



STRATEGIC MOBILITY PLAN TRENDS ANALYSIS

March 2018



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EXECUTIVE SUMMARY

In order to develop a realistic and effective Strategic Mobility Plan, the New Orleans Regional Transit Authority (RTA) reviewed local and national trends that affect the demand for and provision of public transportation and mobility in general. Key findings of this trends analysis are highlighted here.

The demand for urban living has grown considerably

Historically, New Orleans neighborhoods were built with walking and streetcars as the primary means of transportation. The oldest neighborhoods are therefore more densely populated and include more of a mix of residential and commercial buildings.

In the mid-20th century, the cost of private cars declined and the region invested in improved roads and highways. This allowed neighborhood design to shift to less-dense development with larger residential plots. City blocks were also larger, and often irregularly shaped – departing from the traditional grid. New developments sprawled outwards from New Orleans' historic city core.



Figure 1: Development in the Central Business District and other urban neighborhoods has picked up significantly in recent years.

In recent years, the demand for dense housing in mixed-use communities with good transit service has grown considerably, rivaling the demand for suburban housing. As a result, housing prices in New Orleans' historic neighborhoods have become the most expensive the region.

The region is growing and changing – creating new mobility needs

The region's economy has been steadily growing in recent years, adding nearly 40,000 new jobs from 2011 to 2016. The strongest job growth is in the hospitality (driven by the more than 10 million tourists who visit New Orleans annually), healthcare, and retail sectors. Meanwhile, jobs in some traditional sectors, such as manufacturing, construction, and oil and gas, have fallen over this period.

The shift in economic activity has implications for the region's mobility network. As job centers grow and new job centers emerge, these areas will require improved transit service, especially for lower-income workers. Furthermore, as the region continues to increase the number of hospitality and healthcare jobs, the demand for more frequent transit service outside of the typical workday will only increase.

RTA has steadily increased service but ridership and fare revenues have recently plateaued

Since 2006, RTA has steadily added bus and streetcar routes, improved route frequencies, and extended hours for existing routes. During this time, ridership has grown from about 7 million in 2006 to 18 million in 2016, excluding ferry ridership. As ridership has grown, so has fare revenue.

However, ridership and fare revenues have largely plateaued since 2013. While RTA relies mostly on its dedicated sales tax for operating revenue, its \$1.25 base fare has not been raised since 1999 and is low compared to peer agencies.

New Orleans needs a combination of traditional and innovative mobility technologies

Several innovative transportation modes have been implemented throughout the country and many are proposed in the Strategic Mobility Plan. These include modern versions of traditional transit – such as rapid bus, bus rapid transit, and light rail transit – as well as new modes, such as microtransit, bike share and rideshare.

Technological innovation is already changing the way New Orleanians get around. RTA's GoMobile app will soon allow users to track buses and streetcars in real time, in addition to planning trips and purchasing mobile tickets.



Figure 2: Buses are the backbone of RTA's transit network, carrying more passengers than any other mode.

There are many options for providing regional transit service

There is no “one-size fits all” approach to providing regional transit service. While some regions have consolidated transit agencies, a more common approach is to formalize coordination and provide regional services through interagency agreements. What matters most is providing a seamless experience for riders.

1.0 LAND DEVELOPMENT TRENDS

CHALLENGES

- Rising housing costs are resulting in displacement of low-income households to neighborhoods farther from the city's core, where many jobs and services are concentrated. Frequent transit services are more difficult and more expensive to provide in these less dense neighborhoods, since fewer residents can be served with every trip.
- St. Tammany and St. Bernard Parishes continue to build low-density communities.
- Many evolving areas lack basic pedestrian infrastructure. Many major roadways are built for high-speed car travel with inadequate accommodations for safe or attractive pedestrian travel.

OPPORTUNITIES

- Rising housing prices in central New Orleans neighborhoods reflect growing demand for housing in areas that allow residents to walk to jobs, shopping, and entertainment. Frequent transit services are easier to provide in these areas since more residents can be served with every trip.
- New land use/zoning regulations adopted by the City of New Orleans encourage increased development around areas served by quality transit and decrease parking supply requirements.
- Jefferson Parish's Comprehensive Plan and development policies promote parking management and overall transportation demand management to reduce automobile dependency. The parish is taking measures to attract population growth by responding to demands for more walkable neighborhoods with quality transit service.

TRENDS ANALYSIS

Historical Development

Until the mid-twentieth century, New Orleans' neighborhoods were largely designed around walking or riding buses and streetcars. Neighborhoods were built on a grid, with small blocks. Small lot sizes hosted a mix of residential and commercial uses and few parking lots. These historic areas are concentrated in the East Bank along the Mississippi River and in Mid City, Carrollton, Gentilly Ridge, Old Metairie, and Old Jefferson. On the West Bank, they include Algiers Point, Westwego, and Gretna's historic districts.

In the 1950s and 1960s, as automobile ownership grew and more roads were built, population growth in New Orleans shifted to the city limits and beyond. Households migrated to the region's first large-scale suburban developments in Metairie, Gentilly, and Lakeview on the East Bank, and Algiers, Gretna, Harvey, Marrero, and Westwego on the West Bank. In the 1970s and 1980s, single-family subdivisions developed farther into New Orleans East, St. Bernard Parish, and Kenner on the East Bank, and Algiers, Terrytown, Harvey, and Marrero on the West Bank.

