 and over who are employed. These factors measure the likelihood of certain demographic groups to use transit to commute to work relative to the study area's general population. Demographic groups with a transit propensity adjustment factor greater than 1 is more likely than the general population to use transit.

Differences in transit propensity are based on vehicle ownership, race and ethnicity, annual income, and immigration status.

Members of households with no vehicle households are, intuitively, the demographic group with the highest likelihood to take transit. Most people do not live within walking distance of their job, so transit becomes the option available to them. Members of one-vehicle households are also more likely to take transit, but to a lesser extent. This is because many households are comprised of more than one worker or working aged adult, meaning that often one member will not have primary access to the vehicle. Those who are black, Hispanic or Latino/a, or of another race show a strong propensity to use transit, as do those making less than \$25,000 a year and those born in other countries.

Those experiencing poverty are more likely to use transit, as are minority residents and foreign-born residents. Residents living in a household with no vehicle were the most likely demographic group to use transit, with over twice the propensity of an average resident, and those living in a household with only one vehicle were also more likely to use transit, as many households have more than one worker.

DEMOGRAPHIC GROUP	RELATIVE TRANSIT PROPENSITY
RACE AND ETHNICITY	
White Alone (Not Hispanic or Latino)	0.63
Black or African-American (Not Hispanic or Latino)	2.00
Asian (Not Hispanic or Latino)	1.24
Other Race (Not Hispanic or Latino)	2.01
Hispanic or Latino	1.75
HOUSEHOLD VEHICLE OWNERSHIP	
No Car	6.18
One Car	1.27
Two or More Cars	0.55
COUNTRY OF ORIGIN	
Native	0.86
Foreign	1.49
HOUSEHOLD INCOME	
Less than \$25,000	1.42
\$25,000 - \$35,000	0.97
More than \$35,000	0.69

Source: Calculations developed using 2012-2016 American Community Survey 5-Year Estimates of Rhode Island residents.

While persons with disabilities, young adults, and older adults are also documented to use transit at higher rates, transit propensity for these demographics is not captured accurately by using journey-to-work data as these groups are employed at lower rates than the total population.

These figures indicate the relative propensity of different groups of Rhode Island residents to use transit. For example, transit propensity factor of 1.77 indicates that the group is 1.77 times more likely to use transit than the general population. This is based on the transit mode share of 21.5% for the Census Designated Places that makeup the service area, and the available demographic split on journey-to-work data.

Transit Propensity Adjustment Factor

When the proportion of the different socioeconomic characteristics described above are considered, residents of the urban core have a higher propensity to use transit (shades of green), and most residents of outer areas have a lower propensity to use transit (shades of red), as compared to the state average. Areas where the makeup of residents is more transit dependent tend to be adjacent to one another because of the geographic clustering of low-income, immigrant, and minority communities, as well as the tendency of these communities to live in denser areas.

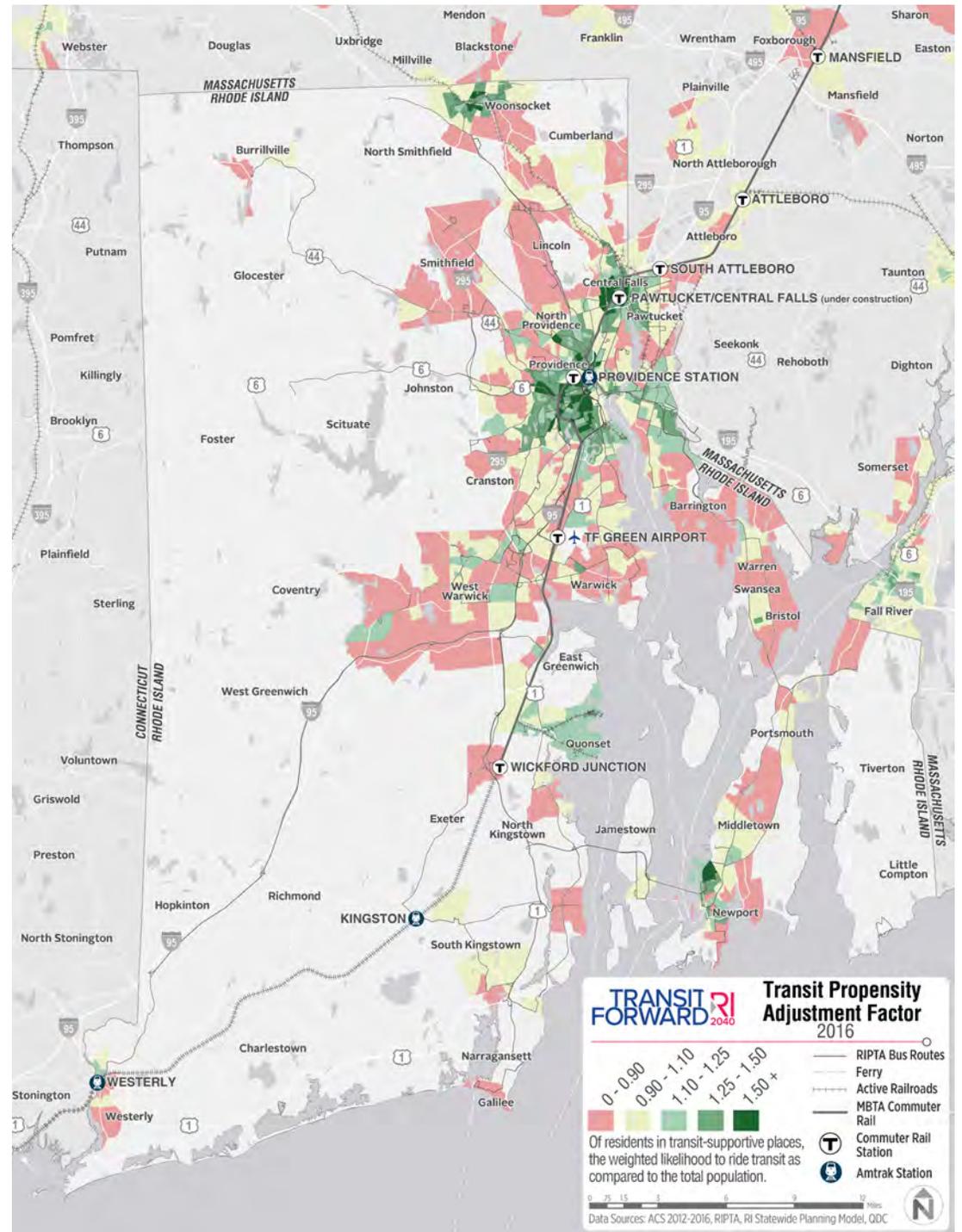
The areas where residents have the highest propensity to use transit include:

- Providence
- Central Falls
- Pawtucket
- Eastern Cranston
- East Providence
- Woonsocket
- Fall River, Massachusetts
- Parts of Newport

Some suburban areas in Rhode Island are still dense enough to support transit, but the demographic characteristics of their residents indicate that they are less likely to use transit than those in the urban core. These areas include:

- East Greenwich
- Smithfield
- Barrington
- Lincoln
- Portsmouth

Note that only areas that can support some level of transit service are evaluated and displayed on the map to the right.

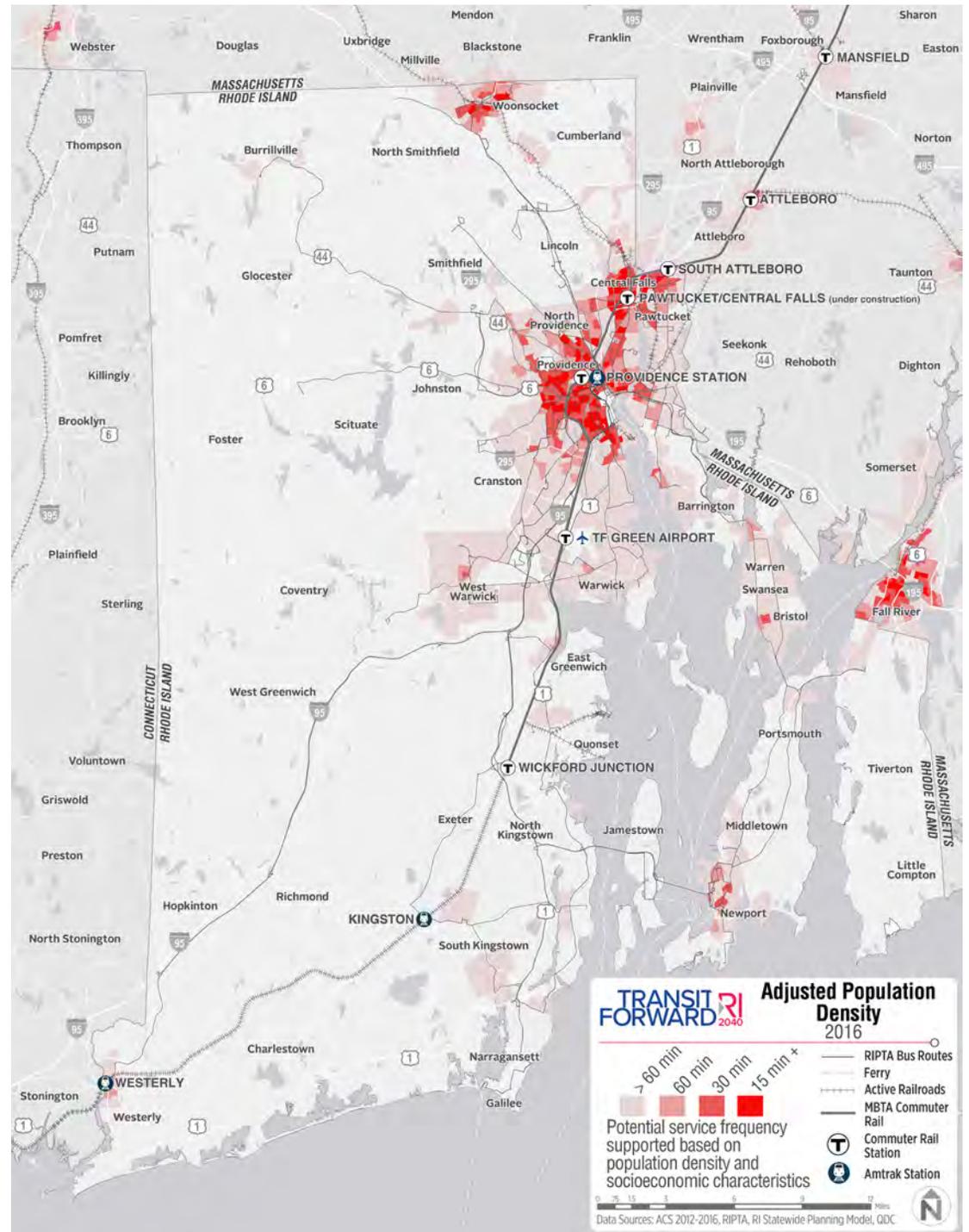


Adjusted Population-Based Demand

When demographic factors are considered in the context of population densities, the effective underlying demand is higher in some areas and lower in others. In general, when socioeconomic characteristics are considered with density, it tends to intensify the demand in urban areas and diminish the demand in more outlying, sprawling areas. Areas that have a very high underlying demand for transit by this measure are:

- Providence
- North Providence
- Pawtucket
- Central Falls
- Woonsocket
- Newport
- Fall River, Massachusetts

These are generally the same areas where absolute population densities are highest. Just as important as recognizing the Providence metro area and the few communities outside of it that show strong demand for transit is to recognize that a vast majority of the state does not consist of an environment in which traditional, fixed-route transit will run successfully. Demand falls off steeply outside of the urban core.



Employment-Based Demand

Employment Density

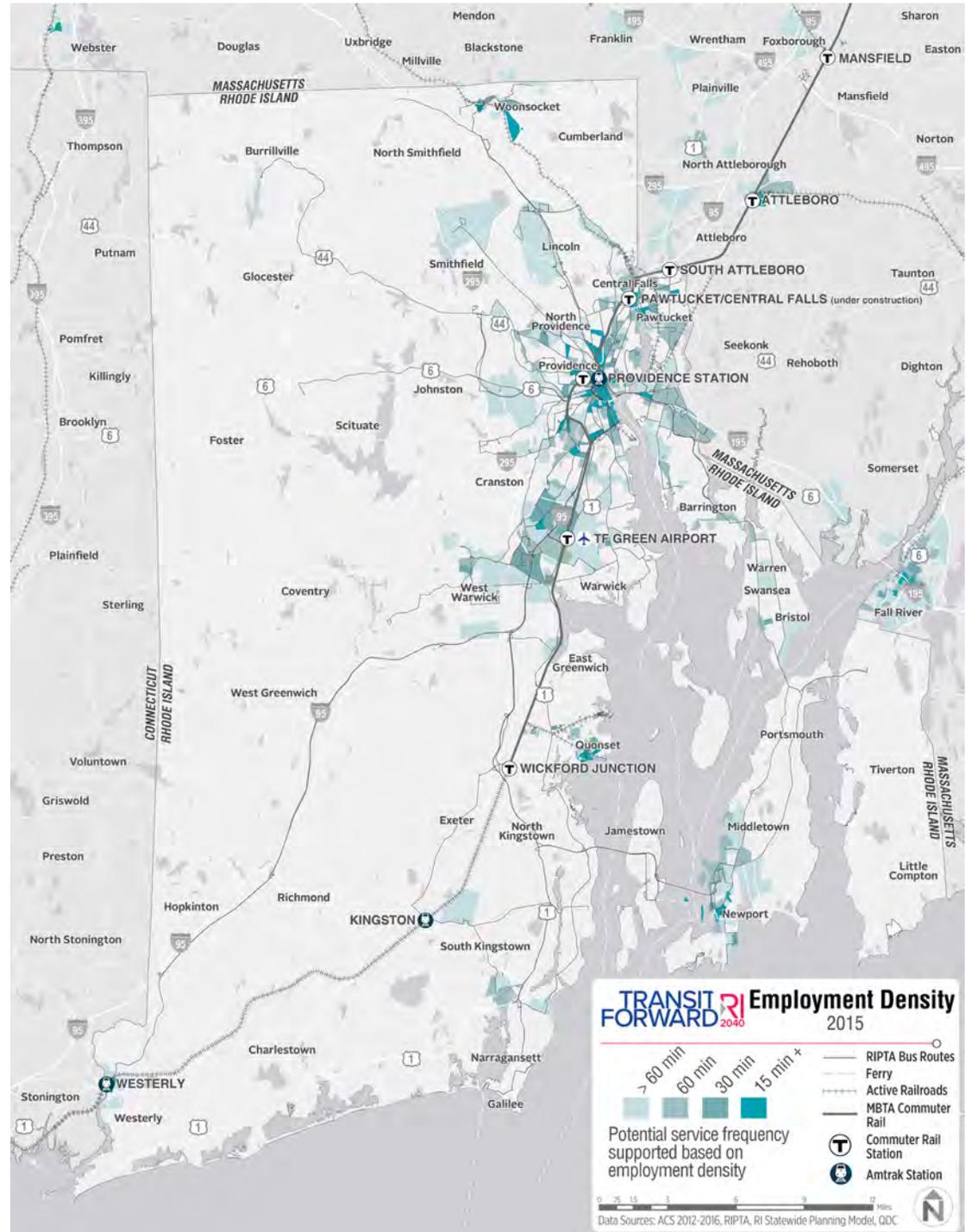
Commuting is the most frequent and regular reason riders take transit. As a result, employment density is another major source of transit demand. Job density is also an important indicator of demand because it is one of the easiest ways to represent other types of potential travel activity as well; where restaurant and retail employees need to travel are also where customers are traveling, as with hospital employees and patients. As densities increase, the demand for transit grows, particularly for more frequent service.

The location of jobs, like population, clusters in certain areas. Those areas where job-based demand is highest include:

- Providence, especially downtown
- East Cranston
- Warwick, including near TF Green Airport
- Central Falls
- Pawtucket
- Woonsocket
- Newport
- Areas of Quonset Business Park farthest from the shoreline
- Fall River, Massachusetts

Areas with lower levels of demand include:

- Smithfield
- Lincoln
- West Warwick
- West Kingston
- Westerly



Employment data note: The Rhode Island Statewide Planning Model in part uses data supplied by the Rhode Island Department of Labor and Training.

Visualizing Employment Density

Just as with residents, density is the most important component when serving jobs with the appropriate level of fixed-route transit service. Jobs tend to be more concentrated than residents and sometimes one employer, like Kent Hospital in Example 2, can produce enough density in a small area to warrant more frequent levels of service. Areas with many office buildings, stores, restaurants, and other diverse forms of employment spaced closely together are the best creators of demand for frequent transit service. Jobs in areas like East Providence in Example 4 often have jobs located in strip-style single-story development that is always lower density and less well-suited to transit.



Density is the most important component when serving jobs with the appropriate level of fixed-route transit service.

<=15 mins		1 Downtown Providence 86 jobs/acre
16 - 30 mins		2 Kent Hospital Warwick 10 jobs/acre
31 - 60 mins		3 Eastern Pawtucket Post office and Elementary School 6 jobs/acre
Micro-transit and on demand		4 Armington Corner East Providence 3 jobs/acre

Beyond Fixed Route Service

While contiguous density matters most to traditional fixed-route or frequent service, serving isolated areas of demand or connecting lower density areas to places that can support fixed route transit may be a priority for a transit system. Serving areas that cannot support fixed-route service with alternative solutions that are more suited to the area's specific transportation needs leads to higher quality service for all users.

Transportation Management Associations (TMA)

Office parks and warehouses, which employ many people in one area, are often a priority for a region to serve with transit. Employees of these areas often have lower incomes or work second and third shift times and may have fewer resources to put toward transportation. Large employers often take an interest in how their employees get to work and are more likely to have the resources to invest in their employees' commutes. Quonset, which currently has 12,000 jobs and continues to grow, is an example of a major employment zone that is isolated from other areas of high transit demand. Such isolated but significant employment areas are prime targets for Transportation Management Associations (TMAs), public-private partnerships between transit agencies and local employers who run shuttles or van services that coordinate with public transit services. Schedules and dropoff points can be coordinated with shift times to get employees to the main sites throughout the park they need to reach from a strategic location with a fleet of small vehicles. Coordinated partnerships can help get employees to their destinations faster, and help a transit agency run more productively.

Microtransit

Microtransit is a term often used to describe private companies or branches of transit agencies that use vans or small transit vehicles, often in conjunction with on-demand service applications generally accessed through smartphones. When run by private companies, routes are often determined based on demographic information and crowdsourced data and may only operate during peak periods primarily as a commuter service. Much like TMAs, there is a potential to partner with microtransit companies to offer a suite of services with the recognition that one size doesn't fit all when it comes to transit. Microtransit run by transit agencies can be a demand-

Example of a TMA Van in Waltham, MA



Source: 128 Business Council

response service that helps transport individuals to the nearest fixed route. This service may pick up individuals at the location they request, or have fixed "nodes" that serve as pickup or dropoff points. Microtransit is one way to address "first-mile/last-mile" connectivity issues.

Rideshare Services

Private rideshare companies, or Transportation Network Companies (TNCs) like Uber and Lyft, compete directly with transit, and evidence suggests they play a role in declining transit ridership across the country. However, public-private partnerships with these companies can also help serve as a way for individuals to reach fixed-route service on demand and be integrated into a transit system rather than competing by serving trips that are not efficiently served by traditional transit.

Volunteer Driver Program/Municipal Programs

Volunteer Driver Programs are often used by humanitarian organizations to serve trips for older adults, people with disabilities, or other underserved markets in generally less dense areas. Volunteers are often reimbursed to drive transit dependent persons to medical appointments, grocery stores, or other necessary places that are usually not served by fixed-route transit services. Municipalities in Rhode Island also run similar programs out of municipal senior centers. These programs often serve lifeline trips that otherwise would be provided by paratransit or family members. Partnership potential between these different programs and RIPTA could expand the geographical reach of these programs.

Major Activity Centers

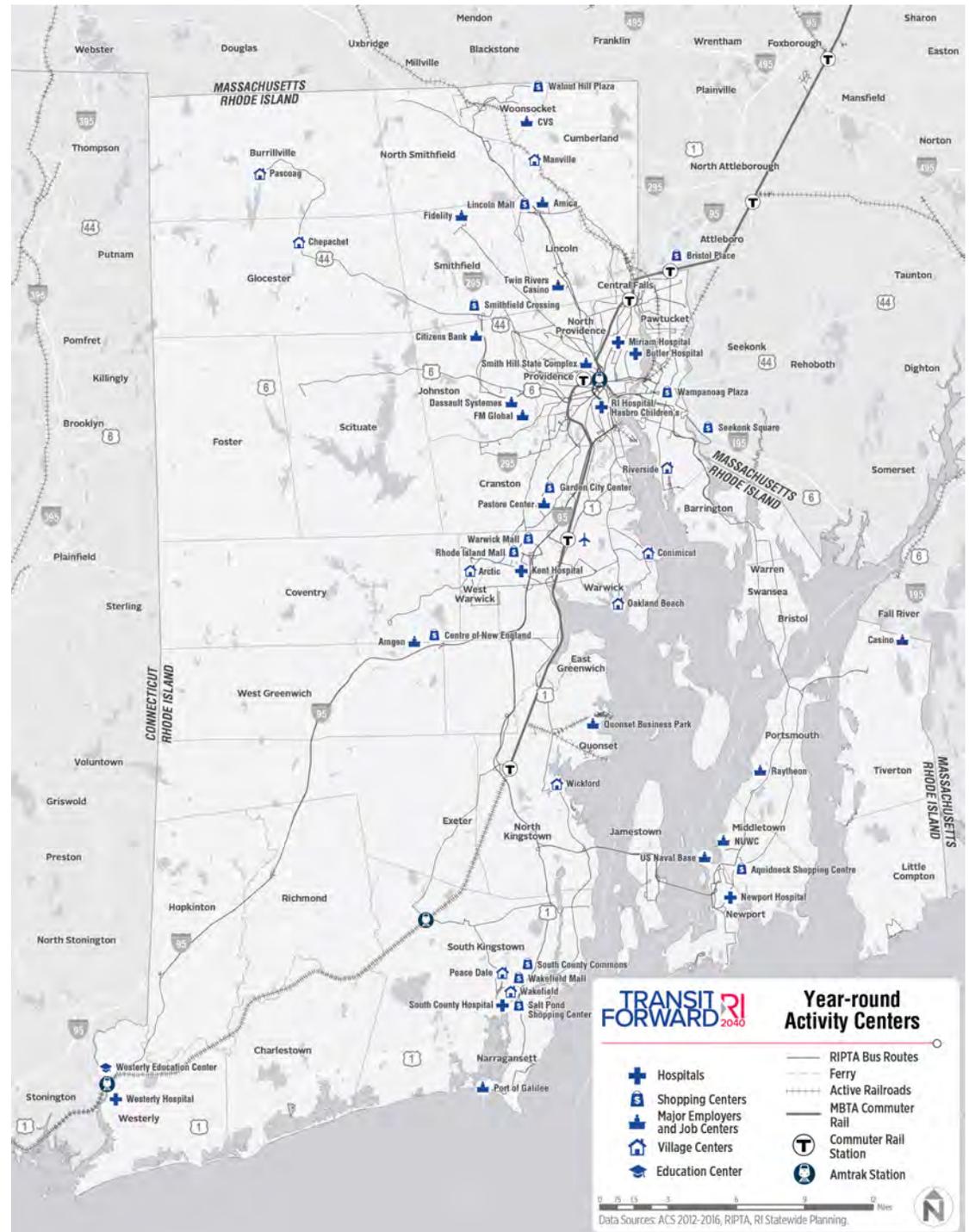
Some activity centers generate additional demand for transit. Most of these places – large employers, shopping malls and retail centers, hospitals, and town centers – generate relatively consistent demand for transit throughout the year. Other activity centers like state beaches and colleges and universities are significant transit demand generators only during certain seasons of the year.