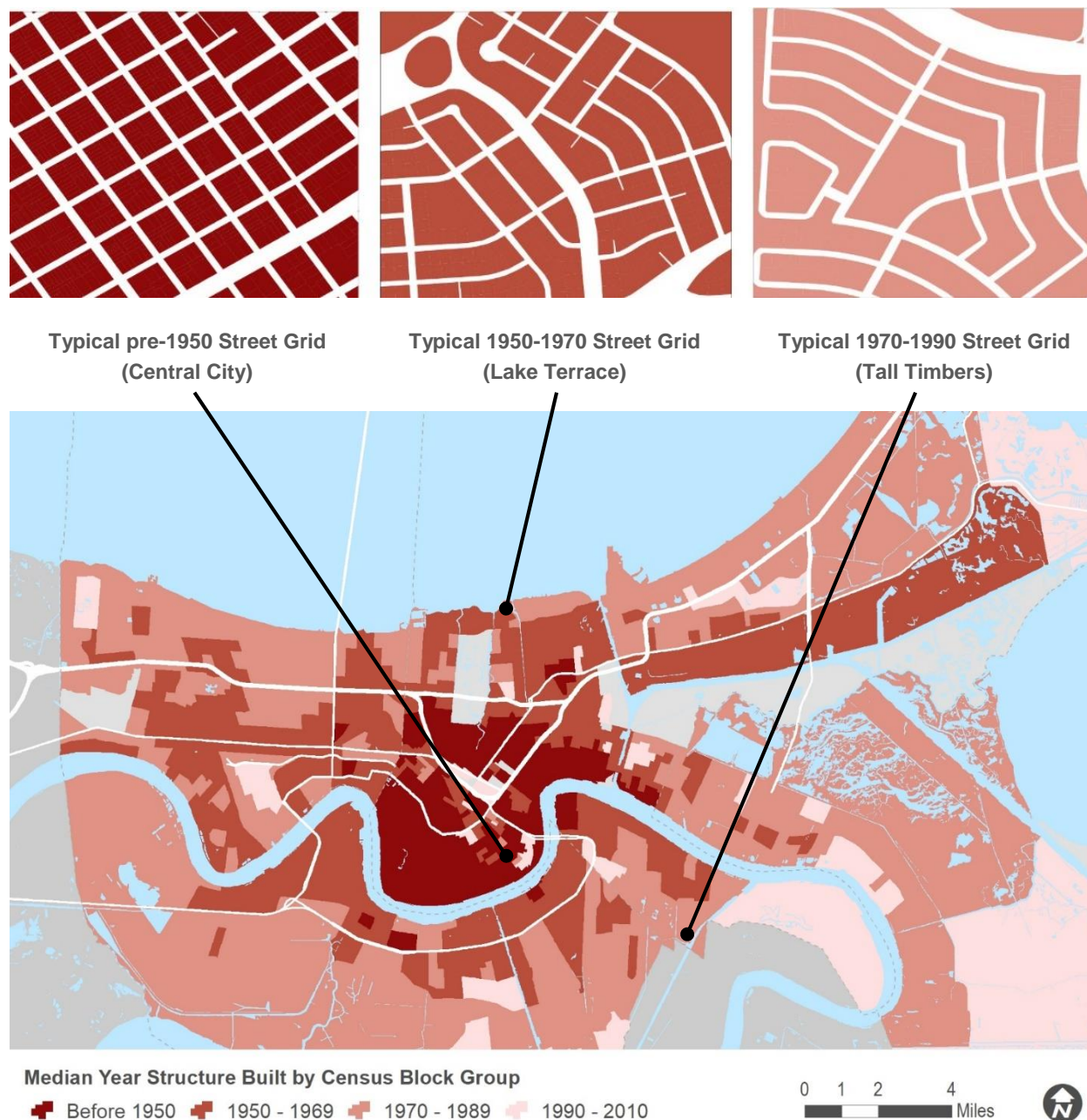
These neighborhoods were built around the car. They are predominantly single-family developments with larger lots and blocks, and generally zoned to separate residential and commercial land uses. The car-orientation requires substantial off-street parking. The large lots limit density and the ability to easily walk to jobs, shopping, and amenities.

During this period, new residential subdivisions also began rapidly transforming the largely rural St. Tammany Parish into a patchwork of bedroom communities with similar land development patterns. This

style of development continues to drive population growth on the Northshore. Here, population and commercial activity is concentrated around the cities of Covington, Mandeville, and Slidell – near Lake Pontchartrain and within close commuting distance to the Southshore.

Figure 3 illustrates these neighborhood development trends across time. The top part of the figure shows that city blocks expanded in size over time, and move from a grid to less-regular designs. The bottom part of the figure shows where these divergent designs are most prevalent throughout New Orleans.

Figure 3: Example Street Grids and Development Timeline



Source: U.S. Census Bureau, 2011-2015 American Community Survey

Recent Development

Since the 1990's, aside from a handful of new suburban subdivisions built in Jefferson and St. Bernard Parishes, growth on the Southshore has mostly taken the form of infill development within existing neighborhoods. Major mixed-income housing redevelopment projects, including Columbia Parc, Harmony Oaks, Marrero Commons, and River Garden, are some of the largest-scale infill developments in New Orleans' historic neighborhoods.

Some redeveloped areas replaced the historic street grid with less walkable environments. The new Veterans' Affairs and University Medical Center hospital complexes in Mid City, for example, replaced a traditional residential neighborhood with large blocks and parking garages. The density of employment in the area, however, has contributed to ancillary redevelopment of residential and commercial buildings in the Tulane Avenue corridor.

Since 2005, significant large-scale, market rate, infill residential development has occurred in the Central Business District and Warehouse District. The number of households receiving mail in these areas increased by nearly 300 percent from 2005 to 2016.¹ Thousands of new multifamily housing units are currently planned, financed, or under construction in these areas.

Large multi-family developments are also planned in historic industrial corridors, such as along the riverfront in the Marigny and Bywater neighborhoods and along the Lafitte Corridor. Rising residential populations and these neighborhoods' traditional role as employment centers are creating all-day demand for transit in multiple directions.

Rising demand for this type of development is also driving up housing prices in many central New Orleans neighborhoods. According to Multiple Listing Service (MLS) data, the city's average per-square foot price of home sales increased by over 35 percent from 2005 to 2016. Central City, the French Quarter, Marigny, Tremé, Seventh Ward, Bywater, and the Upper Ninth Ward have all seen average prices rise by over 50 percent since 2005. In neighborhoods outside central New Orleans and in nearby parishes, housing prices have fallen in real terms since 2005.²

Error! Reference source not found. illustrates the disparities in housing value growth throughout the region by highlighting the change in the average per-square foot home sale prices from 2005 to 2016 by zip code.



Figure 4: The Standard, under construction in the CBD, will have 89 condominiums

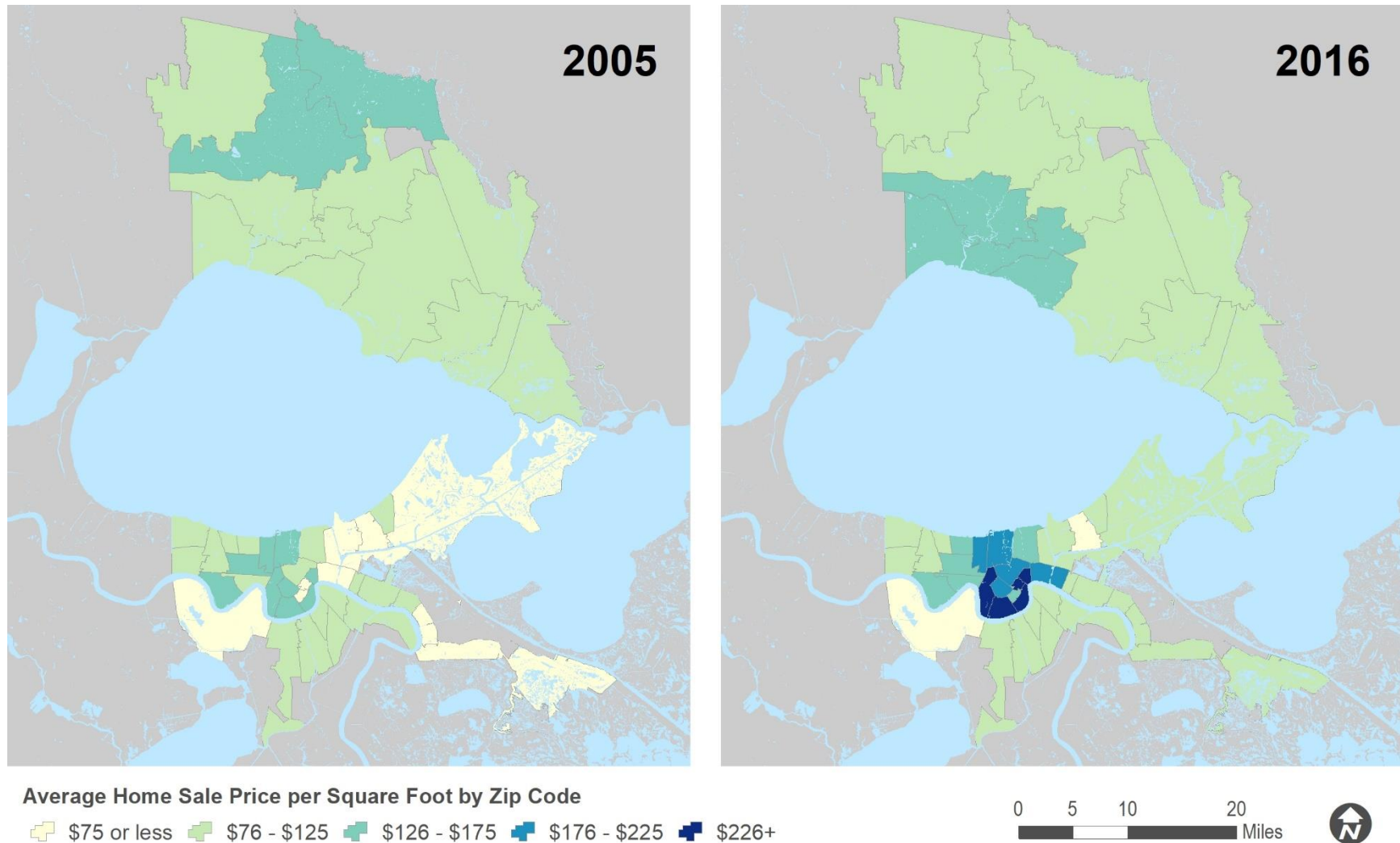


Figure 5: Edwards Communities is developing a 382-apartment community along the Lafitte Greenway

¹ From 1,316 in 2005 to 3,878. Neighborhood Recovery Rates: Growth continues through 2016 in New Orleans neighborhoods Data Tables. (2016, August 15). Retrieved from https://s3.amazonaws.com/gnocdc/reports/TheDataCenter_NeighborhoodRecoveryRates+2016_datatables.xls.

² Home prices rose by about 10 percent in Jefferson Parish and 12 percent in St. Tammany Parish, both less than 23 percent inflation from 2005 to 2016. Source: Thompson, Richard. "New Orleans' real estate market showing signs of cooling, data signal" *The New Orleans Advocate* 7 Mar. 2017: http://www.theadvocate.com/new_orleans/news/business/article_f513766a-02bc-11e7-ba44-af5d619fa409.html

Figure 6: Change in Average Home Sale Price per Square Foot, 2005-2016



Source: Gulf South Real Estate Information Network (GSREIN)

Note: 2005 prices are not inflated to 2016 dollars.

2.0 ECONOMIC TRENDS

CHALLENGES

- Providing inter-parish trips requires coordination between parishes and transit agencies, to best use local and federal funds, avoid duplication of services.
- Inter-parish trips could be relatively costly, since routes will typically be longer than local routes.