Many major employment centers are defense-oriented businesses or military bases along the Rhode Island coast. Others are located in automobile-oriented suburban campuses in the Providence metro area.

Year-Round Transit Demand Generators

Regionally-significant employers and shopping centers like Kent Hospital, Westerly Hospital, the US Naval Base in Newport, and shopping centers in Wakefield, Newport, Warwick, and Lincoln are important destinations to serve with transit year-round. Warwick in particular is home to a number of major activity centers (Warwick Mall, Rhode Island Mall, CCRI Warwick, and Kent Hospital) but is difficult to serve due to the large surface parking lots surrounding each destination.

Corporate campuses like Amica, Fidelity, Dassault Systemes, and Raytheon have large numbers of employees, but are generally segregated from street networks on their own automobile-oriented campuses. The village centers of Arctic, Riverside, Conimicut, Oakland Beach, Manville, Wickford, Chepachet, Wakefield, Peace Dale, and Pascoag are walkable mixed-use centers that today are mostly served by at least hourly service to Providence.



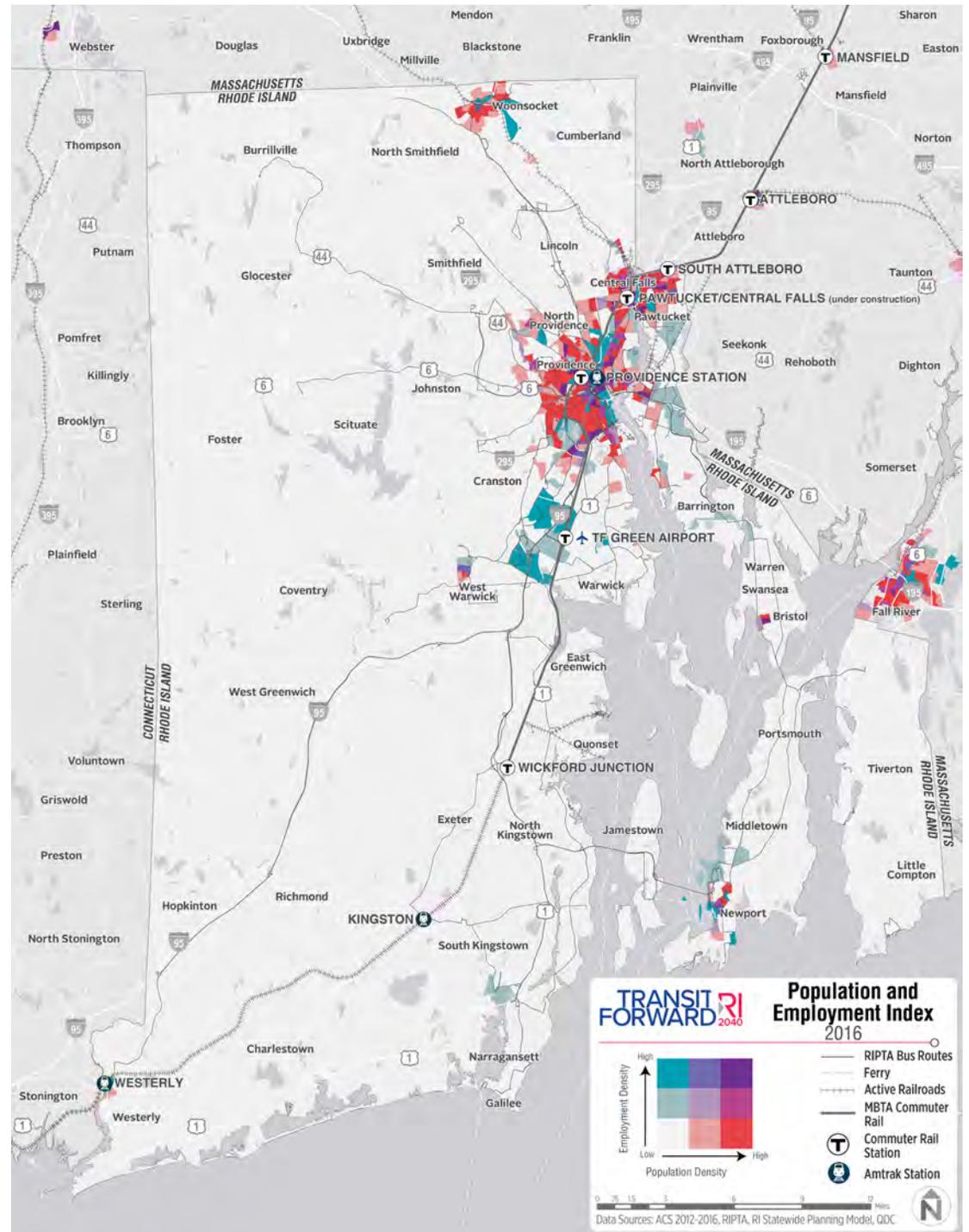
Mixed-Use Areas

Mix of Population and Employment

While density of jobs or residents alone are good indicators of transit demand, a mix of land use in the same areas can produce even more demand than either alone. Areas where individuals are working and living indicate steady activity levels throughout the day and evening, whereas segregated employment and resident density leads to stricter windows of high demand for travel between areas. Places with high mixed-use density (shown in purple) include:

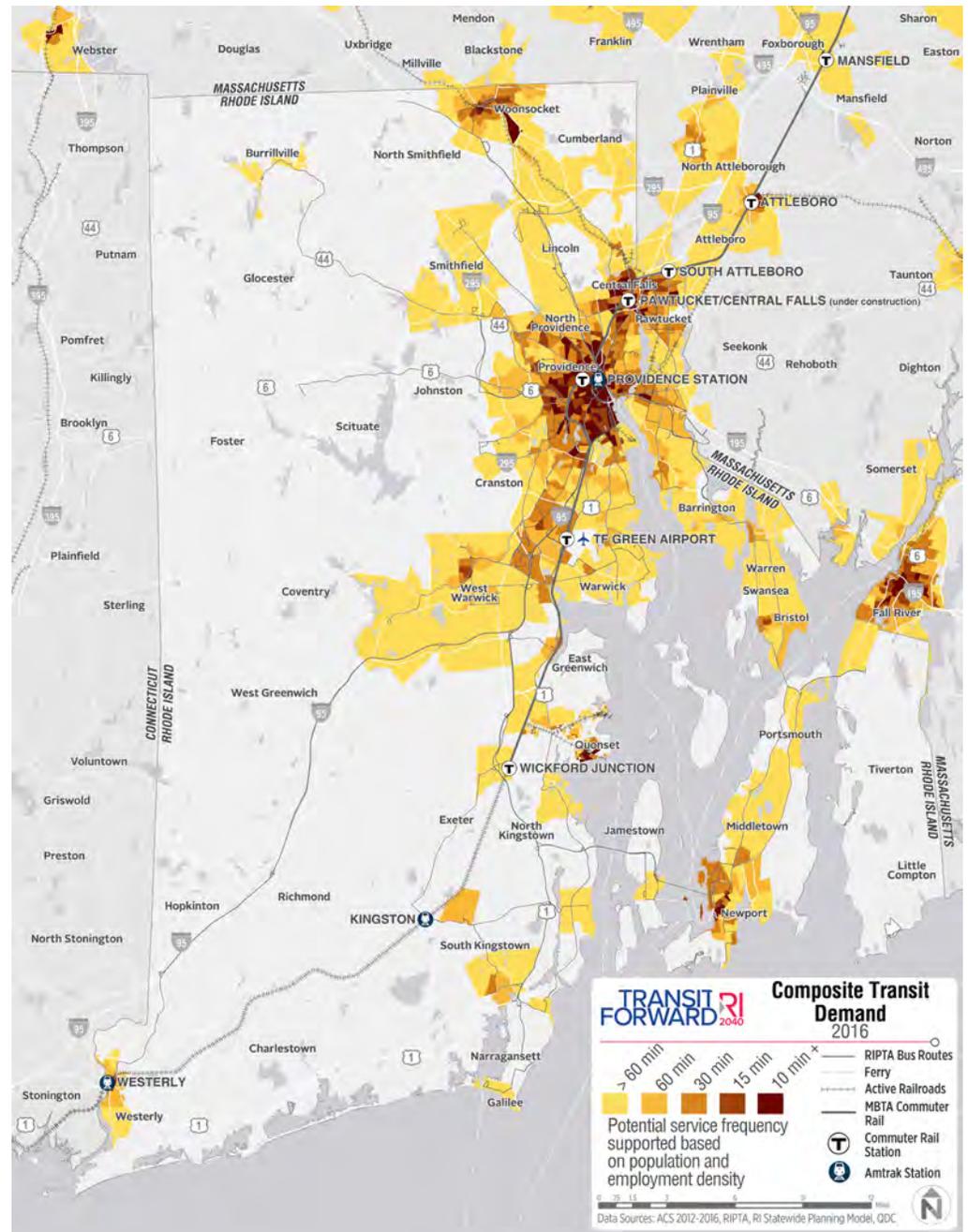
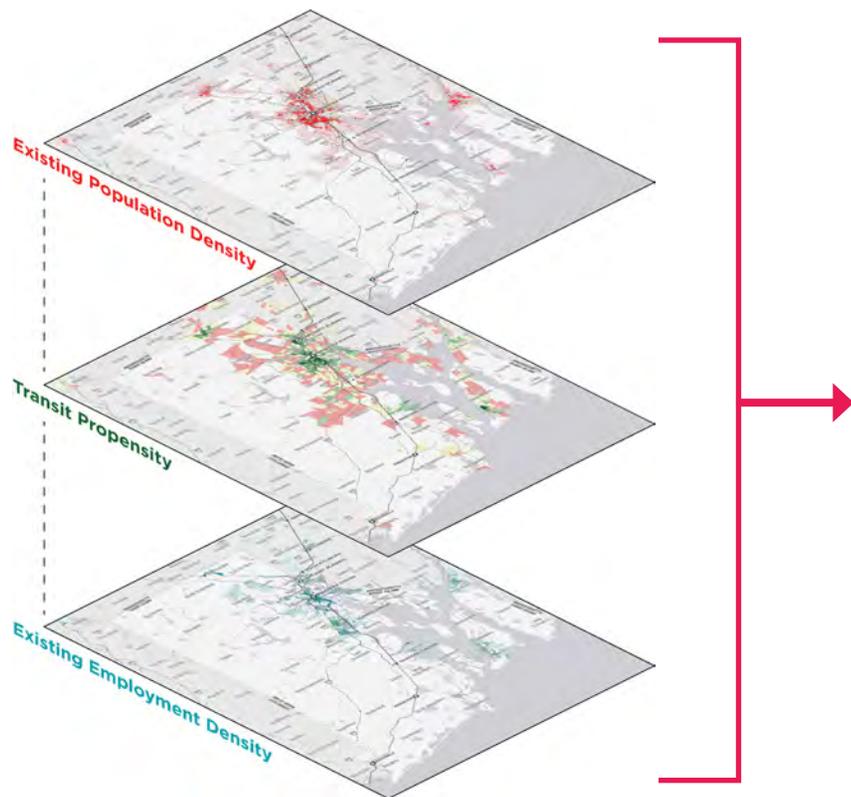
- Downtown Providence
- The area around Rhode Island Hospital
- Parts of Pawtucket
- Parts of Central Falls
- Downtown Fall River

While other parts of the urban core show significant demand from population and employment alone, dense residential or employment areas will produce trips between them that are more likely to follow general commute patterns as opposed to creating steady demand all throughout the day and evening. Making concerted efforts to develop in a mixed-use fashion and changing zoning to favor mixed-use development is an investment that can help support high-quality transit.



Combined Population, Demographic, & Employment-Based Demand

The previous sections have described how population density, socioeconomic characteristics, and employment density separately produce demand for transit. Looking at them combined, however, is the best way to get a complete understanding of the underlying demand as none of these three aspects of demand exist in isolation from one another. When population, demographic, and employment-based demand are considered together, it is clear that the underlying demand for transit is very high in the Providence metro area and is significant along the I-95 Corridor south of Providence. Woonsocket and Newport also make up areas with significant demand, as well as Fall River and Attleboro in Massachusetts. However, much of the state, and almost the entirety of those areas west of cities along the coast, show virtually no demand for fixed-route service.



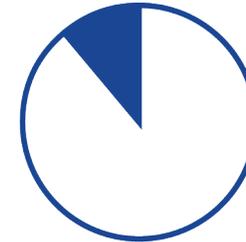
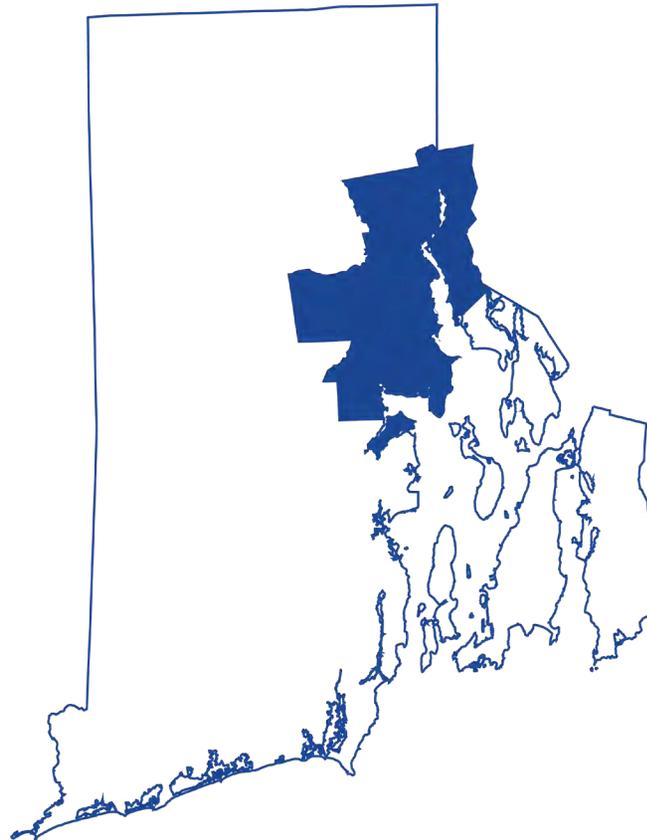
Focusing on the Core

Transit demand is much higher in the Metro Providence core than in outlying areas. Providence and the nearby cities of Pawtucket, Central Falls, East Providence, North Providence, Cranston, and Warwick form a contiguous area with high transit demand. While a large amount of travel will happen outside of these areas, the demand for frequent, all-day, high quality transit is largely within the urban core. With just 11% of the land area, these five communities contain 48% of total residents and 54% of total jobs in the state. Focusing on how to get residents and employees to, from, and within this area by means other than a private vehicle can greatly improve mobility to the highest traveled areas in the state and surrounding communities because of the large pull of such a significant portion of the state's residents and jobs in just 55 square miles of land.

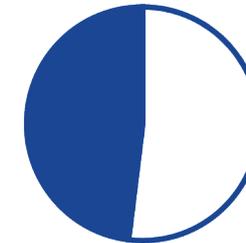
Providence, Pawtucket, Central Falls, East Providence, North Providence, Cranston, and Warwick form the state's urban core. With just 11% of the land area, these five communities contain 48% of total residents and 54% of total jobs in the state.

Rhode Island's Urban Core

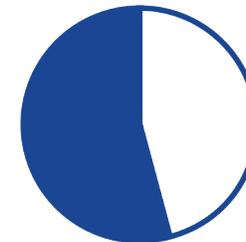
7 Municipalities
113 Square Miles



11%
Total Land Area



48%
Total Residents



54%
Total Jobs

Travel Patterns



Travel Flows within Rhode Island

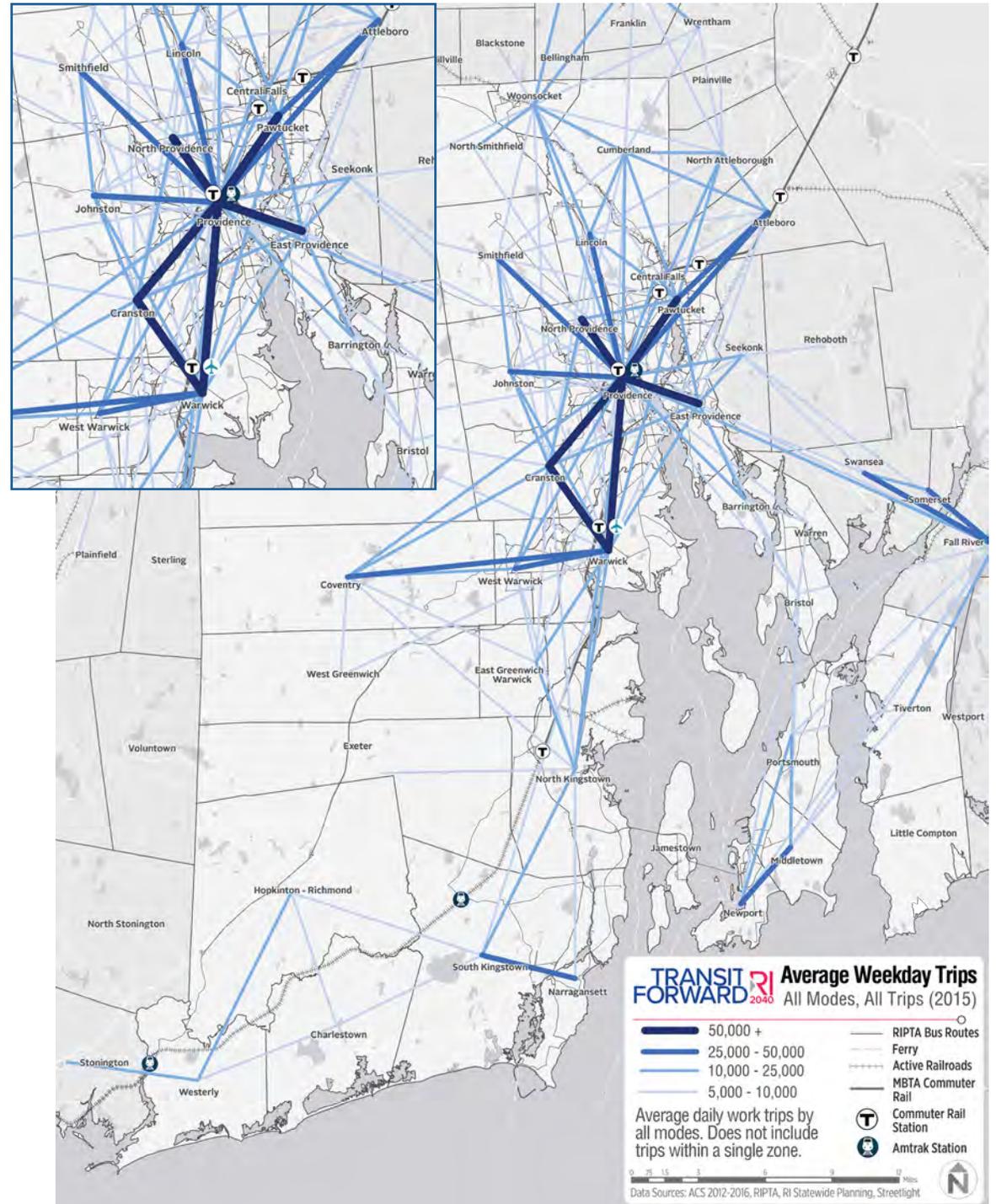
For transit to be effective, it must take people from where they are to where they want to go. Travel flows, which show the places that people travel within the study area, are one resource to determine where direct or relatively easy connections should be made within an area. Travel flows within the study area were mapped based on all trips taken between travel flow analysis zones, which are defined by municipal and neighborhood boundaries. The flows with the largest number of average daily trips are highlighted, and include all types of trips made by all modes.

All Trips All Modes

Downtown Providence has traditionally been the primary business district and employment center in the state.

The largest trip volumes (25,000 daily trips or more) are trips made to and from Providence and the following locations:

- Johnston
- Smithfield
- North Providence
- Lincoln
- Pawtucket
- Attleboro, Massachusetts
- East Providence
- Warwick
- Cranston



Travel flows data note: Flows are shown from the centroid of each zone, not the actual areas of significant trip generation. RI Statewide Planning Model has been slightly adjusted using Streetlight data.

The second highest number of trips are made to and from Warwick and the following locations:

- Providence
- Cranston
- West Warwick
- Coventry

Other large trip volumes (25,000 daily trips or more) occur between the following areas:

- South Kingstown and Narragansett
- Pawtucket and Attleboro, Massachusetts
- Newport and Middletown

The urban core identified earlier as Providence, Pawtucket, Central Falls, Warwick, and Cranston is an origin or destination for 46% of the travel in the study area.

Providence, Cranston, and Warwick are the largest trip generators. In the rest of the state, South Kingstown and Newport are significant trip destinations and origins.



Transit Travel Flows

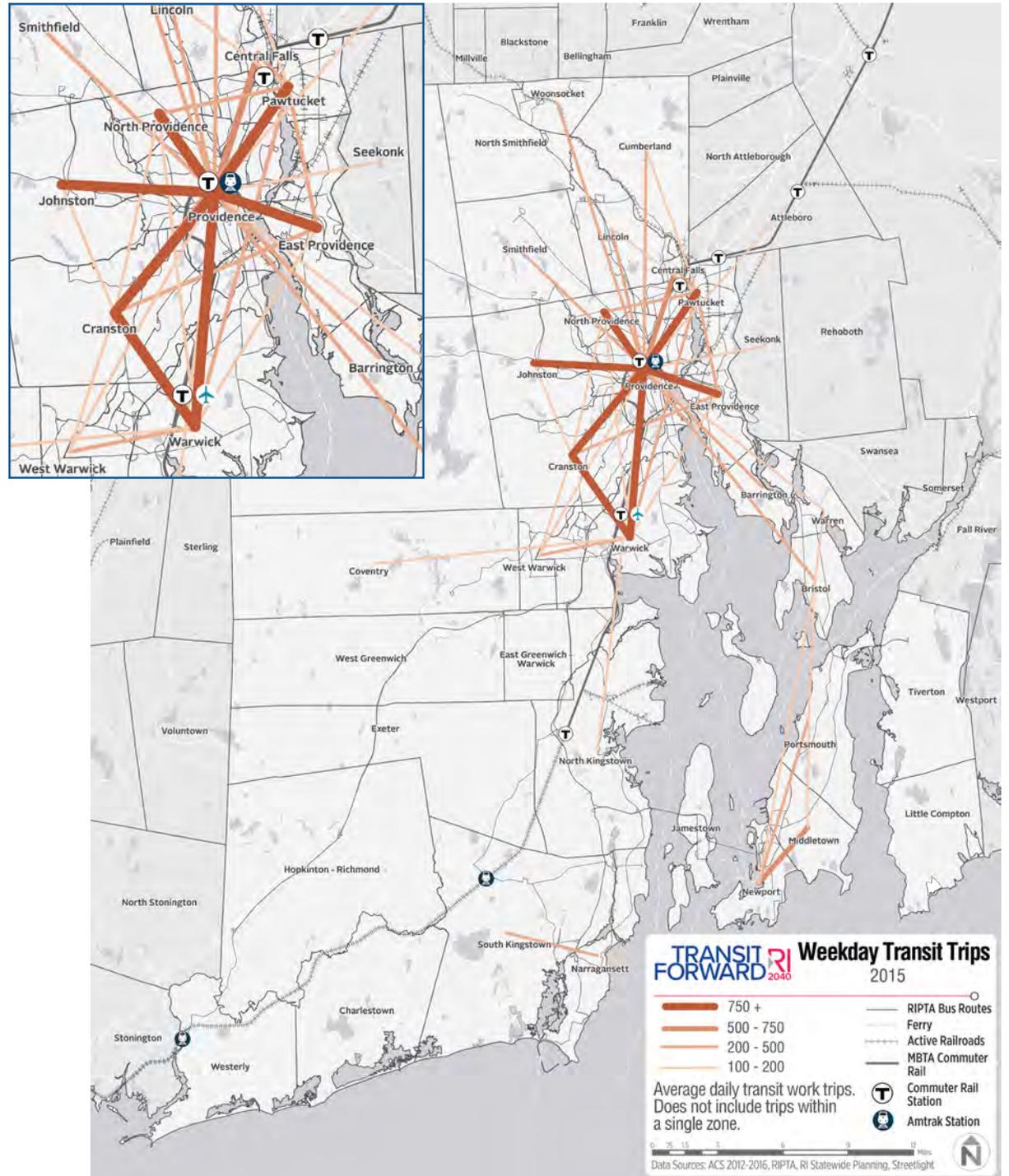
Reflecting the largely radial focus of the local (bus) transit network to and from Providence, the largest transit local trip volumes are generally oriented to and from Providence. Warwick is also a major regional origin and destination for transit trips. Local transit trip pairs that have more than 500 weekday trips and are oriented toward Providence go to and from the following areas:

- Johnston
- North Providence
- Central Falls
- Pawtucket
- East Providence
- Warwick
- Cranston

In addition to Providence-oriented trips, there are several large local transit travel flows (500 or more weekday local transit trips) to and from the following areas:

- Warwick and Cranston
- Newport and Middletown

The urban core identified earlier as Providence, Pawtucket, Central Falls, Warwick, and Cranston are an origin or destination for 84% of local transit travel in the study area.



Providence Metro Area Travel Flows

Travel flows by all modes within the Providence metro area are focused on crosstown trips to and from East Cranston, East Warwick, Apponaug, and West Warwick. Travel to and from Downtown Providence is significant as well. Woonsocket, Johnston, and Cumberland are also regionally significant origins and destinations for trips.

All Trips All Modes

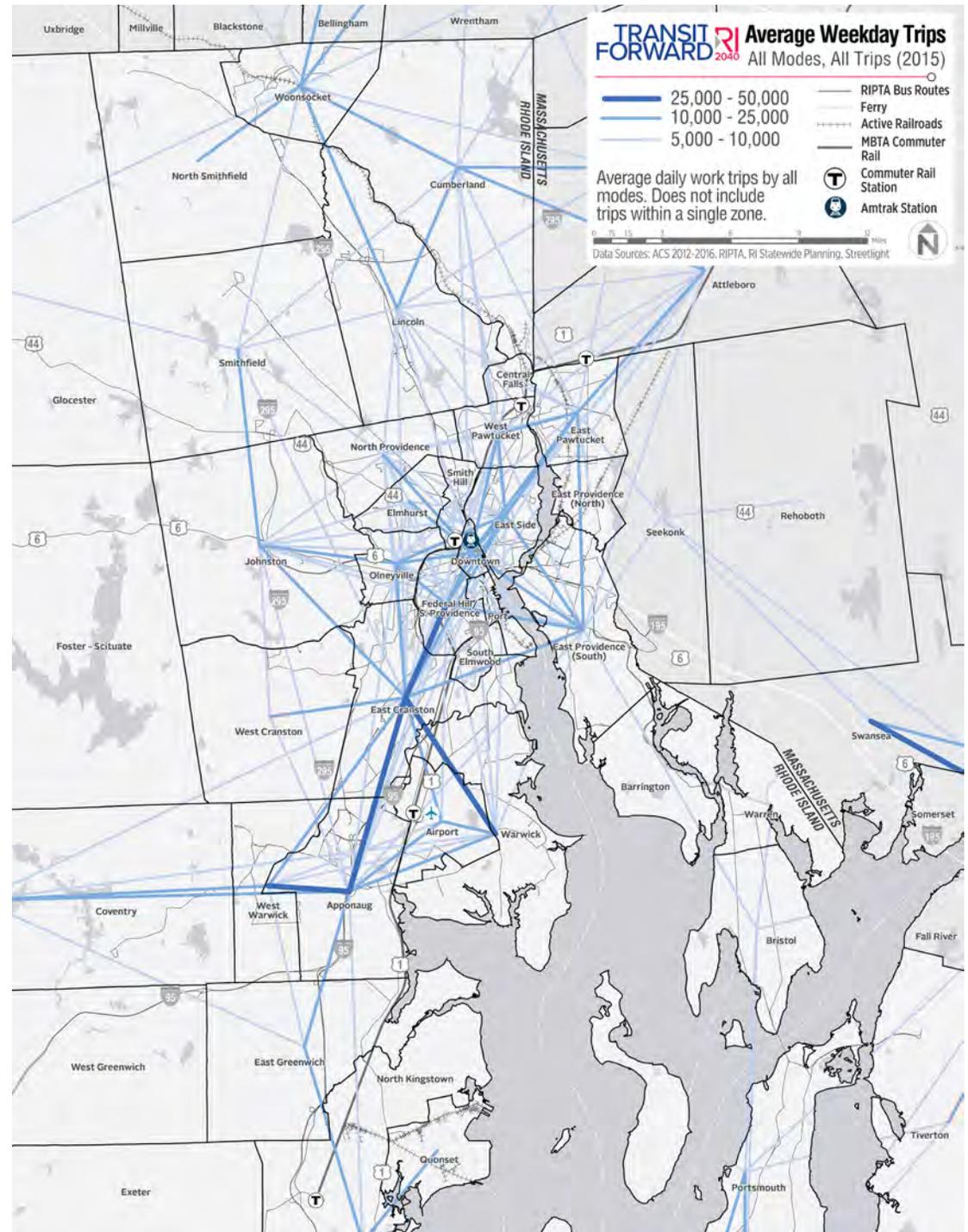
Between 10,000 and 25,000 trips on all modes are made daily to and from downtown Providence and all adjacent zones. Most inner-Providence zones have large crosstown travel flows as well. Downtown Providence, East Side, and Federal Hill/South Providence all have between 10,000 and 25,000 internal trips.

The largest trip volumes (25,000 daily trips or more) within the Providence metro are between East Cranston and:

- Federal Hill/South Providence
- East Cranston and Warwick
- East Cranston and Apponaug

These high volume (25,000+) travel flows are not currently well served by transit.

Apponaug (including the Village Center and Warwick Mall/Kent Hospital) is also a travel hub for all modes, with more than 25,000 weekday trips between this zone and West Warwick, and between 10,000 and 25,000 trips between this zone and Coventry, Warwick, TF Green Airport, and East Cranston.



Transit Travel Flows

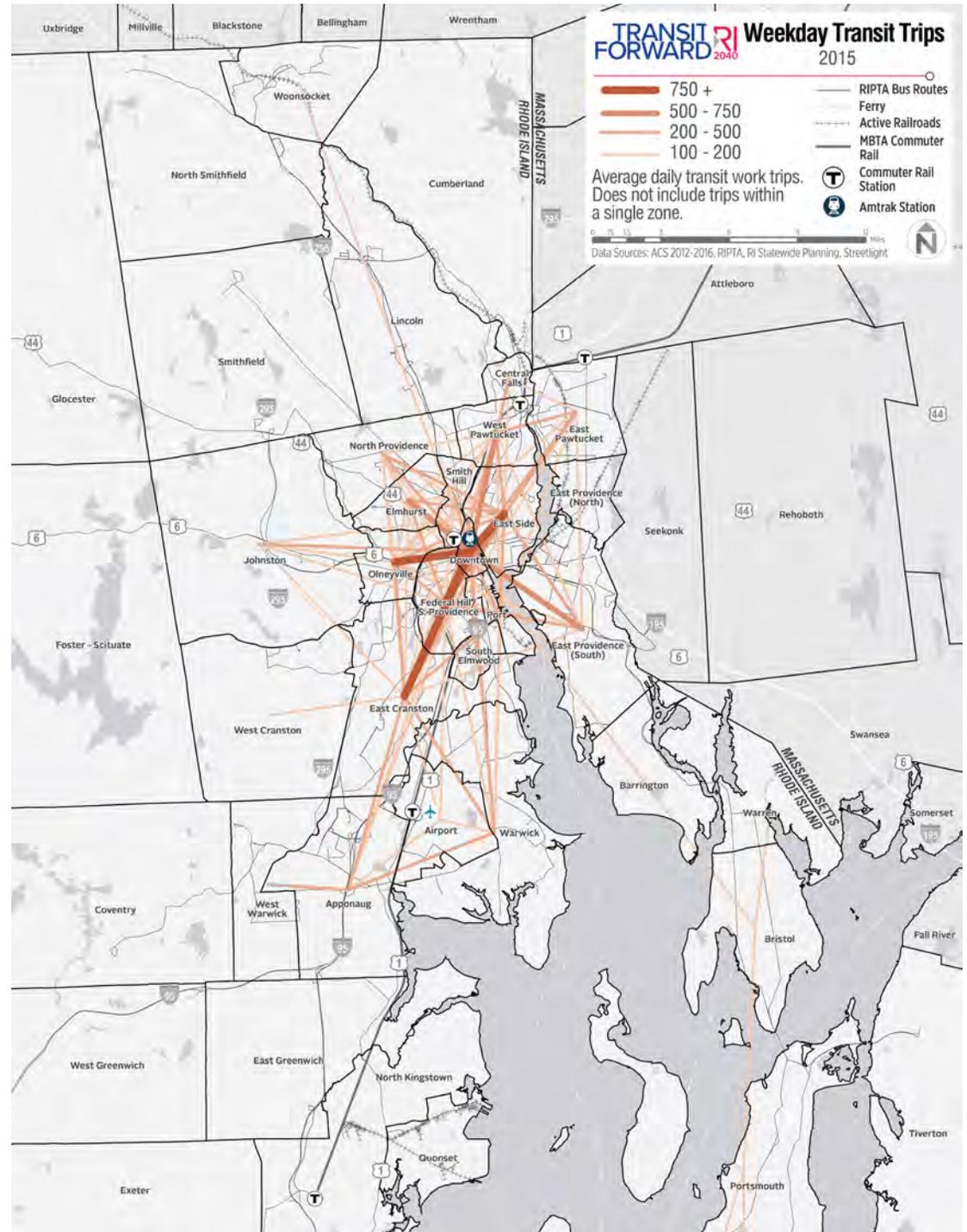
Transit flows are shaped and limited by transit network design. In comparison to the dispersed nature of travel by all modes in the Providence metro area, transit travel is much more radial, with most trips beginning or ending in downtown Providence and a much lower proportion of crosstown trips.

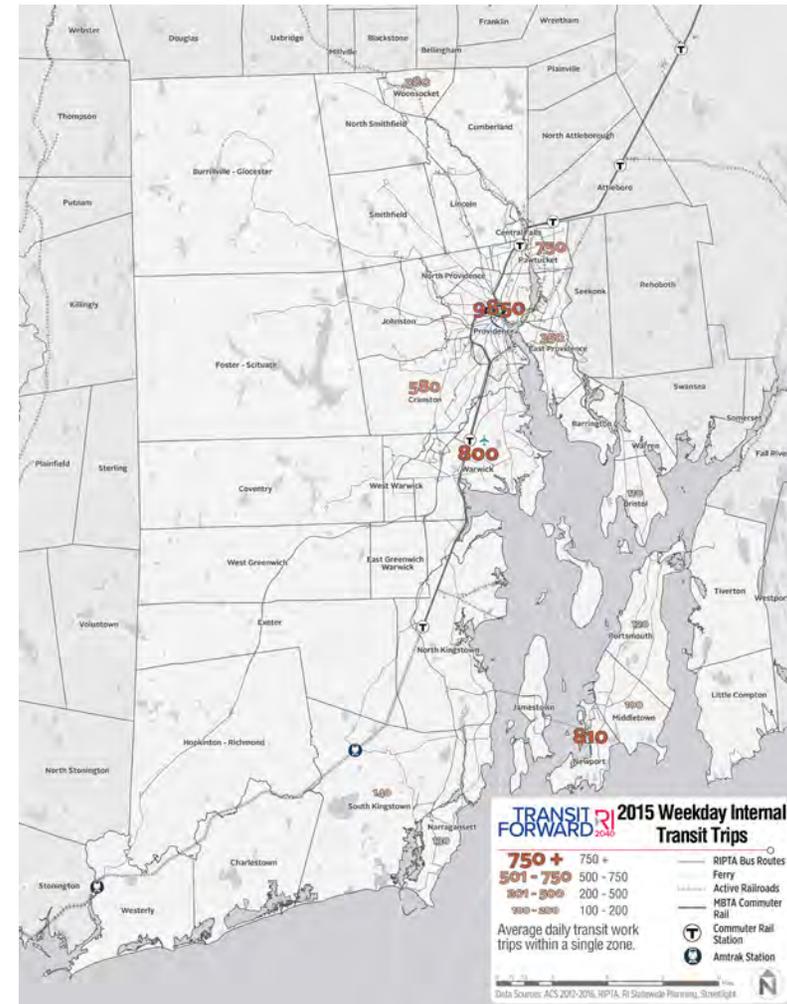
While East Cranston is a major trip generator for all modes, downtown Providence is the major origin or destination for transit trips. More than 500 transit trips per weekday to and from downtown Providence are to and from:

- Federal Hill/South Providence
- East Cranston
- Olneyville
- Elmhurst
- West Pawtucket
- College Hill/Providence East Side
- Southern section of East Providence

The most significant crosstown transit trip activity (more than 200 trips per weekday) occurs between the following pairs of areas:

- Olneyville and East Cranston
- West Warwick and Apponaug
- Apponaug and East Warwick
- East Cranston and the Port of Providence
- North Providence and the East Side
- Elmhurst and the East Side
- The East Side and East Providence (South)
- Western Pawtucket and Eastern Pawtucket
- Eastern Pawtucket and Federal Hill/South Providence





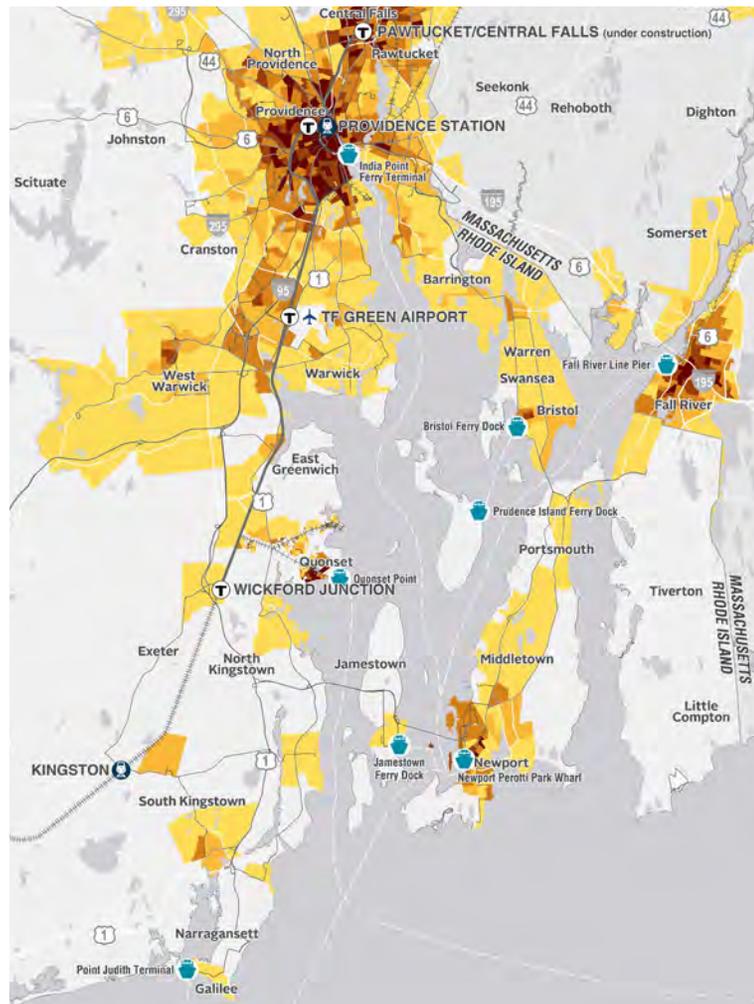
Internal Travel Flows All Modes & Transit

Travel within municipalities is also relevant to transit planning. Internal trips may be more likely to include shopping trips, bringing children to school, and recreational trips than commuting, which tends to be the longest regular trip made by travelers. Areas that are the biggest trip generators for inter-zone flows also have the most internal travel: Providence, Cranston, Warwick, and Newport. Rural areas like South Kingstown and Westerly notably generate more internal trips than flows to different areas.

Providence by far has the most internal transit trips, just as it is the main origin and destination for flow throughout the study area. Using transit for internal trips in other communities appears to be fairly limited. For example, between Johnston and Providence there are over 750 transit trips per day, but there are fewer than 100 transit trips within Johnston itself. This is probably due to the fact that RIPTA is a hub and spoke system: residents outside of Providence mainly use transit to commute into the urban core, rather than for other, more local trip types. A big factor limiting internal trips in denser communities is the lack of adequate cross-town connections.

Ferry Markets

Ferry service in Rhode Island mostly functions today as part of the tourism industry and is used for recreational trips rather than commuting. While Rhode Island has extensive coast line, few high demand transit areas lie directly along the coast that ferries could most easily serve for regular, everyday trips. Furthermore, travel flows that would be most advantaged by ferry service across waterways are not major markets (for example, Bristol to Quonset or Providence to Block Island). In Block Island (not shown), Interstate Navigation provides off-season service as an essential lifeline connection to the mainland.



Challenges of Commuter Ferry Service

National research has shown that transit riders are very sensitive to transfers, and that the need to make multiple transfers makes transit unappealing. Because few final destinations are right along waterways, and because finding suitable places for docks can prove challenging, it is likely that those riding ferries for their daily commute would need to transfer to a shuttle or bus on either side of their trip. While a commute consisting of a ferry ride and a bus ride between Providence and Newport are similar in time, a bus provides a one-seat ride, rather than a commute by ferry that may require one or more transfers.



Image Source: RI DOT

Commuter Service Demand



Underlying commuter transit demand is strongly related to five factors:



Travel Flows from Residential Area to Employment Area:

The most important aspect of commuter service is the total number of people looking to travel between two longer distance areas, usually from a primarily residential area to a denser employment area and primarily during peak periods.



Population and Population Density in Station:

Residents are only willing to travel so far to commuter stations, so the amount of total people in a catchment area significantly affects the level of transit demand that can be expected.