OPPORTUNITIES

- Hospitality and healthcare job growth will likely increase demand for late evening and early morning service, since workers in these jobs ride transit more frequently and many jobs require working during these non-traditional hours.
- The anticipated growth in well-paying jobs in coastal and river parishes will likely increase demand for improved commuter options.

TRENDS ANALYSIS

The New Orleans region³ has consistently added jobs in recent years. From 2011 to 2016, Orleans Parish added 18,190 jobs – nearly half of the region’s overall growth of 38,130.⁴ Growth has been strongest in the hospitality, healthcare, and retail sectors in both the city and the region. At the same time, significant job losses occurred in the manufacturing, construction, and oil and gas industries. Employment in the state government also declined.

The Louisiana Workforce Commission projects modest growth in the region from 2015 to 2024. However, there are significant variations by industry. Table 1 ranks all industries in the region by the projected change in number of jobs from 2015 to 2024. The recent trend of high growth in hospitality and healthcare is expected to continue, as well as high growth in professional and retail jobs.

Area workforce and economic development agencies such as the New Orleans Business Alliance and the Jefferson Parish Economic Development Commission (JEDCO) are focusing on increasing the number of jobs in well-paying industries and number of workers qualified to obtain them. JEDCO is working with the Port of New Orleans to revive skilled employment at the Avondale Shipyard. Jefferson Parish is also investing in public improvements to the area surrounding Ochsner Medical Center, which is expanding on Jefferson Highway. Meanwhile, the New Orleans Business Alliance is working to expand the bio-innovation and creative and digital media sectors.

Representatives of each of these organizations report the strong desire of employers and professionals for transportation alternatives to the private car. All have expressed concerns with the limitations of RTA’s current service, especially the limited service between parishes.^{5 6}

³ Defined here as the Metropolitan Statistical Area, comprising Jefferson, Orleans, Plaquemines, St. Bernard, St. Tammany, St. Charles, St. James, and St. John the Baptist Parishes.

⁴ U.S. Department of Labor Bureau of Labor Statistics, Quarterly Census of Employment and Wages, 2011-2016. Retrieved from <https://www.bls.gov/cew/datatoc.htm/>.

⁵ JEDCO. Personal interview. 14 Feb. 2017.

⁶ New Orleans Business Alliance. Personal interview. 17 Feb. 2017.

Table 1: Regional Employment Projects by Industry

Industry	2015 Employment	Employment Growth, 2015-2024	
		Change	Percent Change
Healthcare and Social Assistance	73,689	9,574	13.0%
Accommodation and Food Services	73,511	7,401	10.1%
Professional, Scientific, and Technical Services	33,105	3,573	10.8%
Retail Trade	64,218	3,543	5.5%
Administrative and Waste Services	34,378	2,140	6.2%
Other Services, Except Public Administration	48,906	1,994	4.1%
Arts, Entertainment and Recreation	11,617	1,801	15.5%
Manufacturing	30,580	1,770	5.8%
Transportation and Warehousing	29,305	1,410	4.8%
Wholesale Trade	23,381	1,209	5.2%
Finance and Insurance	18,365	1,062	5.8%
Educational Services	44,183	1,052	2.4%
Management of Companies and Enterprises	7,868	1,020	13.0%
Real Estate and Rental and Leasing	8,737	316	3.6%
Utilities	2,200	270	12.3%
Government	35,424	-65	-0.2%
Agriculture, Fishing, Forestry, and Hunting	1,239	-74	-6.0%
Mining	7,182	-253	-3.5%
Construction	32,342	-314	-1.0%
Information	9,065	-1,019	-11.2%
TOTAL	589,295	36,410	6.2%

Source: Louisiana Workforce Commission, Regional Labor Market Area 1, comprised of Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John the Baptist, and St. Tammany Parishes

Job centers are located all over the New Orleans metropolitan area. Figure 7 and Figure 8 show the concentration of jobs on the Northshore and Southshore. In addition to the traditional Downtown job center, areas of concentrations in Orleans Parish include the Tulane and Loyola University area, the Michoud facility in New Orleans East, and the University of New Orleans' Lakefront campus. In Jefferson Parish, job centers include Elmwood, the Metairie CBD, Ochsner Medical Center's main campus in Jefferson, and along the West Bank Expressway in Gretna and Harvey. The main commercial corridor of W. Judge Perez Drive in Chalmette is home to the heaviest concentration of jobs in St. Bernard Parish.