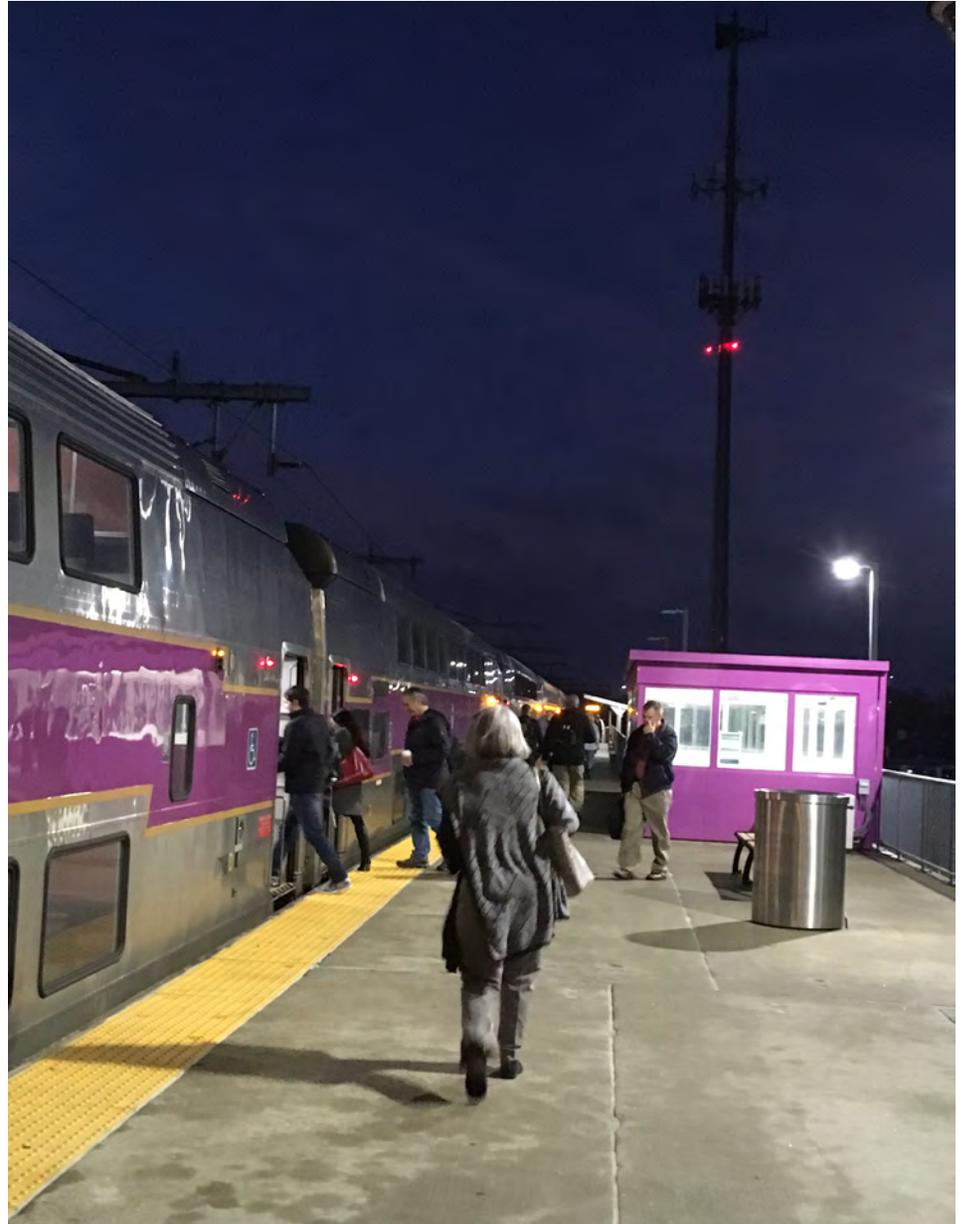
Time Competitiveness: Express services do well in areas with moderate to heavy levels of congestion. Successful commuter services often perform at speeds comparable to driving, or faster in cases of heavy auto congestion. Commuter services may also offer a more reliable time estimate and offer riders time to do work or read for pleasure, rather than driving.



Cost Competitiveness: Both fares and parking prices influence the decision to take commuter services. Higher parking prices near an employment area served by commuter rail can be a big deterrent to driving.



Access to Jobs in Employment Area: After alighting a commuter service, most passengers reach their place of employment by walking, biking, or transferring to another transit service. Therefore, key factors in influencing commuters to use commuter services include the number of jobs available and the multimodal infrastructure at egress stations.



Commuter services generally operate between two areas that are primarily made up of residences or jobs. Generally, the bulk of service runs during AM and PM peak periods, and trip lengths are significantly longer than local transit trip distances. Unlike local service, many riders may access commuter services by driving or being dropped off, and residential commuter service stops may have Park-and-Ride or Kiss-and-Ride infrastructure. Those who use commuter services tend to be higher income, own personal vehicles, and live in areas where high-quality fixed-route service is not viable. Therefore, the attraction of a commuter service is generally based in a time or cost incentive over commuting in a private vehicle.

The most successful commuter services serve high density job areas characterized by heavy congestion and high parking prices. Employment areas served by commuter services tend to be walkable, bikable, and have connections to other frequent transit. High capacity services like commuter rail and Freeway Bus Rapid Transit (BRT) provide time and cost benefits to commuters, as exclusive rights of way provide fast and reliable travel times and monthly passes are generally less expensive than monthly parking passes. Freeway BRT generally operates in exclusive lanes along heavily traveled corridors with limited stops, offering time savings and increased reliability to passengers.

Express buses travel faster than local services as they often make limited stops, but offer no time savings over private vehicles. Express bus services can be expected to have lower ridership than Freeway BRT or Commuter Rail and operate in smaller markets.

More than any other factor, **travel flows from the residential area to the employment area** will determine the underlying demand for commuter service, and what type of service is best. Even if all other elements of demand for commuter services are present, the total number of those regularly traveling from the residential area to the employment area is the largest indicator of how many riders can potentially be captured on commuter transit services. Building and operating commuter rail is an expensive investment for a region, and is appropriate for high total travel flows, as most commuter rail trains can carry several thousand passengers. Buses, however, carry several dozen passengers, and are appropriate for a much broader share of commuter markets.

COMMUTER SERVICE TYPE	ELEMENTS OF DEMAND				
	Travel Flows	Population in Residential Area	Travel Time (compared to SOV)	Parking Cost in Employment Area	Jobs in Employment Area
 Commuter Rail	High	High	Faster or Comperable	High	High
 Freeway BRT	Medium to High	Medium to High	Faster or Comperable	Medium to High	High
 Express Bus	Low to Medium	Low to Medium	Slower	Medium to High	Medium to High

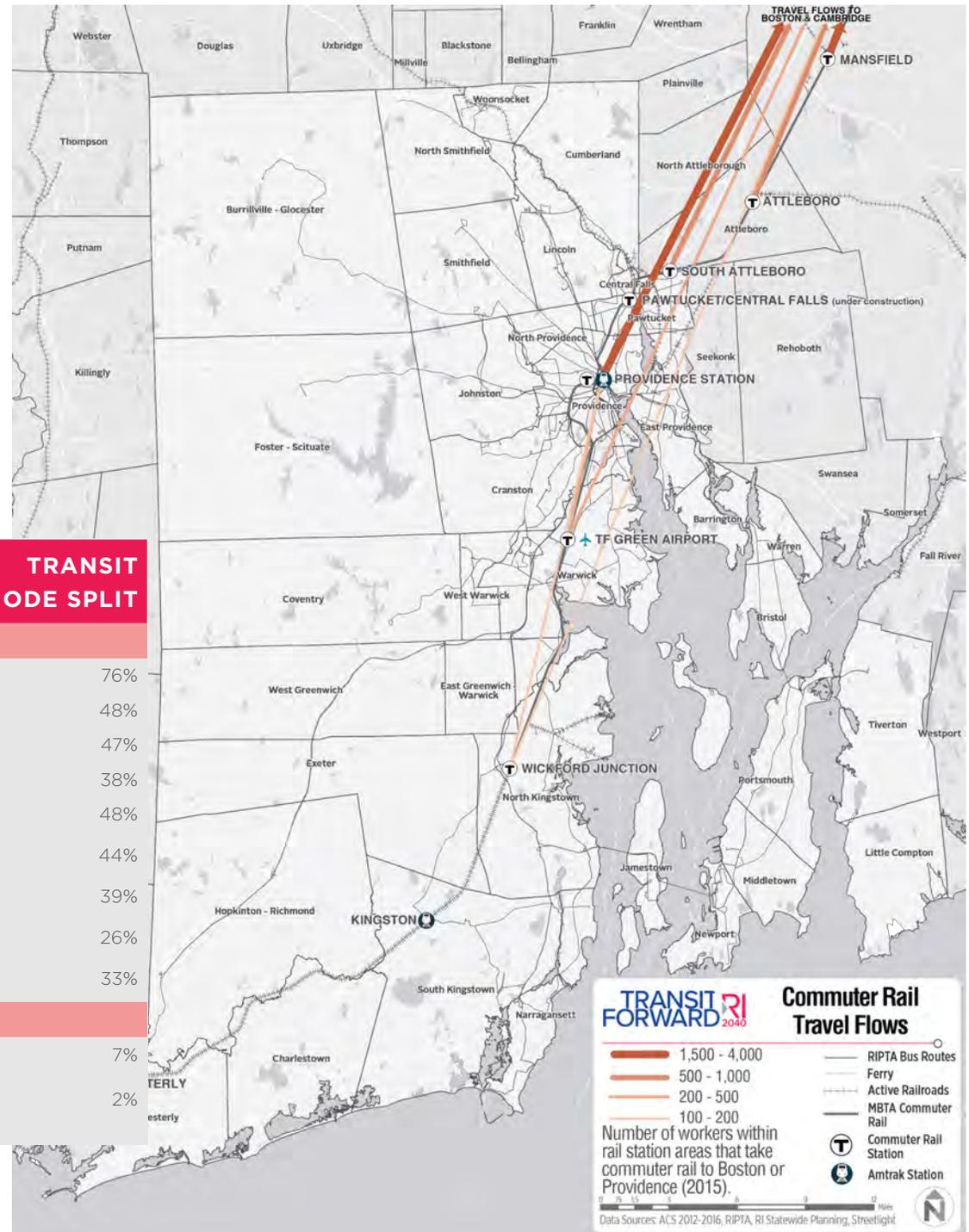
Providence Line Commuter Rail Travel Flows

The MBTA Providence Line runs between Wickford Junction and South Station in Boston. The catchment area for each station along the line was determined to be accessible within a 15-minute drive*. By far the strongest interstate flow occurs between Providence and Boston/Cambridge. Impressive transit capture occurs along the entire Providence Line into Boston/Cambridge, from a low of 26% at Canton Junction to a high of 76% at Wickford Junction. However, total flows matter greatly to appropriate transit service. Wickford Junction and TF Green only have several hundred total commuters traveling to Boston/Cambridge. Transit mode share into Providence is significantly lower along the Providence line, ranging from 0 - 7%. In order to shift these commuters to transit, time and cost competitiveness into Providence would need to also change.

ORIGIN STATION	TOTAL COMMUTERS	TRANSIT COMMUTERS	TRANSIT MODE SPLIT
FLOW TO BOSTON/CAMBRIDGE			
Wickford Junction	190	145	76%
TF Green	648	314	48%
Providence	3,524	1,650	47%
South Attleboro	2,029	772	38%
Attleboro	1,551	746	48%
Mansfield	9,014	4,005	44%
Sharon	4,410	1,733	39%
Canton Junction	14,483	3,835	26%
Route 128	34,981	11,549	33%
FLOW TO PROVIDENCE			
Wickford Junction	2,402	179	7%
TF Green	13,781	265	2%

Source: CTPP 2006-2010 Projected to reflect 2015 estimates

*According to the 2015-2017 MBTA Commuter Rail Passenger Survey, 83% of commuter rail riders traveled fifteen minutes or less to arrive at the first commuter rail station they boarded.



Potential Express Bus Markets

RIPTA currently runs Express Bus services between Providence and Park-and-Rides in lower-density areas of the state. Based on the maximum transit capture of these Express Bus catchment areas, potential express bus markets for workers in Providence were identified for flows 12 miles in length or longer. Assuming a 10% transit mode capture, the most promising Express Bus markets for workers in Providence are from:

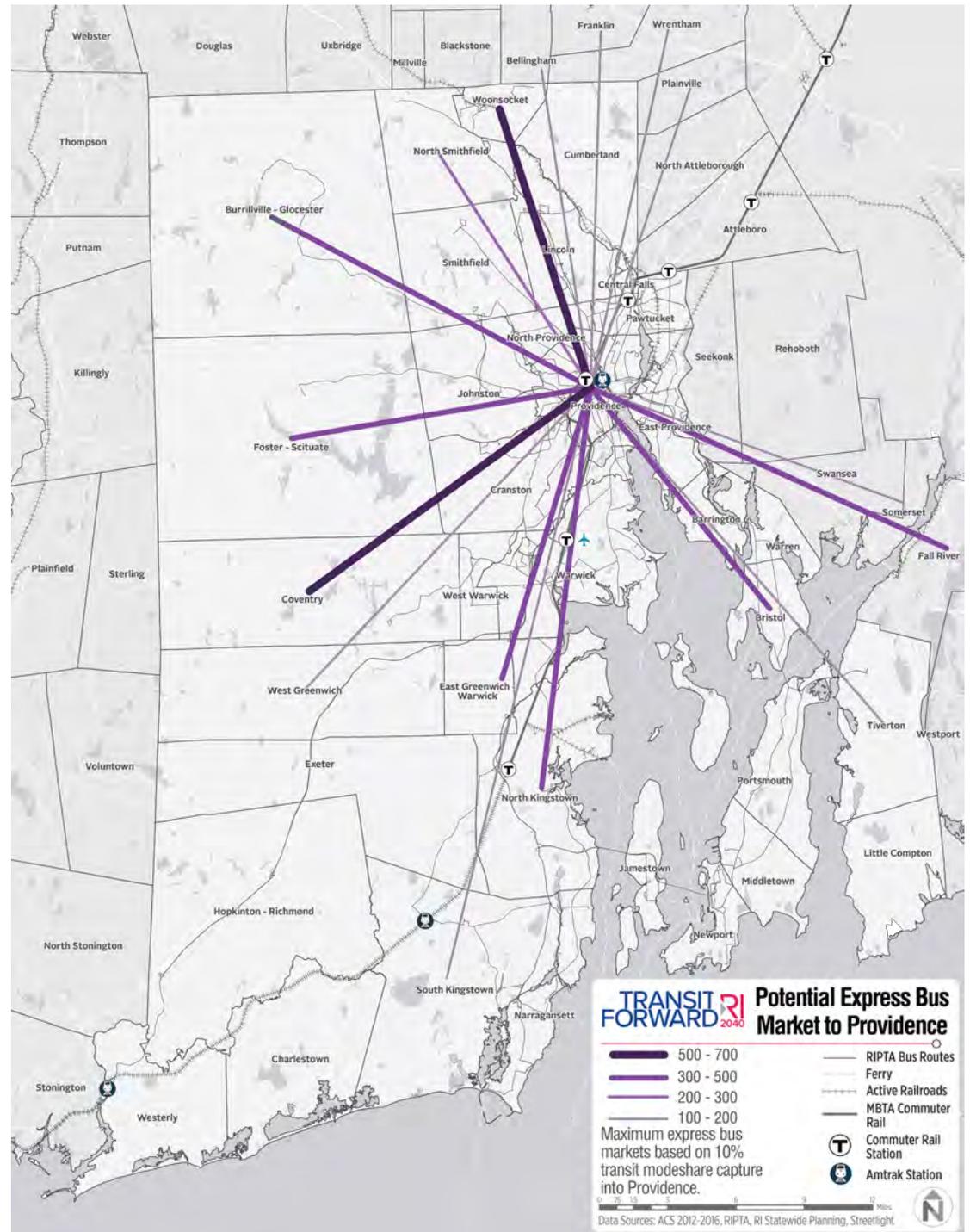
- Woonsocket
- Coventry
- Fall River, MA
- North Kingstown
- Burrillville
- East Greenwich
- Bristol

Areas that show a less significant market for Express Bus are:

- Foster
- North Smithfield
- Franklin, MA
- Tiverton
- Somerset, MA
- South Kingstown
- Bellingham, MA
- West Greenwich
- Wrentham, MA
- Plainville, MA

Flows between other areas had fewer than 100 potential commuters a day, which is the minimum market for an express service.

These flows are expressed as maximum market shares (10%), however, current express services are generally capturing between 2-5% of commutes into Providence. In order to reach these potential markets, transit priority treatments such as dedicated lanes and/or parking penalties in downtown Providence would need to be implemented.



Time Competitiveness

In metropolitan areas with a high level of traffic, commuter rail and Freeway BRT can offer commute times that are similar to or often less than, commute times experienced by private vehicles. While those commuting in private vehicles often have almost no time associated with leaving home in their private vehicle and parking at their job, the amount of time at either end of the transit trip must also be taken into consideration when assessing time competitiveness for transit. For instance between Wickford Junction and Providence stations, the drive time to rail time is almost identical, but when adding in access and egress times, commuter rail time is over 35% longer, where as from Providence to South Station, commuter rail provides a 25% time saving.

Time competitiveness can also be thought of in terms of how time is spent. When riding a high quality commuter service instead of driving a private vehicle, passengers may have time to do work or other activities like reading for pleasure, and may feel like they “gain time” back in their day that they would otherwise spend driving. Driving in traffic has

also been shown to cause high levels of stress, so while the time spent commuting may be the same, commuter services provide quality of life benefits.

In areas of high congestion, commuter transit services can also offer more reliable commute times. Between Providence and Boston, the drive time variability is almost an hour during AM peak. Between Wickford Junction and Providence however, it is 20 minutes. The MBTA’s Providence Line was 90% on time in December 2018. Transit with exclusive right of way often offers much more reliable travel times in congested areas than private vehicles. RIPTA’s express commuter services into Providence vary widely in their time competitiveness. Express bus services with fewer stops prove to be more time competitive. However, without exclusive lanes, transit signal priority, or other time-saving infrastructure, express buses operate in the same congestion and traffic variability as private vehicles.

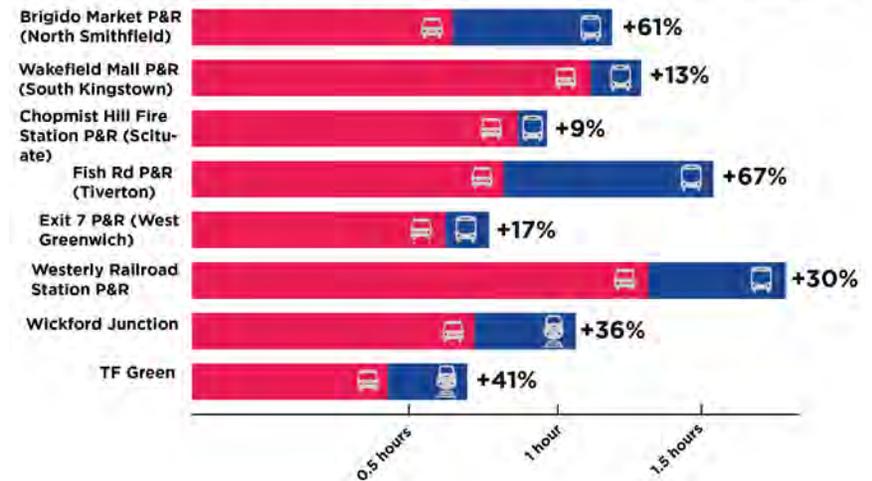
Commuter Rail Time Savings to South Station

As compared to average drive time



Drive Time Savings to Downtown Providence

As compared to average express bus and commuter rail travel times



Source: MBTA Commuter Rail Schedules, RIPTA Schedules, MBTA Dashboard, Google Maps Commute Time Estimates for AM Peak.

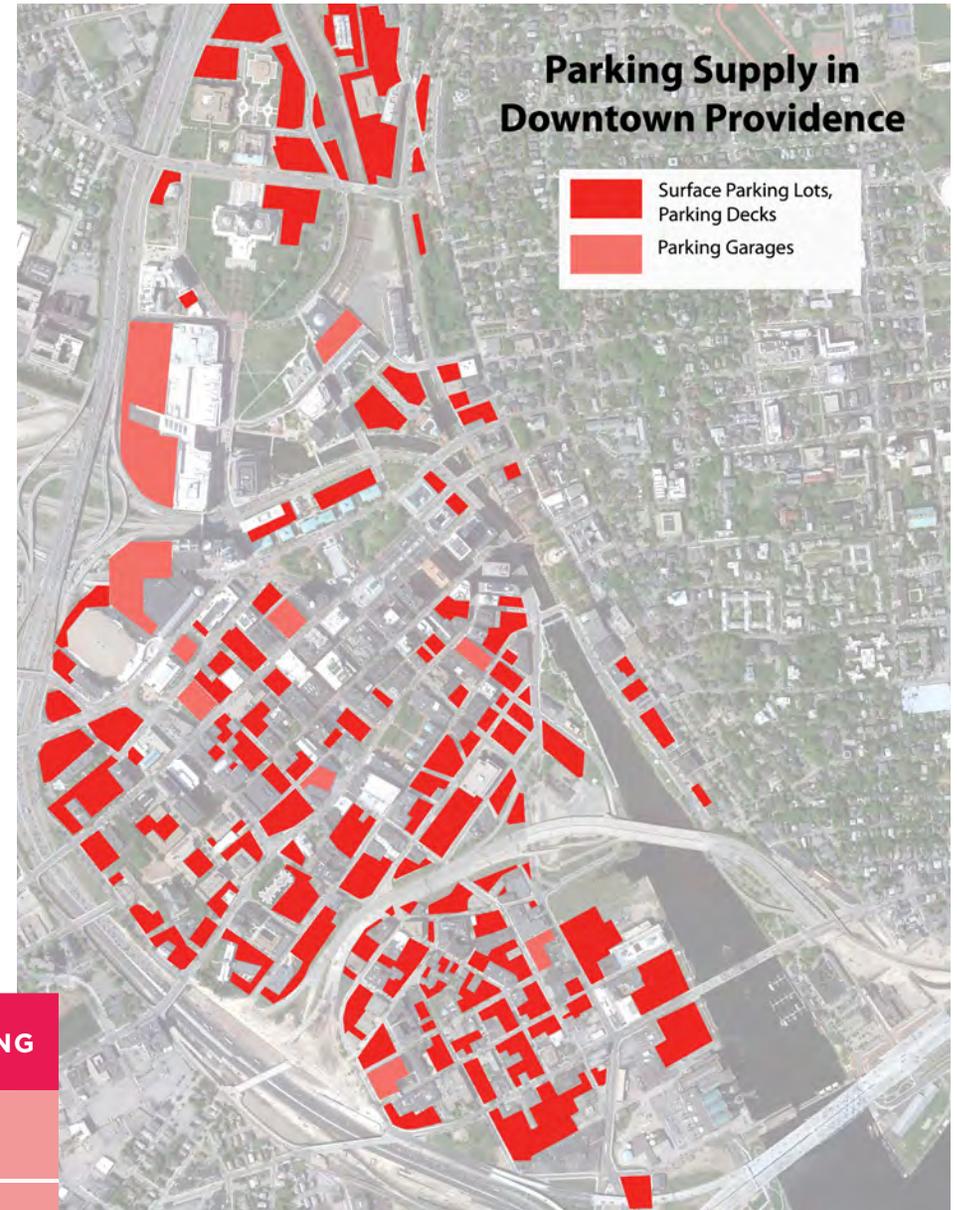
*transit time estimates include average access and egress times

Cost Competitiveness

Commuter services are often most successful when they serve employment areas with limited parking and and/or high parking prices. While a large percentage of those who ride commuter rail are often from higher income households who own vehicles, parking prices are often high enough to deter workers from commuting with private vehicles.

Parking in downtown Providence is significantly less expensive than in downtown Boston or Cambridge. The incentive to drive to downtown Providence is also exacerbated by the fact that parking is ample and largely free. Many downtown workers are offered free parking by their employers, including State employees, municipal employees, university employees, and other large private employers. So while downtown Providence is served by a one-seat ride on most RIPTA routes and the commuter rail from Wickford Junction and TF Green, for those who own a vehicle, there is not a significant price advantage to taking transit.

Other costs that influence public transit ridership are parking prices at the boarding station, fare prices, and gasoline prices. Parking is free at all RIPTA Park-and-Ride lots and at Wickford Junction. Daily parking fees are charged at TF Green's Interlink Garage and at private facilities around Providence Station. Because of the high cost of commuter rail fares to Boston from Rhode Island, most MBTA commuters into Boston are higher income. Reduced passes for low-income riders may increase commuter service ridership.



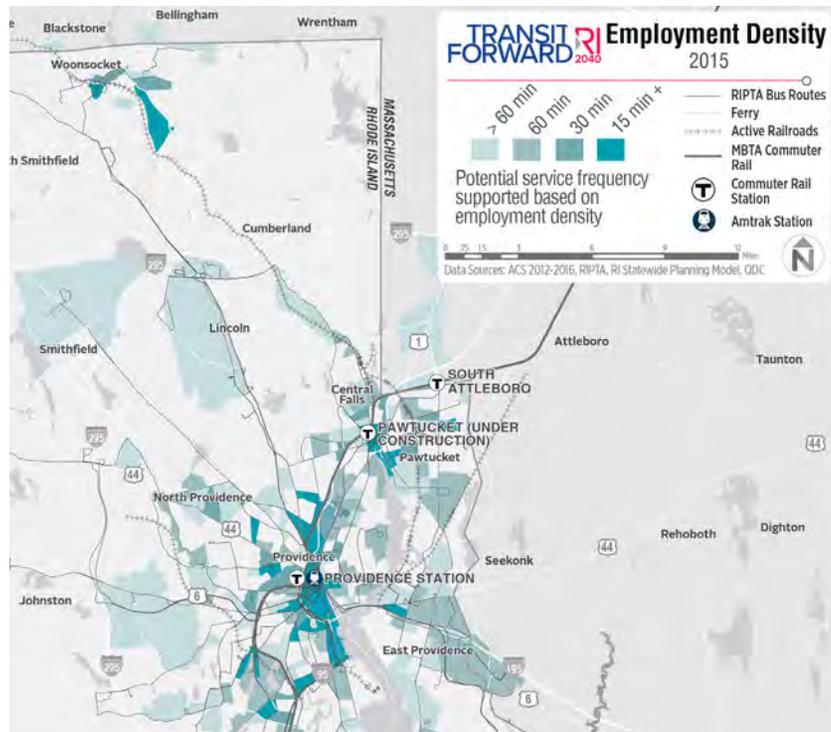
Source: Greater City Providence (gcpvd.org), 2012

EMPLOYMENT AREA	DAILY PARKING GARAGE RATES	PRICE RANKING
DOWNTOWN PROVIDENCE	\$13 - \$20	\$ \$
DOWNTOWN BOSTON	\$30 - \$47	\$ \$ \$
KENDALL (CAMBRIDGE)	\$25 - \$42	\$ \$ \$

Source: parkme.com

Job Access in Employment Areas

Currently, 91% of those who ride the Providence Line are using it for home-based work trips.* Boston/Cambridge and Providence both serve as the largest employment areas in Massachusetts and Rhode Island, respectively. Once a commuter reaches either place via a commuter service, the majority of jobs are reachable by walking, biking, or transferring to another frequent transit service.



Most RIPTA service runs through Providence, which has approximately 117,000 jobs. Passengers on commuter rail can easily walk to jobs or transfer to RIPTA service.

The other stops on the Providence Line that are not in Boston or Providence serve a limited number of jobs as well as multimodal connections and access. This is why travel between primarily residential areas along commuter rail lines are low.



The highest density jobs areas in Boston and Cambridge are walkable from commuter rail stations or served with one transfer to rapid transit or frequent bus routes. Boston has 600,000 jobs and Cambridge has 113,000 jobs.

*MBTA 2015-2017 Systemwide Passenger Survey

Looking Forward to 2040

Planning for the Future

In order to prioritize transit improvements, it is as important to understand where future development and changes in population, employment, and land use will occur in Rhode Island. Looking ahead to 2040, the population of Rhode Island and the surrounding areas are predicted to increase by 4% and employment is predicted to increase by 6%.

What Goes Into the Forecasts

These population and employment projections are subject to uncertainty. For the most part, current projections assume that recent trends will continue; for example, that post-industrial Pawtucket will continue to lose population and jobs as has been the case over the last several decades. However, it is widely expected that the area of Pawtucket around the forthcoming commuter rail station is expected to grow in population as transit-oriented development advances.

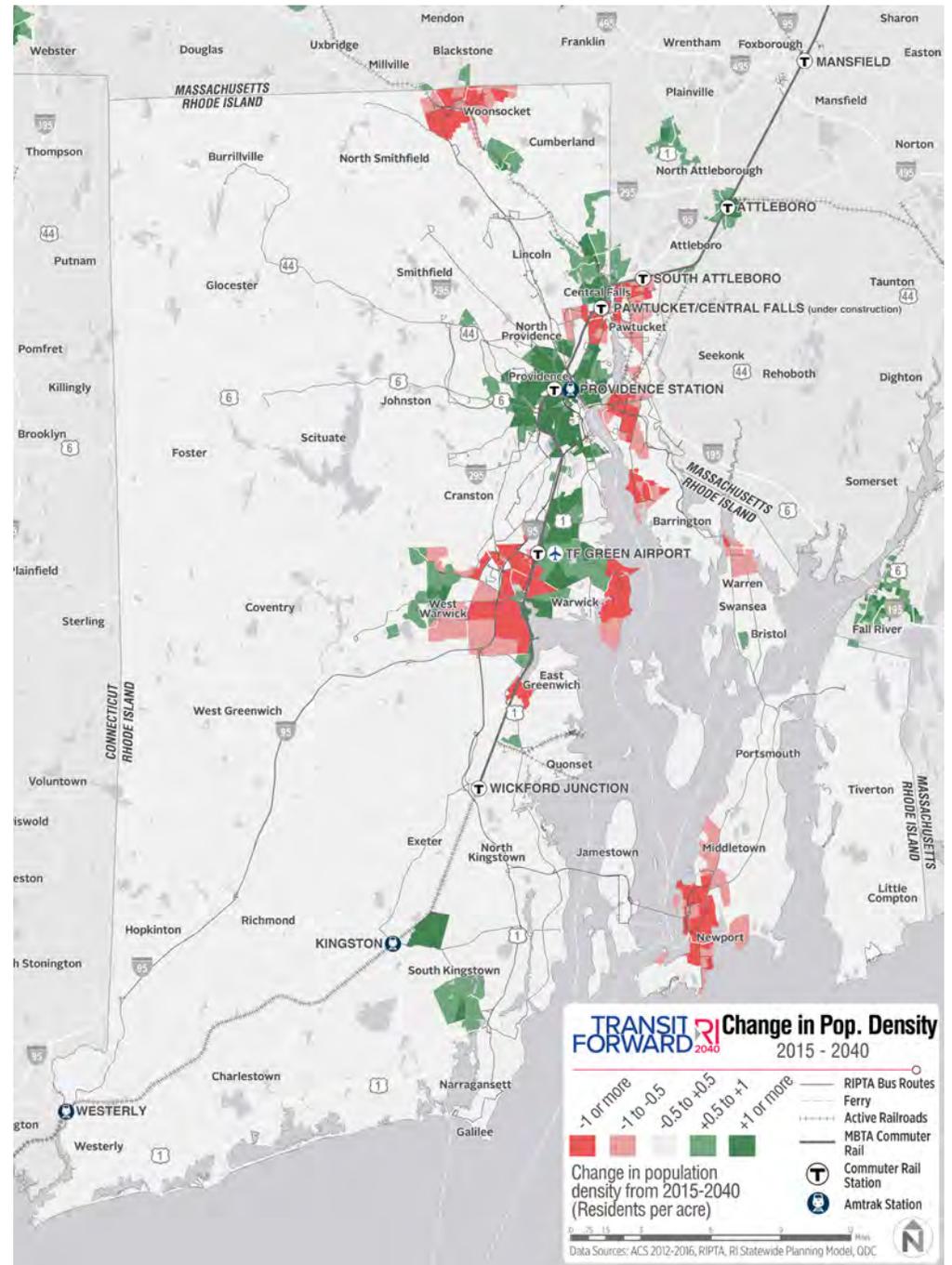
Population loss and shrinking household sizes is also a product of national trends toward smaller family sizes, especially in urban areas. Despite this trend, some urban areas are expected to continue to densify further.

Population Growth 2015 - 2040

Over the past few decades, Rhode Island has grown slowly, from 1 million in 1990 to 1.05 million in 2016. Through 2040, total population is projected to grow by 2% to 1.07 million. It is projected that changes will be small in all areas of the state.

In terms of density, most of the city of Providence is expected to densify by at least one resident per acre by 2040. The areas of Warwick adjacent to and north of TF Green Airport, the area around URI, and the villages of Peace Dale and Wakefield are expected to densify by at least 0.5 residents per acre by 2040. Population density is also expected to increase in Central Falls just north of the planned Pawtucket MBTA Commuter Rail Station.

Most of West Warwick, Pawtucket, Woonsocket, East Providence, and Newport are expected to lose at least 0.5 residents per acre by 2040

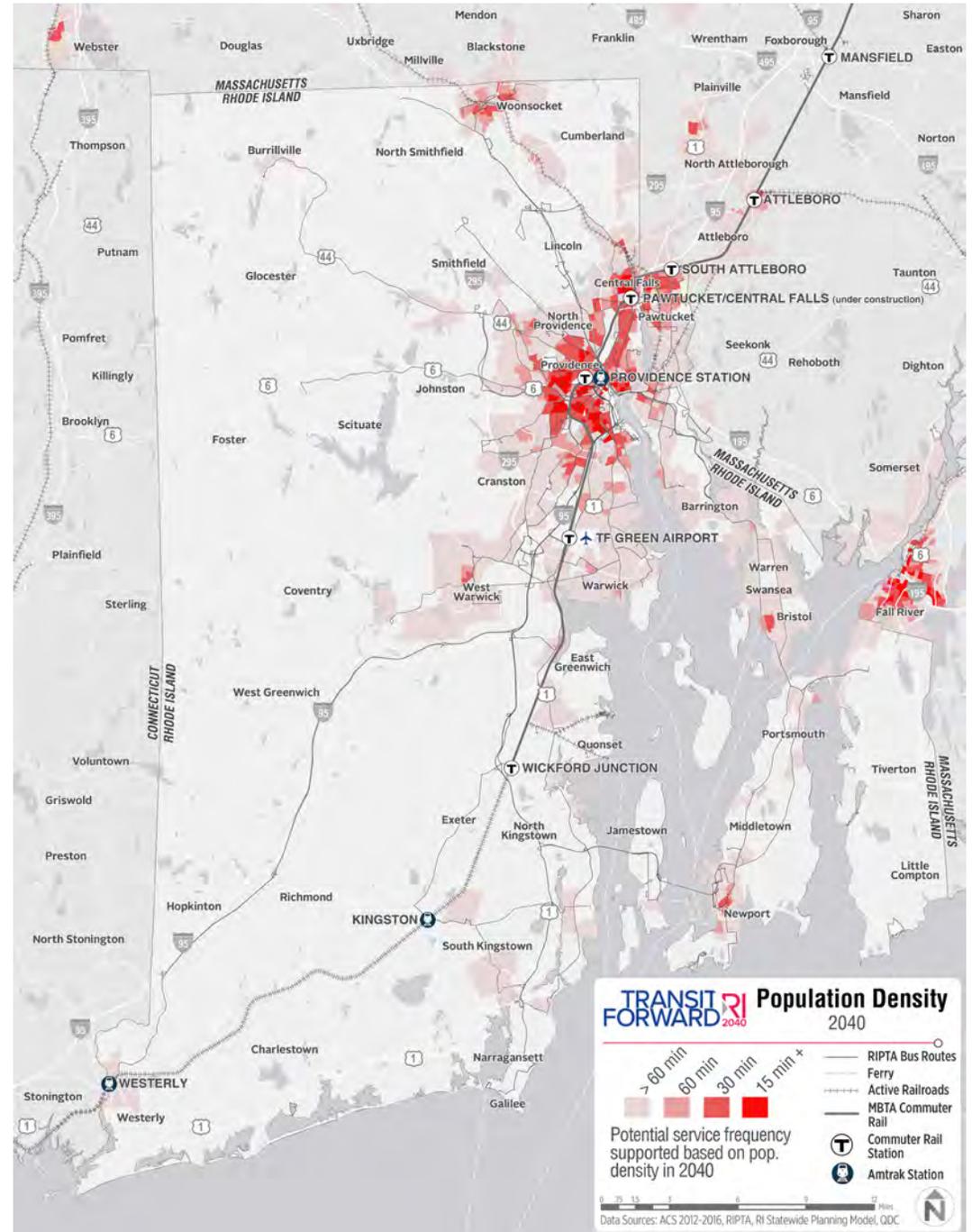


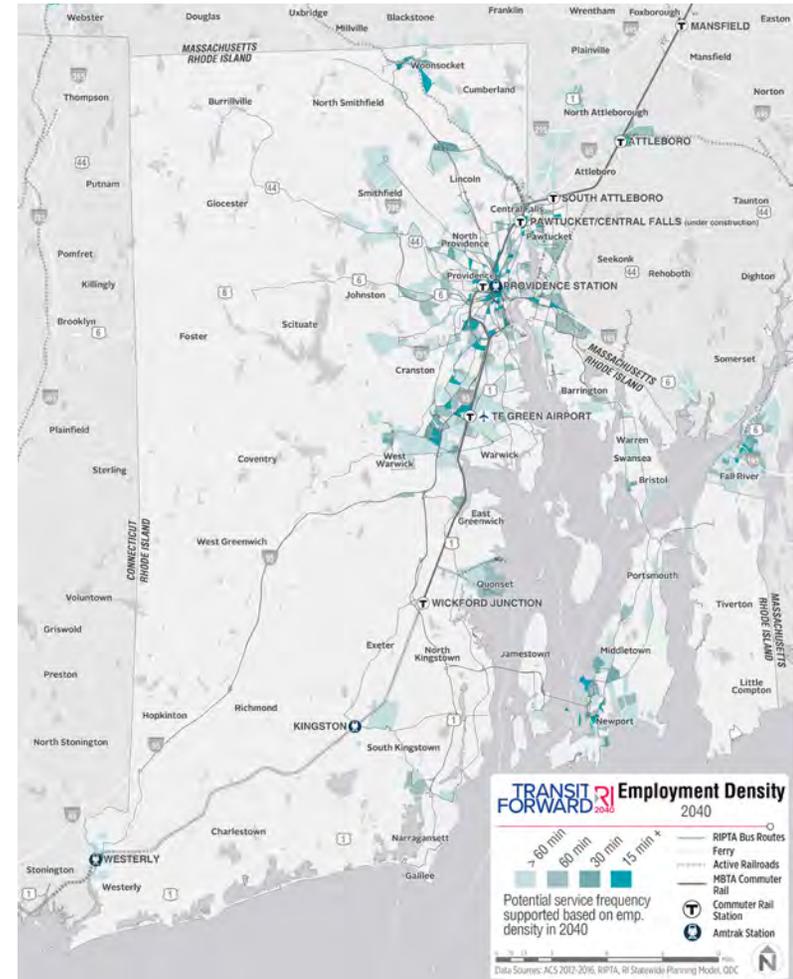
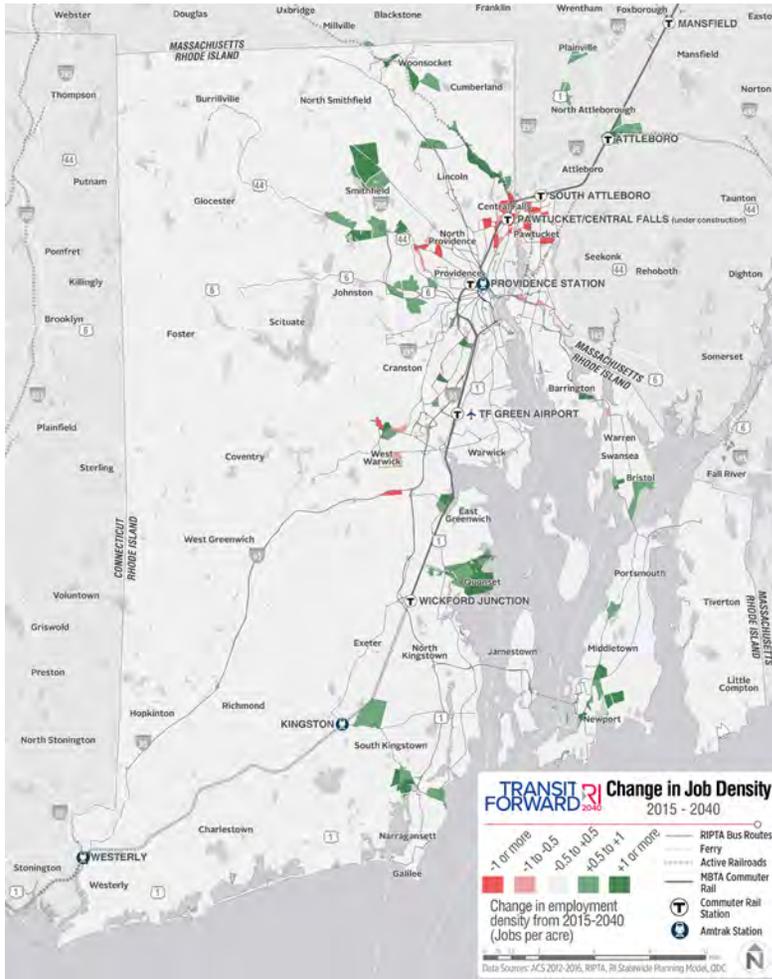


Population Density 2040

Areas with the highest population concentrations in 2040 are projected to be the same as in 2016:

- Providence
- Pawtucket
- East Cranston
- Central Falls
- Woonsocket
- Newport
- Fall River and Attleboro, across the border in Massachusetts





Employment Growth 2015 - 2040 & Employment Density in 2040

Employment growth largely accompanies areas where population growth is also expected to occur. Western Providence, West Kingston, Peace Dale, and Narragansett are expected to experience an increase of at least 0.5 jobs per acre by 2040. The largest areas expected to experience job growth are:

- Smithfield, near I-295 and State Route 7
- North of Providence along the P&W mainline railroad
- Quonset
- Newport

Pawtucket and isolated areas of North Providence, Johnston, and West Warwick are expected to lose at least 0.5 jobs per acre during the next 25 years.

The densest employment areas in 2040 are projected to be:

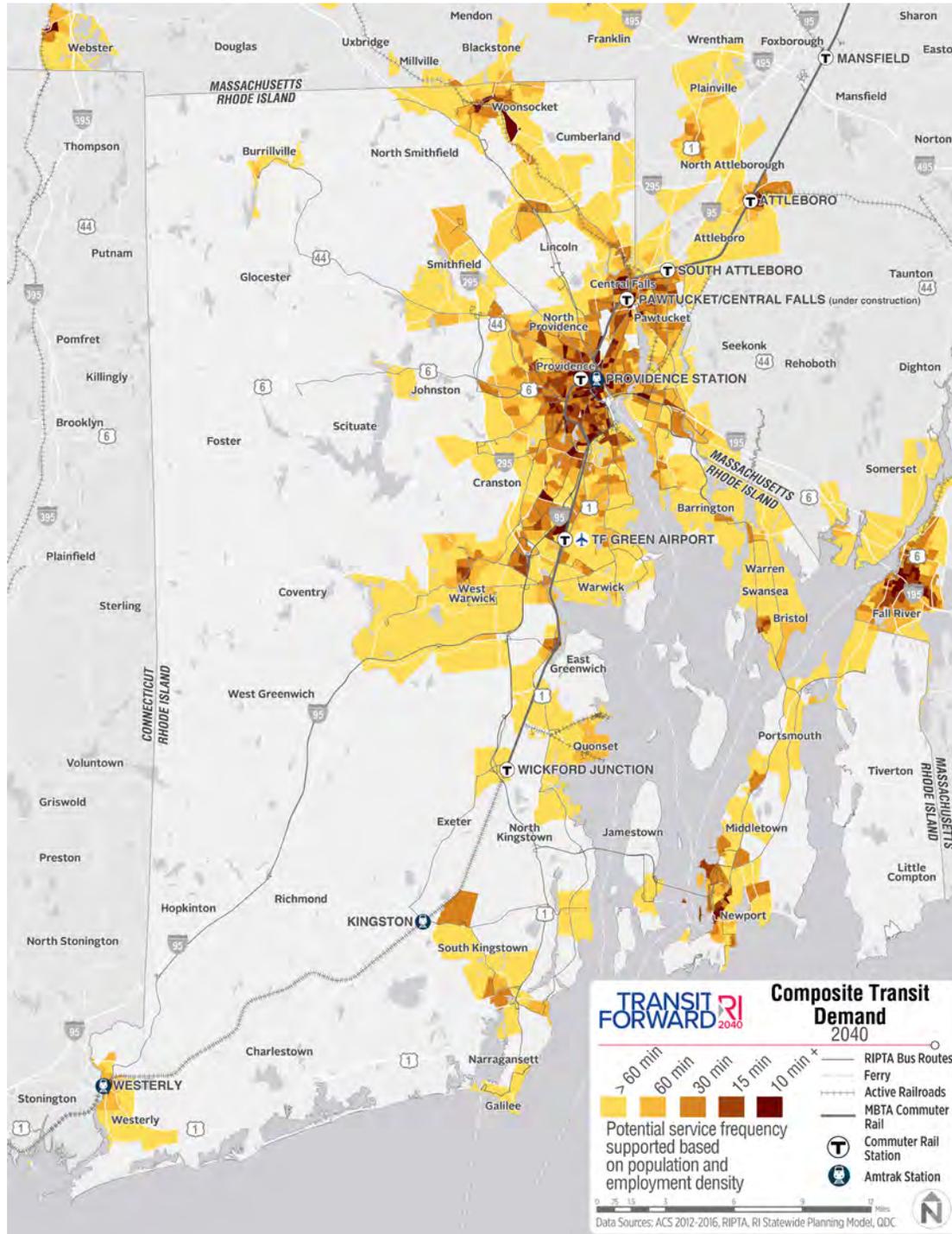
- Providence, especially downtown
- Pawtucket
- Warwick, especially the Area around TF Green Airport
- Woonsocket
- Central Falls
- Newport
- Fall River and Attleboro, across the border in Massachusetts

Composite Demand 2040

The areas with the greatest demand for transit are generally expected to be similar as at present. However, demand will increase in some areas:

- Lincoln near Lincoln Mall
- North of Providence along the P&W mainline railroad
- Smithfield near I-295 and State Route 7
- Quonset Business Park
- Warwick/Cranston near employment centers west of TF Green Airport

The transit propensity adjustment factors based on the socioeconomic characteristics of each area are applied in the same pattern as 2015, as no demographic predictions have been made for the state.