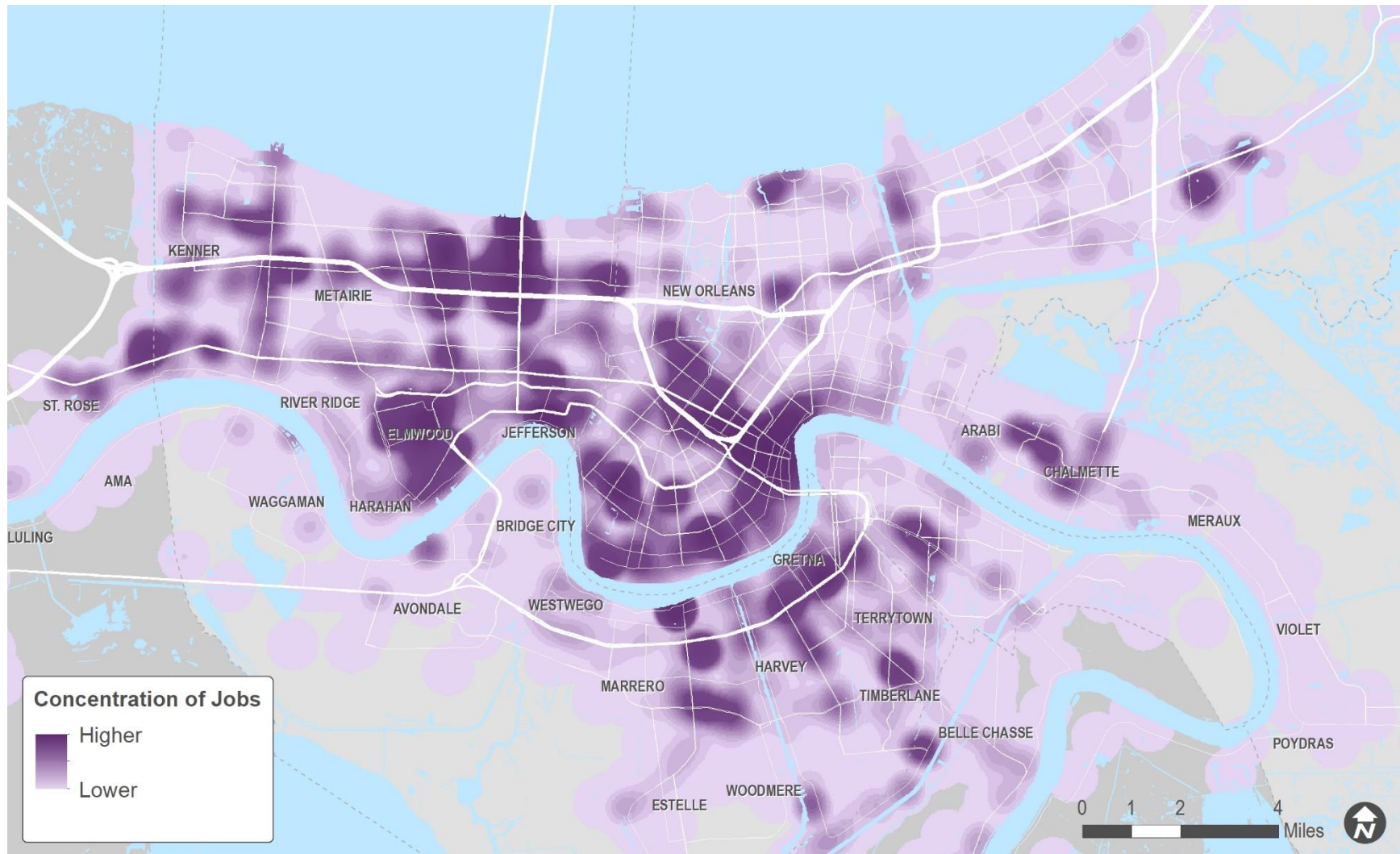
Many New Orleanians commute across parish lines. In 2014, over 100,000 workers commuted into Orleans Parish, and 62,938 commuted from Orleans Parish to other locations. Of these, 49,540 commuted to Jefferson Parish, 11,881 to St. Tammany Parish, and 4,980 to St. Bernard Parish.⁷

Company announcements and interviews with workforce development organizations suggest that future opportunities for high-paying jobs will be located in the River Parishes.⁸ Industrial projects, such as the Monsanto Expansion in Luling (St. Charles Parish), a new Entergy Power Station in St. Charles Parish, and a new methanol plant in Vacherie (St. James Parish) will add hundreds of well-paying jobs. The coastal restoration project in Plaquemines, Jefferson, and Terrebonne Parishes is expected to create thousands of construction and engineering jobs.

⁷ Source: U.S. Census Bureau. 2017. OnTheMap Application. Longitudinal-Employer Household Dynamics Program. <http://onthemap.ces.census.gov/>

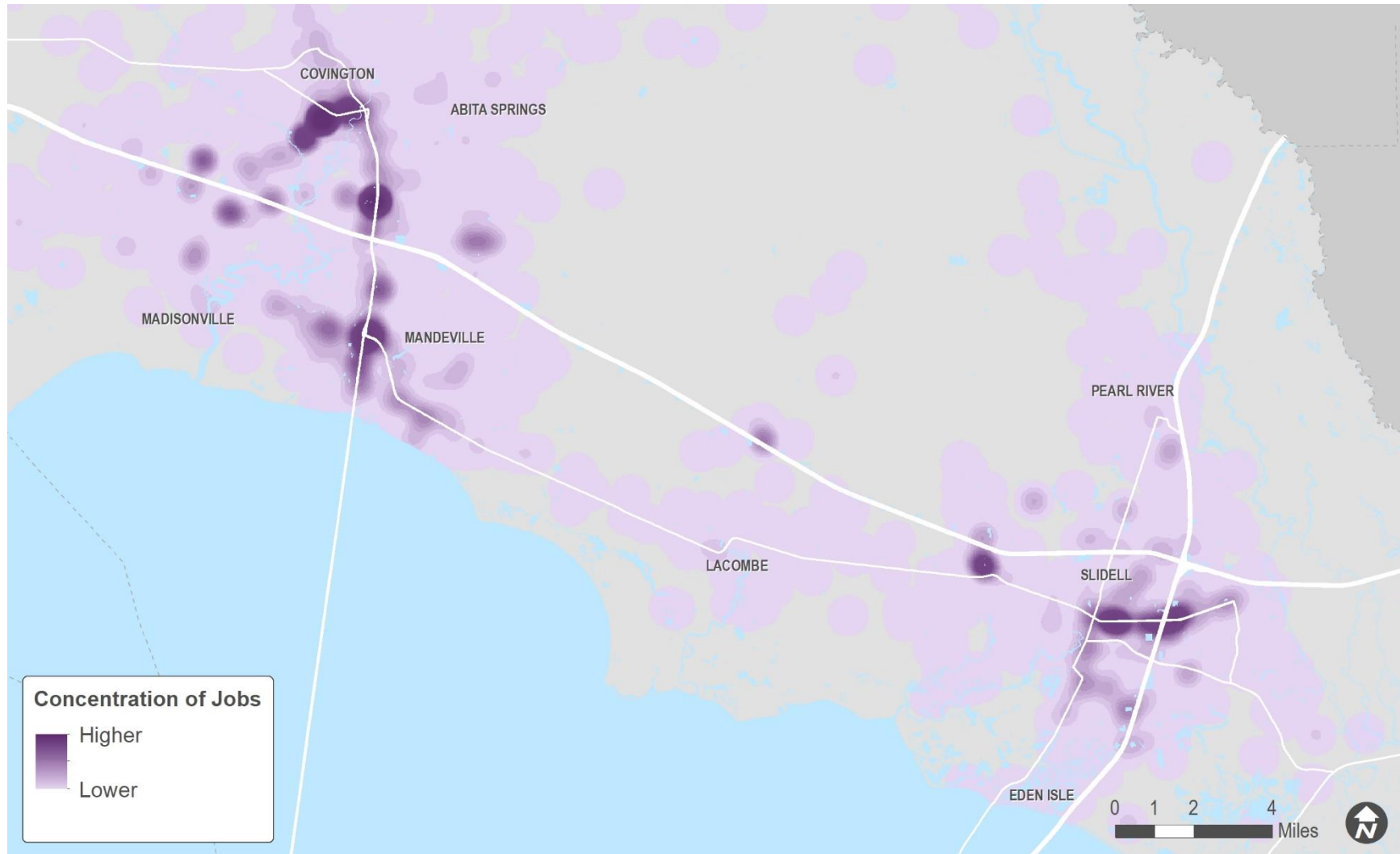
⁸ St. Charles, St. John the Baptist, and St. James Parishes. JOB1. Personal interview. 15 Feb. 2017.