Travel Flows 2040

Travel Flows within Rhode Island

Daily trips are expected to increase by 7% within the state by 2040. Most travel patterns are very similar to those in 2015, and trips between the dense communities neighboring Providence and Providence remain the most significant.

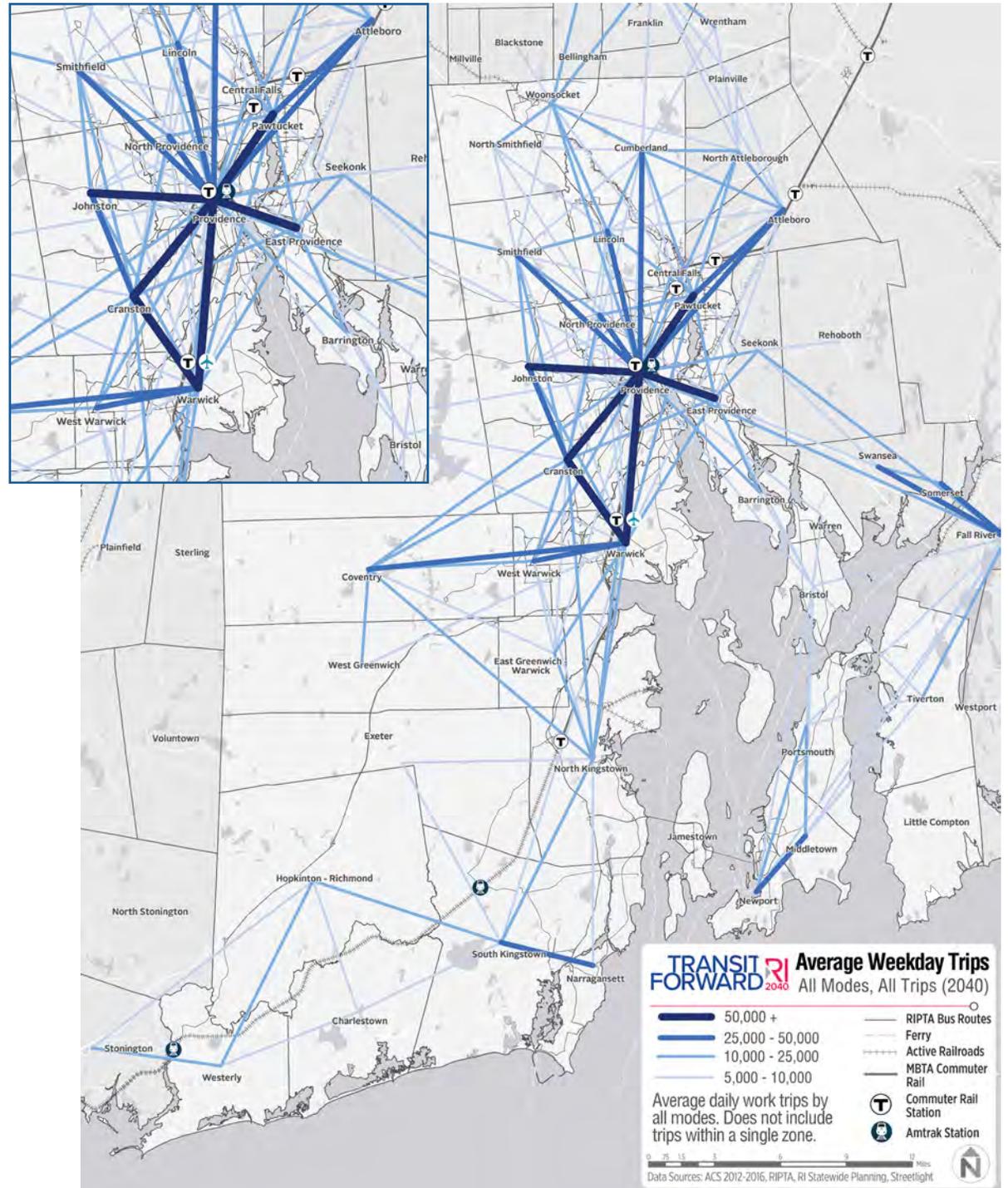
All Trips All Modes

The largest increases in travel are between the following areas:

- Providence and areas directly west of Providence, including Smithfield, Johnston, and Cranston
- South Kingstown and Narragansett in the southern part of the state

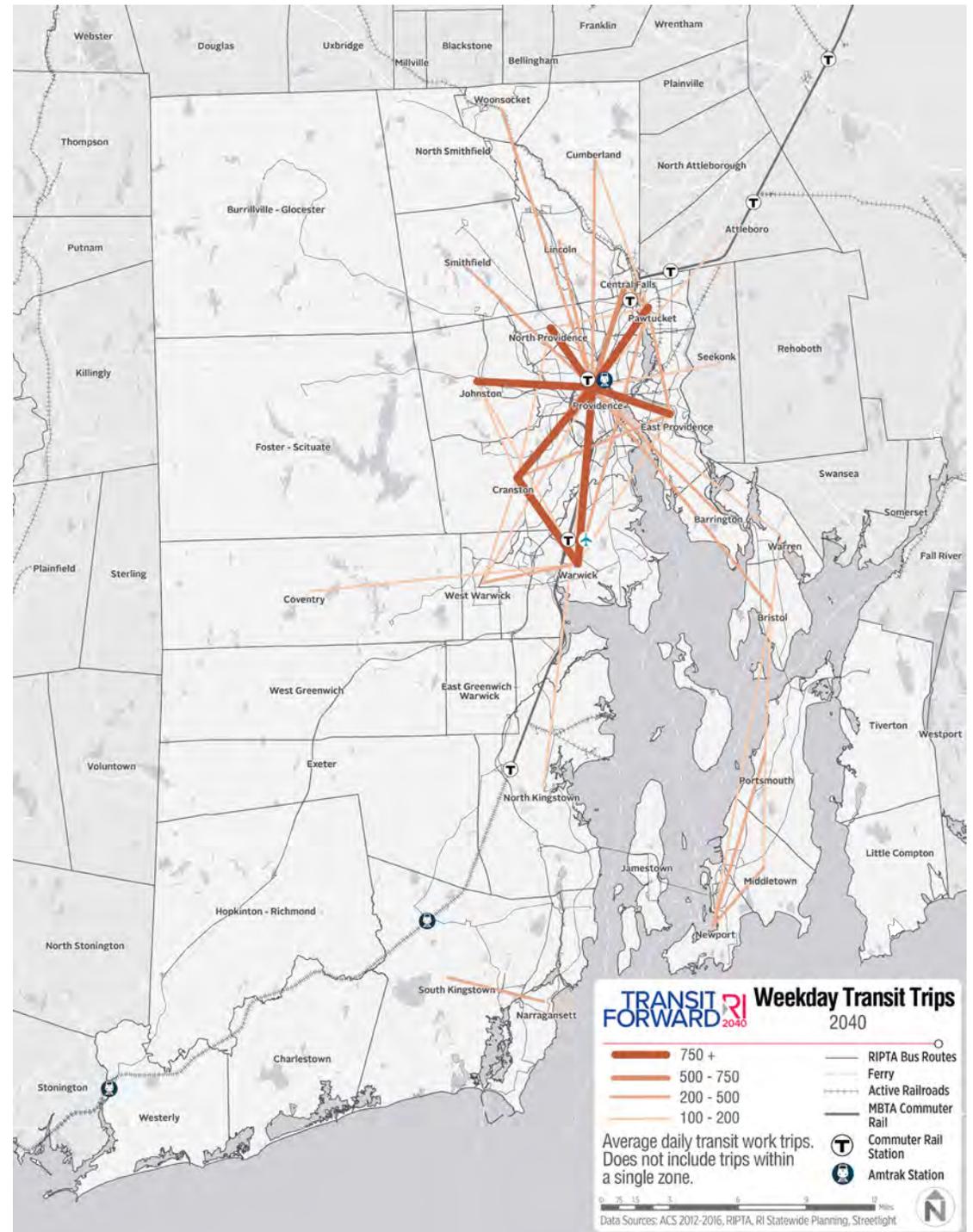
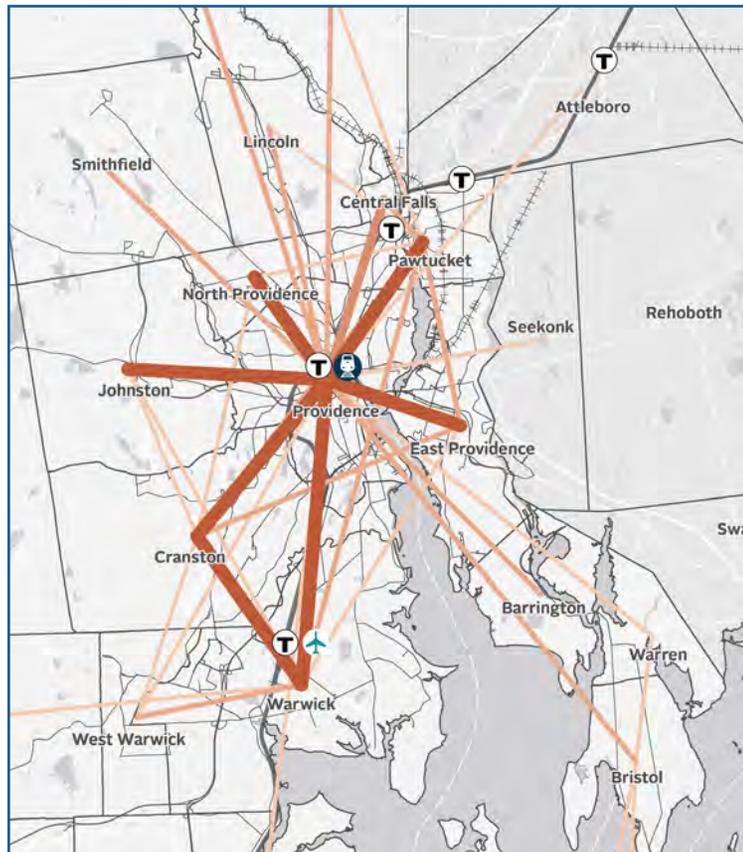
There are also increases in internal trips, most notably in:

- South Kingstown
- North Kingstown
- Smithfield
- Coventry
- Cranston
- Cumberland
- Providence
- Bristol



Transit Travel Flows

Transit trips are expected to grow by only 1% by 2040, a slower rate than trips of all modes and population and employment growth. As population and employment are expected to grow in Providence, where the majority of the state's transit travels to, from, and through, all the most notable transit travel patterns radiate from Providence. The most notable trip increases are internal trips within Providence and Cranston.



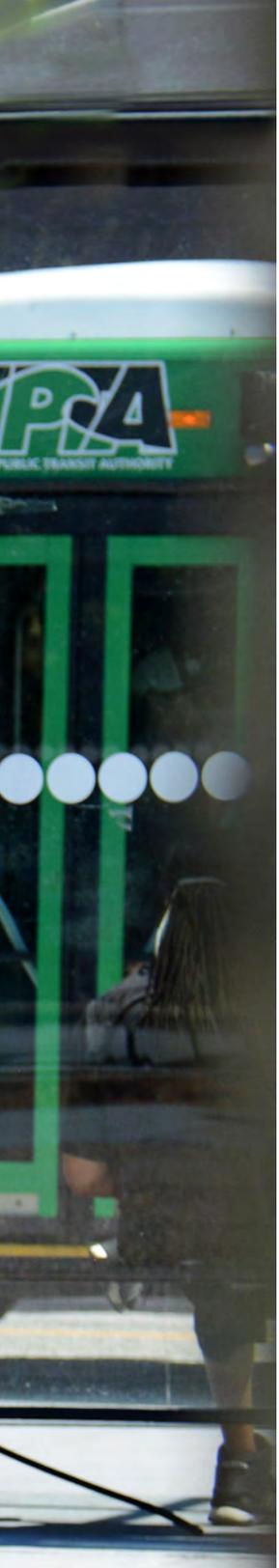
781-9400

R-LINE SOUTH



@RIPTA





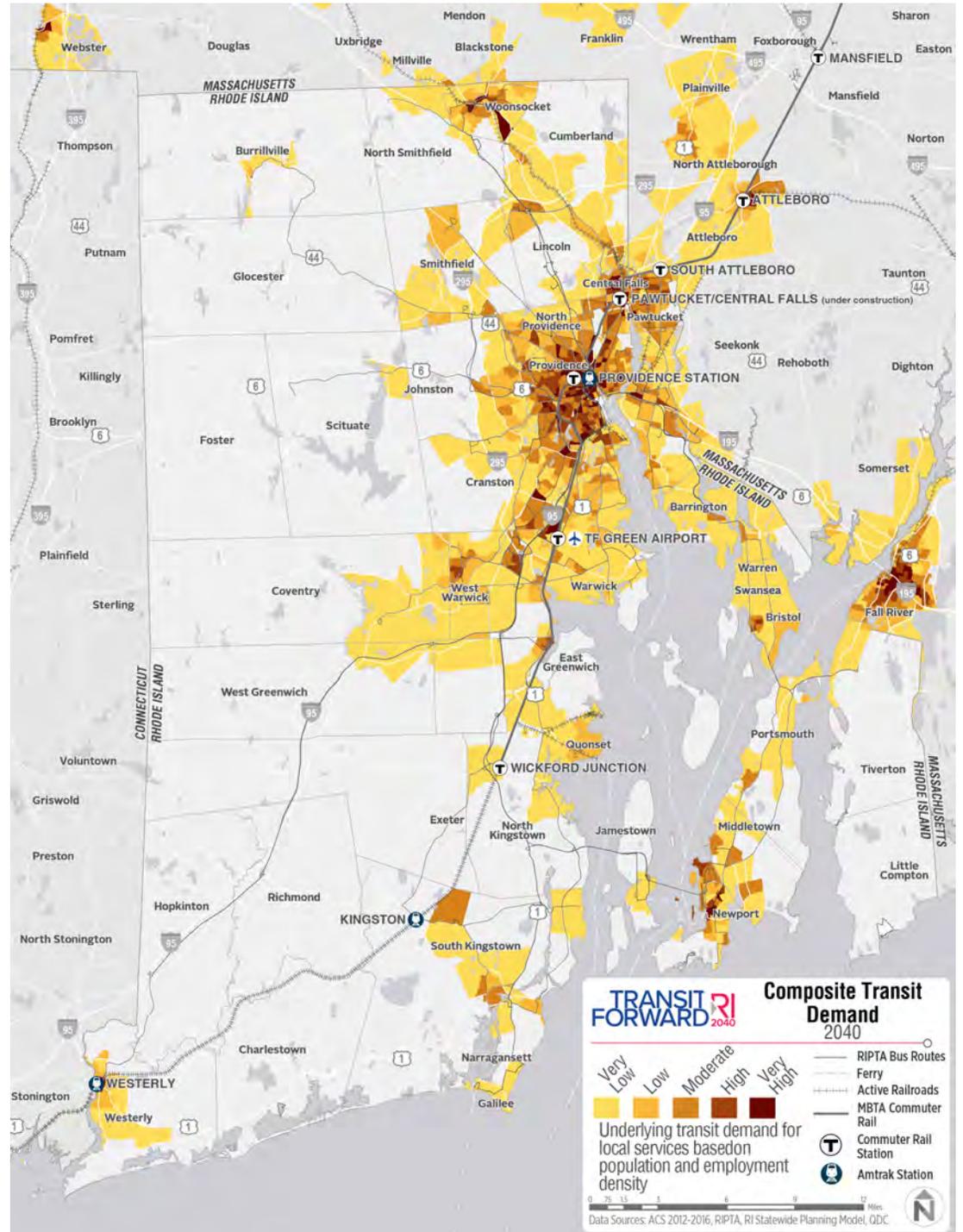
④ Issues and Opportunities

Transit Demand Varies Greatly Throughout Rhode Island

Although Rhode Island is small geographically, its development patterns are diverse and range from the densely developed Providence metro area to western and southwestern areas that are mostly rural. Similar to the way that development patterns vary, transit demand does as well.

In summary, the underlying demand for transit is very high in the Providence metro area and can support much better transit service than is now provided. Outside of the Providence metro area, demand is very high or high in much of Woonsocket, Newport and Middletown, and a few more isolated areas. In addition, there are many areas with moderate demand. These include Kingston, South Kingstown, Westerly, and Quonset.¹

In most other areas, demand is low or very low. This is simply because most of these areas are exurban or rural and few people live, work, and travel there. Public transportation is very efficient when there are enough people to fill buses or even vans, but inefficient when vehicles run mostly empty.



1. On the map, Quonset is shown to have low transit demand. However, this is largely due to the very large size of the industrial park. When only the portions where the jobs are located are considered, demand is moderate.

Different Types of Services are Needed in Different Places

Just as the demand for transit varies throughout Rhode Island, there are many ways to provide service. Transit is most cost-effective and productive when it carries large numbers of people and the least cost-effective and least productive when it transports few people. The best examples of this are fully loaded commuter rail trains that carry well over 1,000 people versus RIPTA Flex services that sometimes carry only a single person. Just like roads, transit vehicles will never always be crowded, but effective and efficient transit matches the type of transit service that is provided to underlying demand levels. The types of services that are most applicable to different markets are summarized on this page.

Transit Services for Local Markets

TYPE OF TRANSIT	LEVEL OF DEMAND	TIME OF DAY
 Light Rail	 Very High	All Day
 Bus Rapid Transit	 High	All Day
 Rapid Bus	 High	All Day
 Streetcar	 High	All Day
 Local Bus	 Low to High	All Day
 Employer Shuttles	 Moderate to High	All Day or Peak Only
 TMA Shuttles	 Moderate to High	All Day or Peak Only
 Microtransit	 Low	All Day or Peak Only
 Rideshare Partnerships	 Low	All day
 Shopping and Medical Shuttles	 Very Low	Limited Hours or Limited Days
 Volunteer Driver	 Very Low	By Reservation

Transit Services for All-Day Regional Markets

TYPE OF TRANSIT	LEVEL OF DEMAND	TIME OF DAY
 Regional Rail	 Very High	All Day
 Commuter Rail	 High to Very High	All Day
 Light Rail	 High to Very High	All Day
 Freeway BRT	 High	All Day
 Rapid Bus	 Moderate to High	All Day
 Local Bus	 Moderate to High	All Day

Transit Services for Commuter Markets

TYPE OF TRANSIT	LEVEL OF DEMAND	TIME OF DAY
 Regional Rail	 Very High	All Day
 Commuter Rail	 High	All Day or Peak Only
 Freeway BRT	 High	All Day or Peak Only
 Express Bus	 Moderate	All Day or Peak Only
 Employer Shuttles	 Low to Moderate	All Day or Peak Only
 TMA Shuttles	 Low to Moderate	All Day or Peak Only
 Microtransit	 Low	All Day or Peak Only
 Rideshare Partnerships	 Very Low to Low	All Day
 Vanpool and Carpool	 Very Low	Peak Periods

High Capacity Bus Services

How do they compare?

REGULAR BUS	RAPID BUS	BUS RAPID TRANSIT (BRT)
<p>TYPICAL FEATURES</p> <ul style="list-style-type: none"> • No special branding • Frequent stops • Wide range of stop facilities – from very basic to elaborate • Wide range of service frequencies – from very infrequent to very frequent • Wide range of service spans – from early morning to late night to only a few trips 	<p>TYPICAL FEATURES</p> <ul style="list-style-type: none"> • Special branding • Simple service design • Limited stops • Enhanced stops/stations • Frequent service (at least every 15 minutes) • Service from early morning to late night • Real-time passenger information <p>OTHER COMMON FEATURES</p> <ul style="list-style-type: none"> • Unique vehicles, including high-capacity buses • Queue jump lanes • Transit signal priority • Off-board fare collection 	<p>TYPICAL FEATURES</p> <ul style="list-style-type: none"> • Special branding • Simple service design • Limited stops • High quality stations • High-capacity buses • Exclusive bus lanes • Transit signal priority • Very frequent service (at least every 10 minutes) • Service from early morning to late night • Real-time passenger information <p>OTHER COMMON FEATURES</p> <ul style="list-style-type: none"> • Unique vehicles • Level platform boarding • Off-board fare collection
 <p>RIPTA local bus service</p>	 <p>Los Angeles Metro Rapid service</p>	 <p>Cleveland Healthline BRT service</p>

Demand for Local Service is Highest in Urban Areas

The demand for transit is highest – by far – in the Providence metro area. Demand is very high in Providence, Pawtucket, Central Falls, and parts of North Providence, and high in East Providence, Warwick, and much of Cranston. Transit demand in most of the rest of the Providence metro area is moderate.

With the exception of the R-Line, all bus service is regular local service. There is demand for much better service, including more frequent service for longer hours, BRT, Rapid Bus, and possibly light rail. Key improvements include:

Transit Needs to be More Frequent

The most important driver of transit ridership is how frequently the bus comes. At present, RIPTA defines frequent as every 20 minutes or better, while the more common national definition is every 15 minutes. Using either standard, only one route – the R-Line – provides frequent service from at least 6:00 AM to 9:00 PM. To make

service more attractive, RIPTA needs to provide frequent service on more routes.

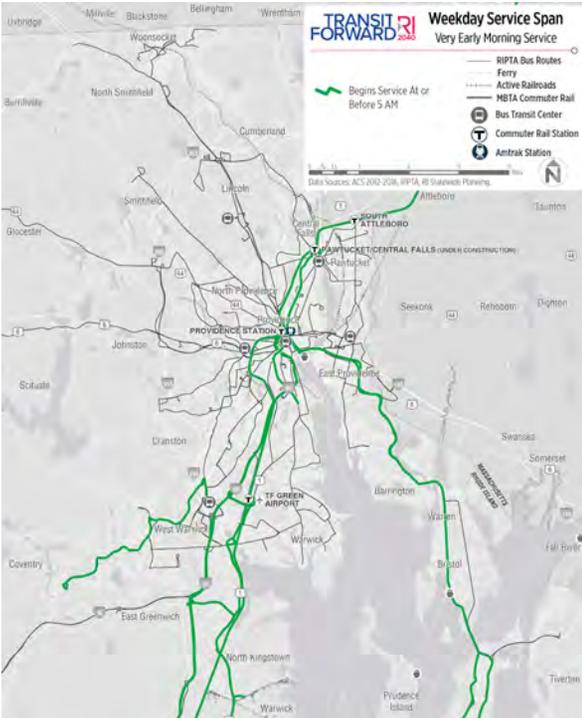
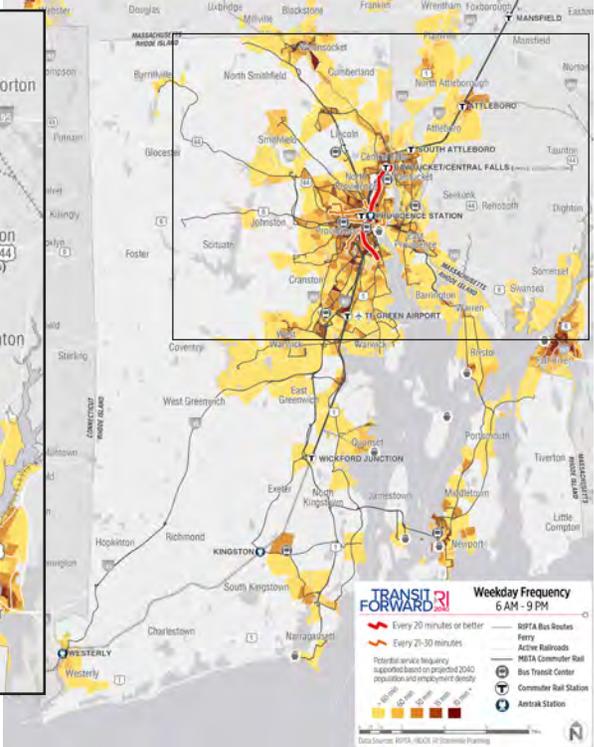
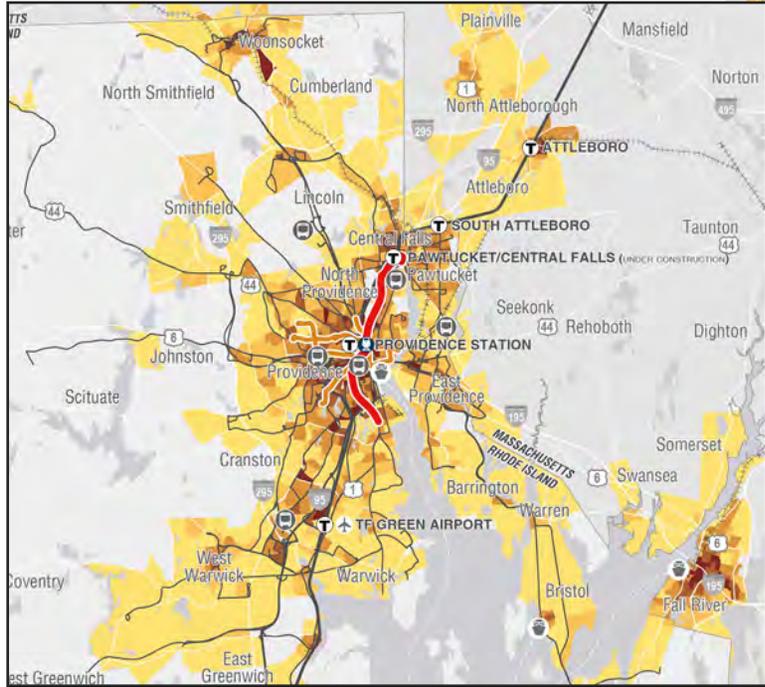
Service Needs to Operate for Longer Hours

At present, only four routes begin service before 5:00 AM and only five operate until after midnight. Especially to connect people with jobs with non-traditional hours and to accommodate longer commutes to places such as Quonset, more service needs to operate for longer hours.

Service Needs to be Faster

With few exceptions such as rail in dedicated rights-of-way, taking transit will take longer than driving. However, to the extent that the difference can be reduced, more people will choose transit. There are a number of ways to make service faster. With the R-Line, RIPTA made service faster by consolidating stops to better balance travel times with walk times. The Downtown Transit Connector (DTC) will provide exclusive lanes for buses in downtown Providence. Additional options include queue jump lanes, transit signal priority, off-board fare payment, and more.

Today, frequent transit service is limited...



...and few services operate during early and late hours.

Rhode Island can use new technologies to improve transit services in the following ways:

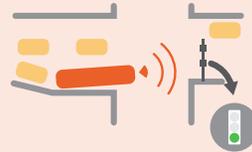
Queue jump lanes

- Queue jump lanes are short, dedicated transit facilities with either a leading bus interval or active transit signal priority (TSP) to allow buses to easily enter traffic flow in a priority position. They can reduce delay considerably, resulting in run-time savings and increased reliability on the state's most congested streets.
- Travel time savings: 5%-15% at intersections.



Transit signal priority

- TSP is an operation improvement that uses technology to reduce time at traffic signals for transit vehicles by holding green lights longer or shortening red lights.
- Travel time savings: 8%-12% is typical.
- TSP has been shown to improve travel times by 5 to 18%.¹⁷



Cashless/barrier-free fare payment

- Having fare payments occur before boarding the bus and with the aid of a smart card reduces the amount of time spent at each stop (also known as dwell time). Off-board fare payment resulted in a 38% to 50% reduction of passenger dwell times and in one case, a travel time reduction of up to 8%.



Universal fare payment

- Fare collection system that has compatibility with other transit systems in a region.
- This can be taken a step further with digitization and mobile ticketing, and some agencies aim to integrate other modes.



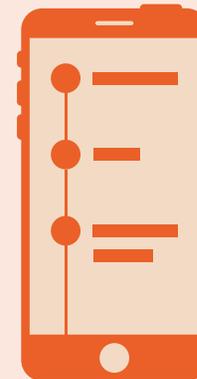
Level boarding

- Platform level boarding occurs when the station platform is same height as the bus (or train) floor.¹⁹
- Level boarding eliminates need to ascend steps onto the bus (difficult for elderly/mobility impaired), thus decreasing dwell times for all passengers.
- Level boarding will make it more possible to transition to fully autonomous transit vehicles as it reduces some need for additional assistance from drivers.



Information

- More extensive and better real-time information in stations, distributed on screens, in search engines, or via transit information aggregator apps may help retain or attract riders.



There is Demand for Much Better Service in Major Urban Corridors

In general, RIPTA and RIDOT provide service in the areas where demand is highest and in other areas where there is sufficient underlying demand for transit service. However, many of the higher demand markets can be considered to be underserved, in that there is demand for more robust services than are currently provided - in particular, more frequent service for longer hours.

Major Metro Area Corridors

With the exception of the R-Line, which provides Rapid Bus service, major corridors are currently served by local bus service. In most of these corridors, there is demand for more frequent service and/or service for longer hours. In some, there are also opportunities to upgrade service to Rapid Bus, BRT, or possibly light rail.

Within Providence

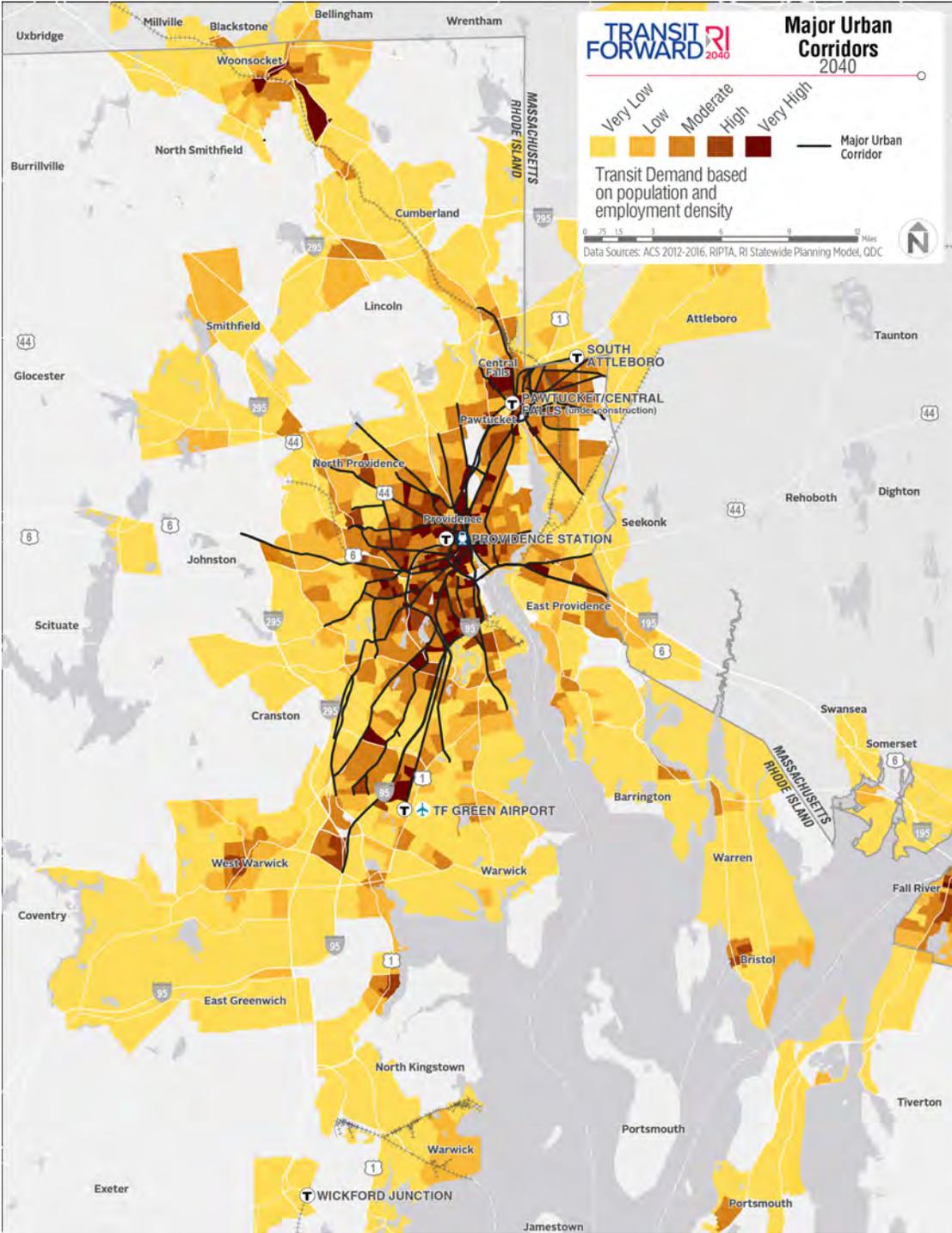
- Prairie Avenue
- Manton Avenue/Broadway
- Dyer Avenue Westminster Street
- Valley Street
- College Road/Mount Pleasant Avenue/Atwells Avenue
- Chalkstone Avenue
- Charles/Smithfield Avenue
- Plainfield Street
- Dyer Street
- Union Avenue
- Eddy Street

Within Pawtucket

- Central Avenue
- Cottage Street
- Benefit Street/Broadway
- Armistice Boulevard/Walcott Street
- Columbus Avenue

Pawtucket-Providence

- Hope Street
- Walcott Street
- Smithfield Avenue/Charles Street
- US Highway 1/N Main Street
- Prospect Street



Central Falls-Pawtucket

- Dexter Street
- Broad Street

Smithfield-North Providence-Providence

- Douglas Avenue
- Old Louisquisset Pike/Charles Street

North Providence-Providence

- Smith Street
- Admiral Street

Johnston-Providence

- Hartford Avenue/Broadway

Cranston-Providence

- Elmwood Avenue

Warwick-Providence

- Reservoir Street
- Pontiac Ave/East Street
- Cranston Street/Oaklawn Avenue
- Eddy Street/Broad Street
- Northeast Corridor

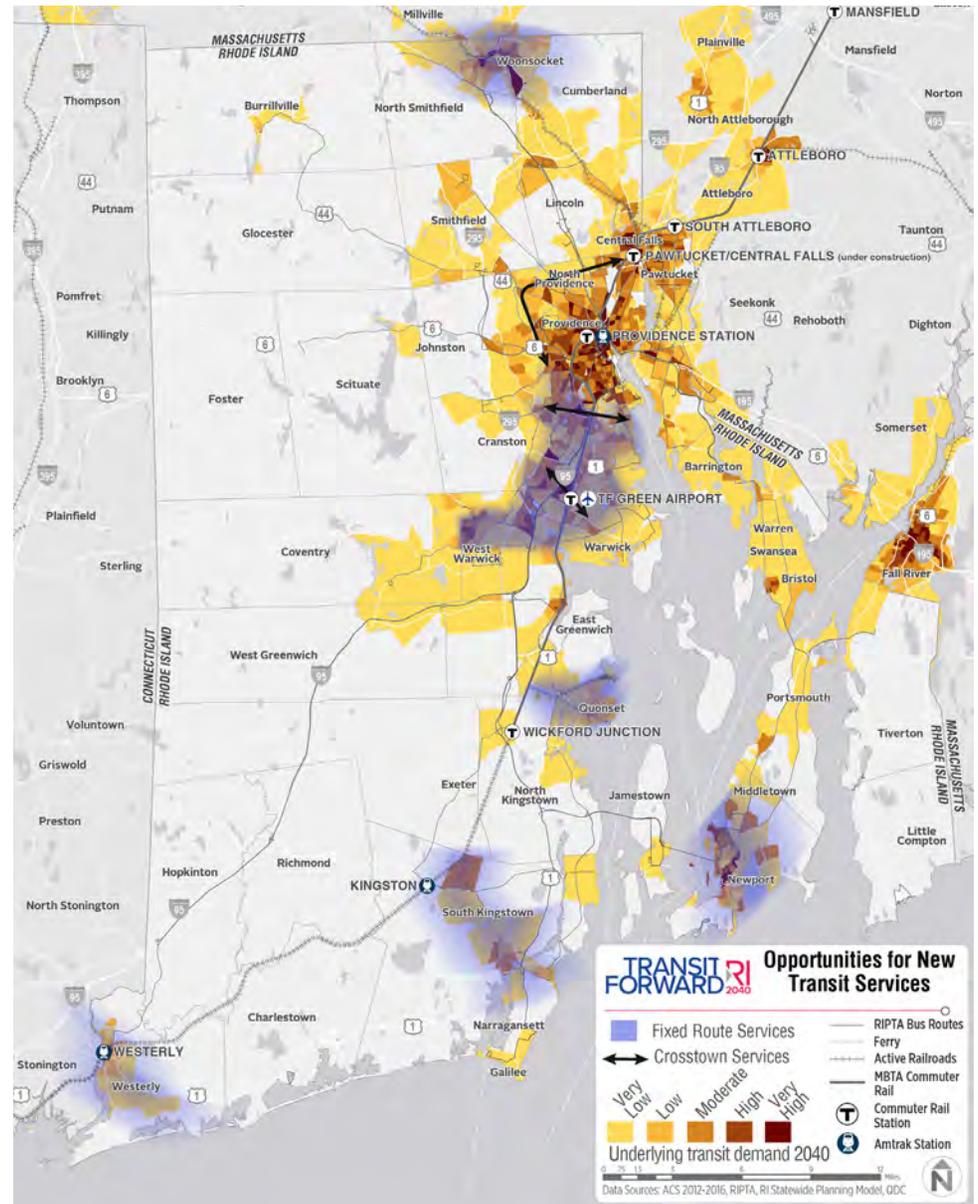
East Providence-Providence

- I-95/Route 114
- Angel Street/Waterman Street
- Pawtucket Avenue

There is Also Demand for New Fixed-Route Transit Services Outside of the Metro Area

There are a number of areas where there is demand for more local service than is currently provided. For the most part, this would likely consist of the development of new local fixed-route services. However, it could also include the development of new Rapid Bus service. These areas and corridors include:

- Within Woonsocket
- Crosstown routes in the Providence Metro area



- Within and between Cranston and Warwick
- Connections between Quonset and regional routes
- Between, Narragansett, Wakefield, and Kingston/URI
- Within Newport and Middletown
- Within Westerly

Commuter Demand is Highest to Boston

While most Rhode Island residents work in Rhode Island, the highest demand for commuter transit service is to and from Boston. This is for a number of reasons, but two are particularly important:

- 1. MBTA commuter rail and Amtrak service is faster than driving and much more reliable
- 2. Parking costs in Boston are very high

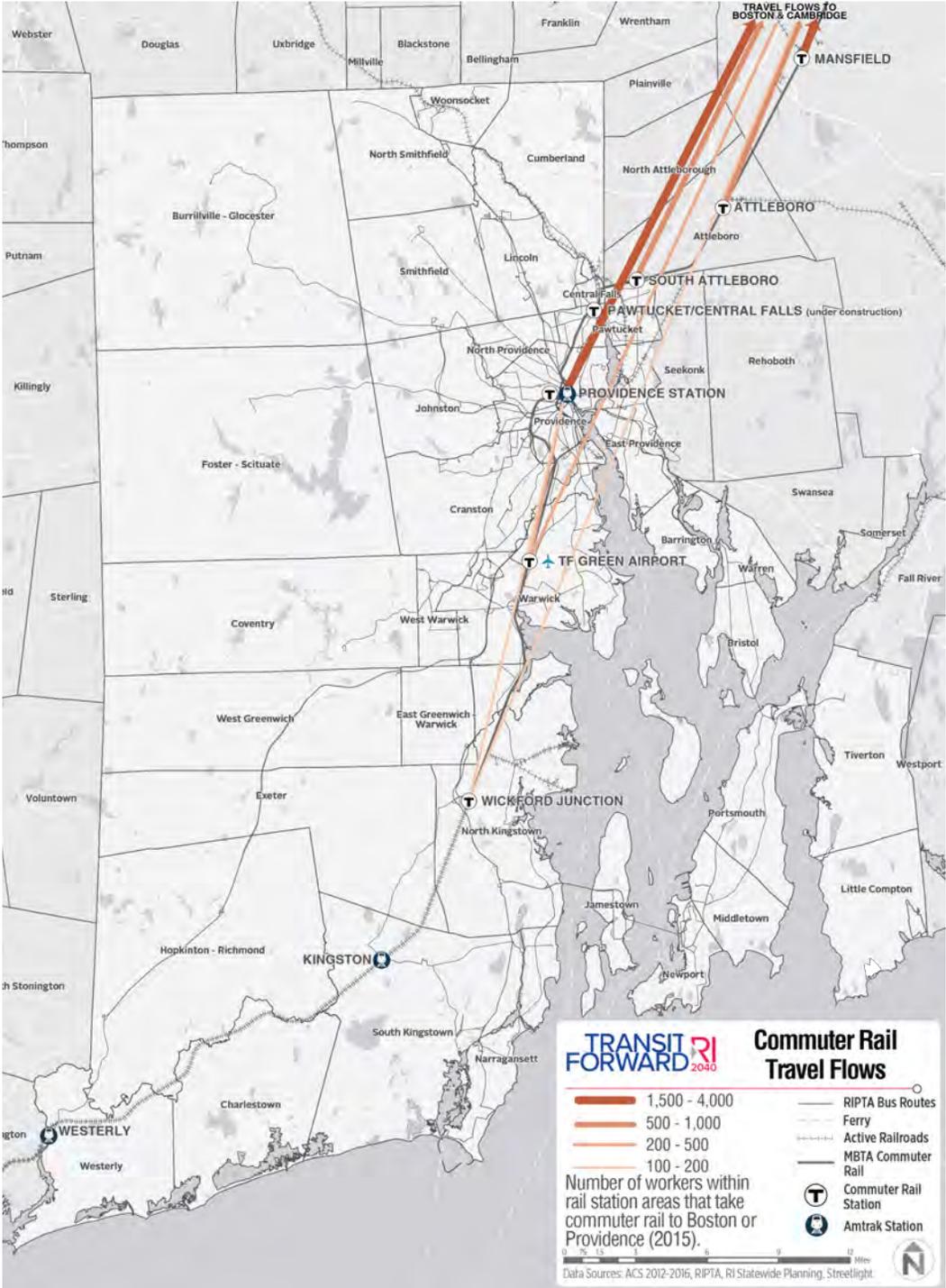
High levels of service (40 MBTA round trips and 38 Amtrak one-way trips) also make these trips convenient. The proportion of Rhode Island residents who use transit to commute to Boston ranges by station from 47% to 76%.

While more work trips overall are made to Providence, the demand for commuter transit service is much lower. This is because the factors that make transit so attractive to Boston are not in place for trips to Providence. First, transit is much slower. All express buses operate on congested roadways, and MBTA commuter rail between Wickford Junction and Providence runs slowly to avoid conflicts with Amtrak trains. Second, parking in Providence is relatively inexpensive for most, and free for many (for example, State employees). The proportion of Rhode Island residents who use transit to commute to Providence, by route, is 10% or lower, and usually less than 5%.

Better Rail Service Could Strengthen Economic Ties with Boston

By many measures, rail ties between Rhode Island and Boston are already very good. The MBTA runs 40 round trips between Providence and Boston and Amtrak runs 38 one-way trips. In total, there are more trains between Providence and Boston than between any other city and Boston. Providence is also the highest ridership commuter rail station outside of Boston and one of the highest ridership stations in the Amtrak system.