Figure 7: Concentration of Jobs, Southshore, 2014



Source: U.S. Census Bureau. OnTheMap application. 2014 Longitudinal-Employer Household Dynamics program.

Figure 8: Concentration of Jobs, Northshore, 2014



Source: U.S. Census Bureau. OnTheMap application. 2014 Longitudinal-Employer Household Dynamics program.

3.0 RTA SERVICE TRENDS

CHALLENGES

- Ridership levels have consistently risen since 2006, but bus ridership has plateaued since 2013.
- RTA has not raised fares since 1999 and its base fare remains low relative to peer agencies.

OPPORTUNITIES

- Continued growth in revenue miles and revenue hours indicate the system is consistently improving level of service.

TRENDS ANALYSIS

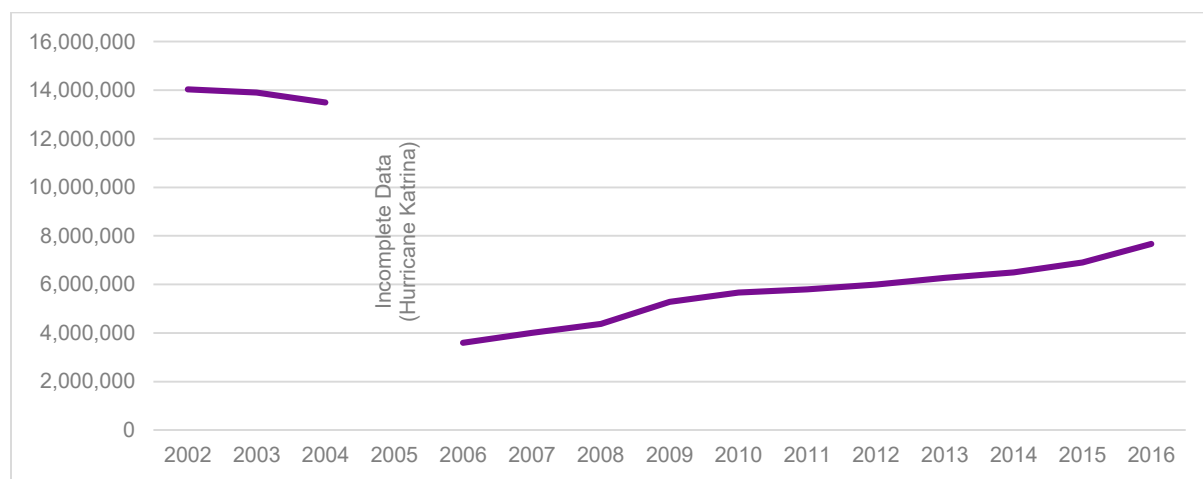
Level of Service

RTA's level of service has steadily increased since Hurricane Katrina devastated the system. While RTA provides bus, streetcar, ferry, and paratransit service, this section will focus on bus, streetcar, and paratransit service. The following metrics are used to evaluate RTA's level of service:

- **Vehicle Revenue Miles (VRM):** The distance that vehicles travel while open to riders.
- **Vehicle Revenue Hours (VRH):** The amount of time that vehicles travel while open to riders.

In 2016, RTA vehicles traveled nearly 8 million Vehicle Revenue Miles. This was a 113 percent increase since 2006 (Figure 9). The increased service miles reflect a combination of more routes and more frequent service and longer hours on existing routes.

Figure 9: RTA Vehicle Revenue Miles (2002 to 2016)

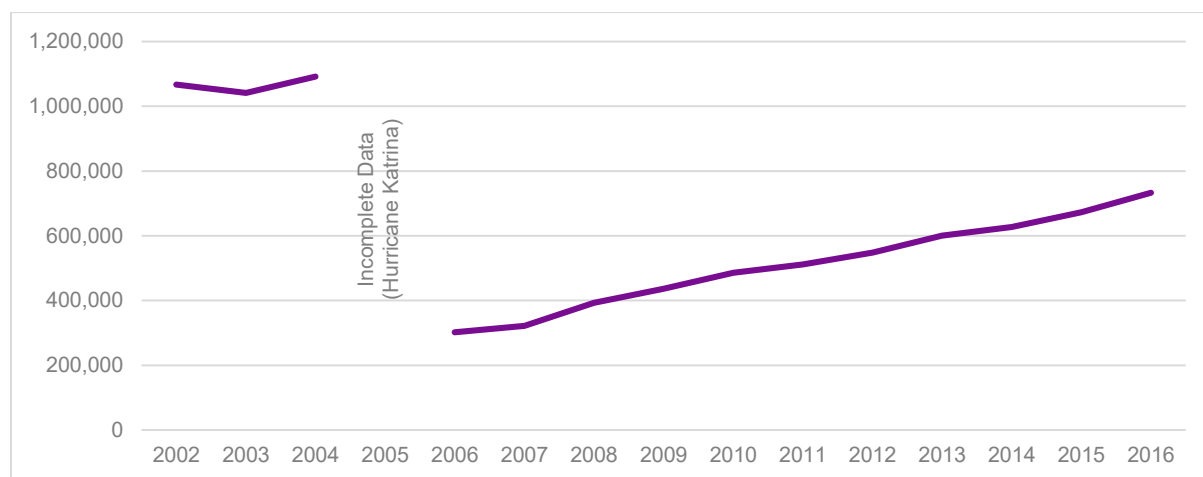


Source: RTA and National Transit Database

Vehicle Revenue Hours (VRH) also grew steadily between 2006 and 2016, as shown in Figure 10 below. VRH increased by 143 percent over the period. The growth also reflects RTA's growing services. The larger growth, compared to vehicle miles, is because:

- Proportionately more service (especially streetcar service) is in congested areas and on high ridership routes, where vehicles travel slower.
- Proportionately more service is during peak hours, when congestion also reduces average speeds.
- More layover time between runs has been added to improve on-time performance. Layover time counts as revenue hours, but vehicles do not travel during the additional time.

Figure 10: RTA Vehicle Revenue Hours (2002 to 2016)



Source: RTA and National Transit Database

Ridership and Productivity

RTA operates 34 bus routes and 5 streetcar routes. Using average weekday and weekend ridership data from October 2016⁹, this section analyzes ridership and productivity for these routes.

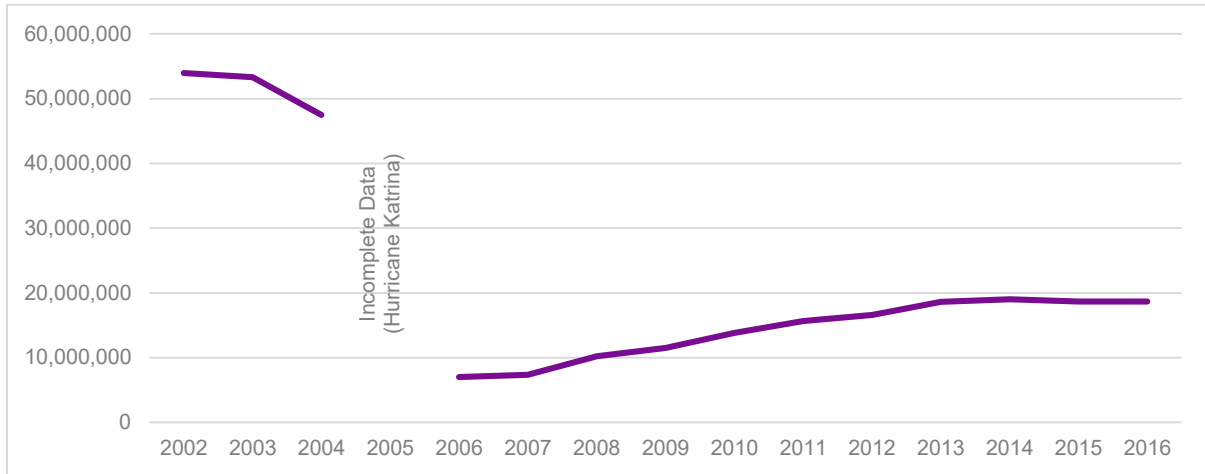
Passenger ridership is an important indicator of a transit system's strength. From 2012 to 2016, total transit trips in the U.S. have declined, due largely to a drop in fixed route bus ridership.¹⁰ While factors for this loss vary by system, common explanations include cheaper gasoline, competition from ride-hailing services, and declining service and funding.

RTA ridership is expressed in unlinked passenger trips – the total number of trips within the system, regardless of fare paid or transfer. As shown in Figure 11, the number of annual unlinked passenger trips has gradually increased by 166 percent from 2006 to 2016. This trend tracks RTA's gradual service improvements as the transit system and the city recovered from Hurricane Katrina. Since 2013, ridership has generally held steady between 18 and 19 million annual unlinked passenger trips.

⁹ The data from October does not include the first and last week of the month's data to account for behavioral adjustments to the route, the streetcar extension, and holidays that impact typical ridership. October was selected because of holidays occurring in November, December, January, February, and March. As the Rampart-St. Claude Streetcar opened in October 2016, it should not yet be considered a fully mature route for October 2016 data.

¹⁰ Federal Transit Administration, Office of Budget and Policy. U.S. Department of Transportation. 2016 National Transit Summary and Trends. October 2017. Retrieved from: <https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/ntd/66011/2016-ntst.pdf>

Figure 11: RTA Unlinked Passenger Trips (2002 to 2016)