However, there is still much room for improvement, and stronger links with Boston would strengthen Rhode Island economically. Opportunities include faster MBTA service, additional trains to fill gaps in existing schedules, joint MBTA and Amtrak ticketing, and the operation of more MBTA service south of Providence to Warwick/TF Green Airport. (Demand for frequent rail service, however, does not extend south of Warwick.)



Better Express Services Could Improve Providence Commutes

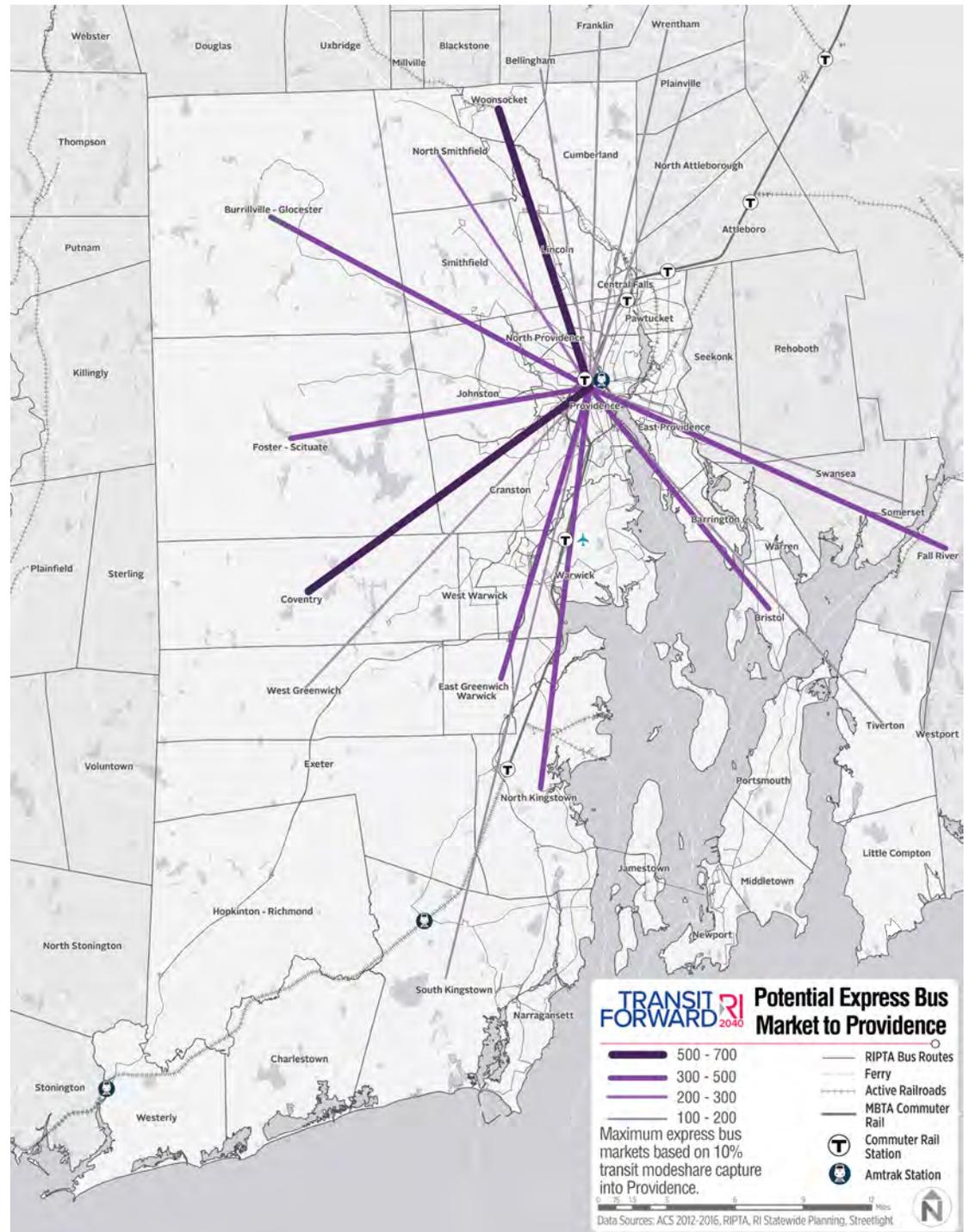
Although inexpensive and free parking in Providence reduces transit demand, there are still opportunities for improvement. These include more frequent peak period express service to provide riders with more flexibility (for example, while many view 10 commuter rail round trips to Wickford Junction as insufficient, most express bus routes only provide half as much service). There is also demand for new express bus service, including between Providence and Woonsocket, as an overlay to existing or improved regional service, and between Providence and Fall River.

Woonsocket - Providence and Newport - Providence are Very Strong Regional Markets

Rhode Island has some of the strongest regional transit markets in the Northeast, if not the United States. These include Woonsocket - Providence and Newport - Providence via the West Bay. Other strong markets include Newport - Providence via the East Bay and Narragansett - South Kingstown - Kingston - Providence.

Better Regional Services Could Strengthen Economic Ties between Rhode Island's Communities

Existing services between Woonsocket and Providence and between Newport and Pawtucket are already well used, but very basic. Upgraded services such as Rapid Bus with better stop facilities and transit priority would make service faster and more comfortable. Other markets where there is demand for stronger regional service are Newport to Kingston/URI and to and from Quonset.



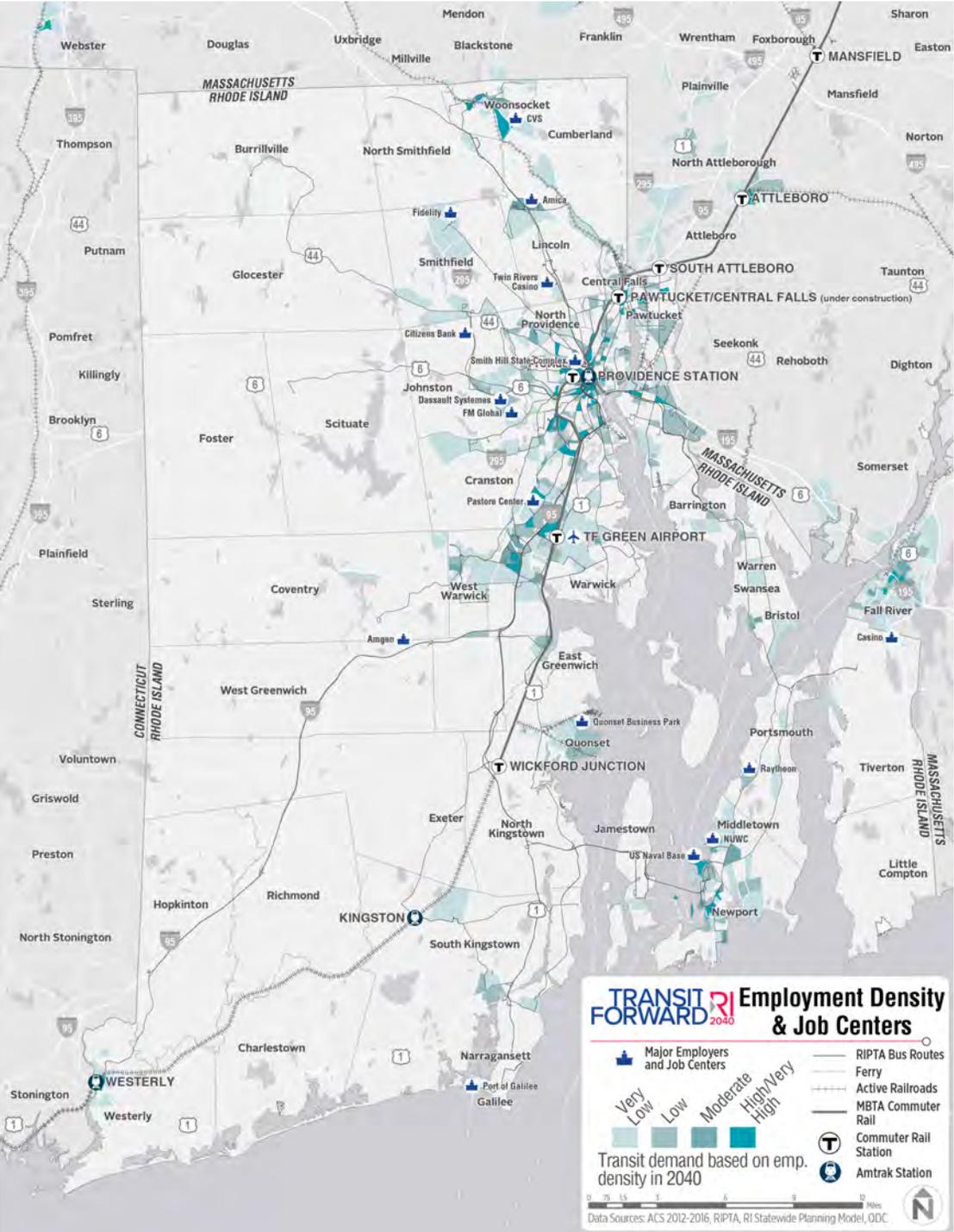
Better Service to Employment Centers Would Improve Access to Jobs

Connecting residents to jobs is one of the State’s highest priorities. Today, transit service is provided to nearly all of Rhode Island’s major employment centers. Exceptions, however, are to newly emerging employment areas such as the Quonset Industrial Park and large office parks in Lincoln, Smithfield, and Woonsocket, among others. As described in RIPTA’s recent Quonset Transit Market Study and Service Plan, these more isolated employment areas are very difficult to serve with traditional fixed-route transit. However, there are non-traditional approaches that could provide these connections:

- Direct service from Kennedy Plaza in Providence (as with the current Quonset transit pilot project, which is providing two AM trips and two PM trips).
- Public shuttles to and from mainline public transit services, including new types of Microtransit services, including on-demand services.
- Rideshare partnerships to provide connections with mainline public transit services.
- Employer and Transportation Management Association (TMA) shuttles to RIPTA mainline services and commuter rail. (TMAs are associations of area employers who join together to provide transit service that connects to and/or supplements publicly operated services.)
- Subsidy programs to encourage the development of employer and TMA shuttles.

Service to Low Demand Areas Remains a Question Mark

As described at the beginning of this chapter, the demand for transit in Rhode Island ranges from very high to very low. RIPTA and RIDOT focus their resources in places where their services can be most effective. This is the case for a number of reasons. First, it allows them to use available resources to serve the greatest number of people. Second, areas with low demand are areas where traditional transit does not work well - places where empty buses raise the question, “why are we paying so much to run empty buses?”



While it is clear that high levels of transit should be provided in areas where demand is very high and that transit should not be provided where there are no people, most areas fall in between. A major challenge for all transit systems is to determine which areas in between warrant transit services, and if so, what kinds of transit services. There are a number of different ways to serve these markets, many of which are still experimental.

Microtransit

Private “Microtransit” companies have been started to provide both service to these areas and the technologies for public operators to provide their own Uber or Lyft-like service. Many of these companies first started with the intent of using “big data” and new technologies to run these services profitably. However, few have been able to do so, and most have transitioned to a model in which they provide service on behalf of public agencies on a contract or subsidy basis. Even with that approach, the two best known Microtransit companies – Bridj and Chariot – have gone out of business. To date, a common denominator of these services is that costs per passenger have been very high and productivity low.

Ridesharing

A second approach has been to subsidize trips on Uber, Lyft, and other similar services. However, the cost of these services is also very high. A second issue is that these services often do not operate in the areas where transit demand is low.

Looking forward, the advent of autonomous vehicles promises to reduce the costs of these types of services. However, even with autonomous vehicles, it is not yet known whether cost savings will be enough to make services cost-effective.

Partnerships/Service Provided by Others

A third approach is to develop partnerships in which RIPTA and RIDOT provide mainline services – for example, commuter rail and regional bus routes – with connecting services provided by others. These options would be similar to those described above to improve connections to employment areas:

- Shuttles to and from mainline public transit services
- Rideshare partnerships to provide connections with mainline public transit services



- Employer and Transportation Management Association (TMA) shuttles

The State could also develop subsidy programs to encourage the development of employer and TMA shuttles.

Volunteer Driver Program/Municipal Programs

Volunteer Driver Programs are a potential fourth approach. Often used by humanitarian organizations to serve trips for older adults, people with disabilities, or other underserved markets in generally less dense areas, these programs rely on volunteers who are often reimbursed to drive transit dependent persons to medical appointments, grocery stores, or other necessary places that are

usually not served by fixed-route transit services. Municipalities in Rhode Island also run similar programs out of municipal senior centers. These programs often serve lifeline trips that otherwise would be provided by paratransit or family members. Partnership potential between these different programs and RIPTA could expand the geographical reach of these programs.

Better Infrastructure for a Better Transit System

While most people think mostly about buses and trains when they think about transit, many facilities and other supportive policies and programs are also needed to make it attractive and convenient.

Stops Need to be Improved

All transit passengers spend time waiting at a stop or station, which are the “front door” to transit. Waiting is also typically seen as the most onerous part of using transit. The quality of this experience significantly impacts people’s perceptions of transit and it impacts their decisions on whether to take transit or do something else.

Most RIPTA stops are very basic and are often uncomfortable places to wait. A comprehensive bus stop improvement program could significantly enhance passenger comfort and encourage more people to take transit. Bus stop improvements could include:

- Making all stops ADA-accessible
- Providing seating, shelters
- Upgrading customer information
- Integrating the stop with its surroundings (art, local information, landscaping, etc.)
- Convenient pedestrian and bike access
- Consistent branding

Regional Transit Hubs will be Essential to Tie Things Together

One key to developing an excellent system will be to tie all future services together into an integrated network. This will require the development of regional hubs that provide connections between transit services and other transportation services, including first-



mile and last-mile connections. Potential major locations – existing, new, and improved – include:

- Kennedy Plaza
- Providence Station
- Providence’s Jewelry District
- Woonsocket
- Newport (keep at Gateway center)
- Wakefield
- Warwick
- Lincoln
- URI

These major hubs would include a variety of features to facilitate connections to and from transit and between regional and local transit services. Examples include pickup and dropoff areas (for personal vehicles, taxis, ridesharing, and private shuttles), parking, bikeshare and scootershare, bicycle storage, and comfortable pedestrian connections to nearby areas.

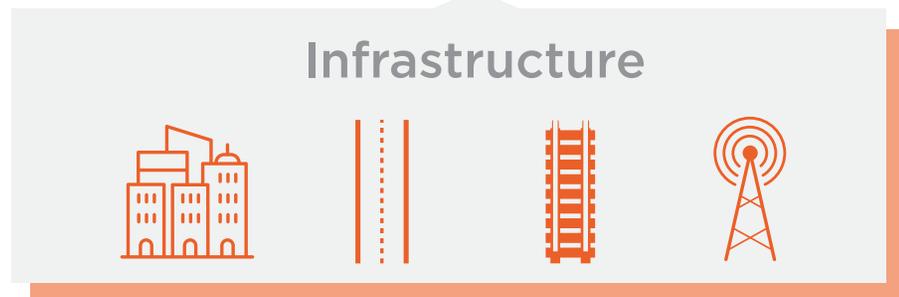
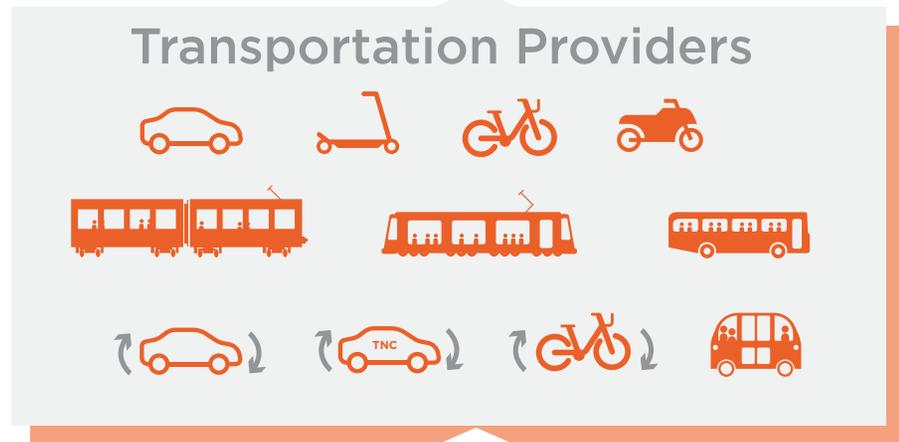
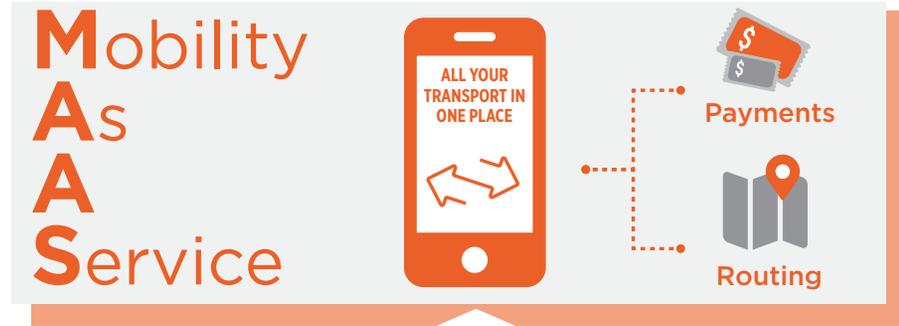
Community Mobility Hubs Can Further Extend the Reach of Transit

Smaller scale Community Transit Hubs can play a similar function but at a smaller scale, and with an emphasis on providing connections between local services and between public and private services (for example, to office parks).

Technology Can Also Help Tie Things Together: Mobility as a Service

As transportation options expand, the transportation landscape has become more fragmented. For example, a commuter may take a train to Providence Station and then ride a scooter to work. On the way home, because it is raining, he or she may take Lyft back to the station. At present, the use of these different options requires people to get information from different places and pay their fares in different ways.

Mobility as a Service (MaaS), which is still more concept than reality, envisions the integration of various forms of transportation



services (public and private) into a single mobility service that is accessible on demand. This could combine trip planning and fare payment functionality. It could also include trip booking, creative partnerships and incentives, and subscription payment models. Overall, MaaS provides the opportunity to make the overall transportation network more efficient and user-friendly.

Information Needs to Improve

For people to be able to use transit, they need to be able to quickly and easily learn what is available. Technology is also enabling better information for transit customers, which reduces the uncertainty of riding transit and attracts new users. Almost all transit vehicles will soon report their location every few seconds, and this information can be conveyed to customers through mobile devices and larger display screens where appropriate. There are a number of third-party companies that compile the information into phone apps. Recent trends include:

- Integrating transit information from multiple agencies
- Combining schedule and real-time info for trip planning
- Including other transportation such as TNCs, bikes, shared ride, etc.
- Integrating fare payment with trip information

Fare Payment Will Become Much Easier

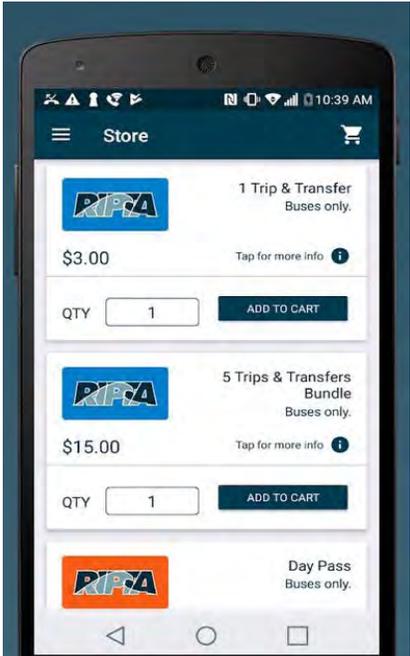
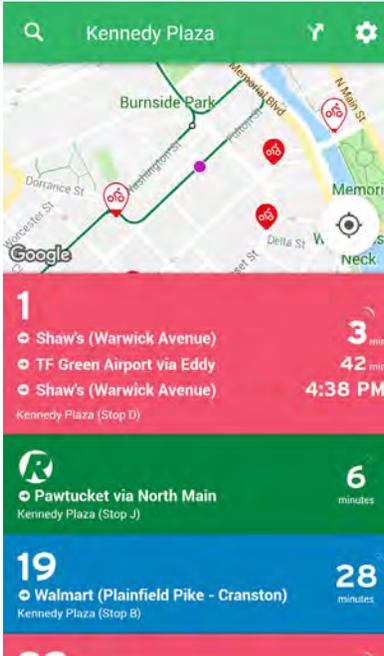
One reason that bus service is slow is because of the time it takes riders to pay their fares. To make this process faster, RIPTA is procuring a new account-based fare collection system to facilitate more off-board fare payment and allow all-door boarding on buses. Riders will be able to pay for their bus fare by smartphone, or by loading value onto a transit card or credit card at a kiosk, retail outlet, or website.

Supportive Policies and Practices are Key

Current parking, right-of-way management, and community development policies and practices encourage people to drive and discourage the improvement of transit. People respond to economic incentives, and at present the incentives are heavily tilted toward a car-based system. Ending hidden parking subsidies, encouraging mixed-use and transit-oriented development, and rebalancing streets toward walking, biking, and transit would not only support a more vital transit system but also build a healthier, more livable community.

Funding

Current funding for transit in Rhode Island is limited. Federal funds (shared across the U.S. based on a national formula, or awarded based on competitive grants) are used to support most capital



investments, as well as the operation of MBTA commuter rail services. RIPTA operations are predominately funded through the gas tax, a revenue source that has been declining over recent years as cars become more fuel efficient. However, other cities and regions across the U.S. have successfully pursued a range of alternative funding sources to support transit. These include new or increased taxes (e.g. sales, gas, hotel, etc.), value capture from new developments adjacent to transit, parking fees, advertising, and sponsorships. As a new vision for enhanced transit in Rhode Island is further developed as part of this Master Plan, potential new revenue sources will be explored to support capital investments and to support long-term operations in a sustainable manner.

Summary



Transit demand and needs vary greatly throughout Rhode Island. Existing service provides a strong foundation upon which to build a much better system, and there are many ways in which that can be done. Many of those opportunities are described in this document. The remainder of the Transit Forward RI project will further evaluate these opportunities, identify and further develop additional ideas, and ultimately determine the best way forward.

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