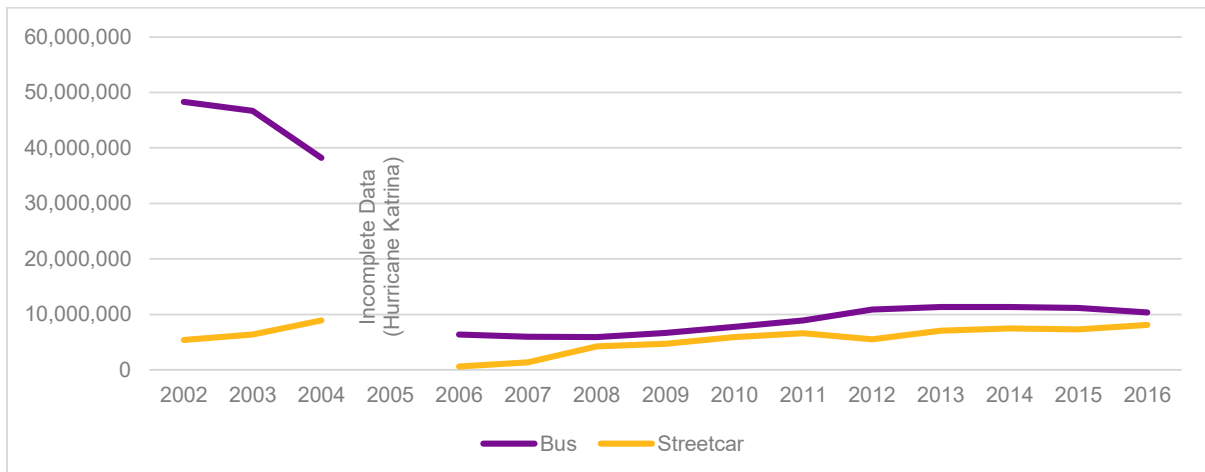
Source: RTA and National Transit Database

Bus and Streetcar Ridership

There are over 10 million boardings on RTA buses every year, about 25 percent more boardings than on streetcars (Figure 12). Higher bus ridership reflects the far larger network and more service hours, compared to the streetcar system, which has only five routes.

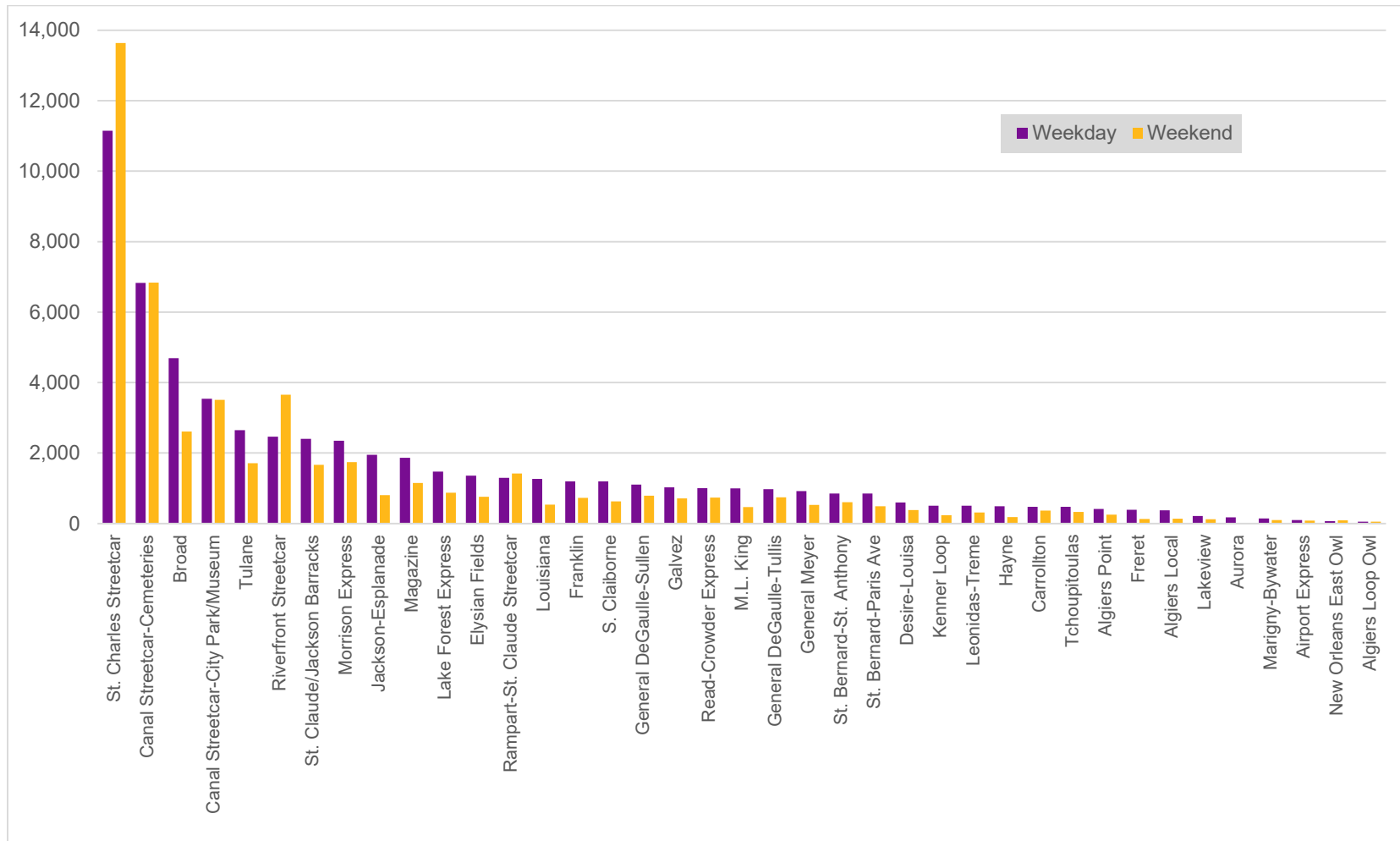
Figure 13 shows that the streetcar routes have the highest weekday and weekend ridership. The St. Charles Streetcar attracts nearly 11,000 boardings on weekdays and over 13,000 on weekends, by far more than any other route. Combined, the Canal Streetcars have about 10,000 riders on weekdays and weekends. The Broad bus route is the most popular bus route, with over 4,500 riders on weekdays and over 2,500 on weekends.

Figure 12: RTA Transit Ridership by Mode (unlinked passenger trips)



Source: RTA and National Transit Database

Figure 13: RTA Average Weekday and Weekend Ridership by Route (October 2016)



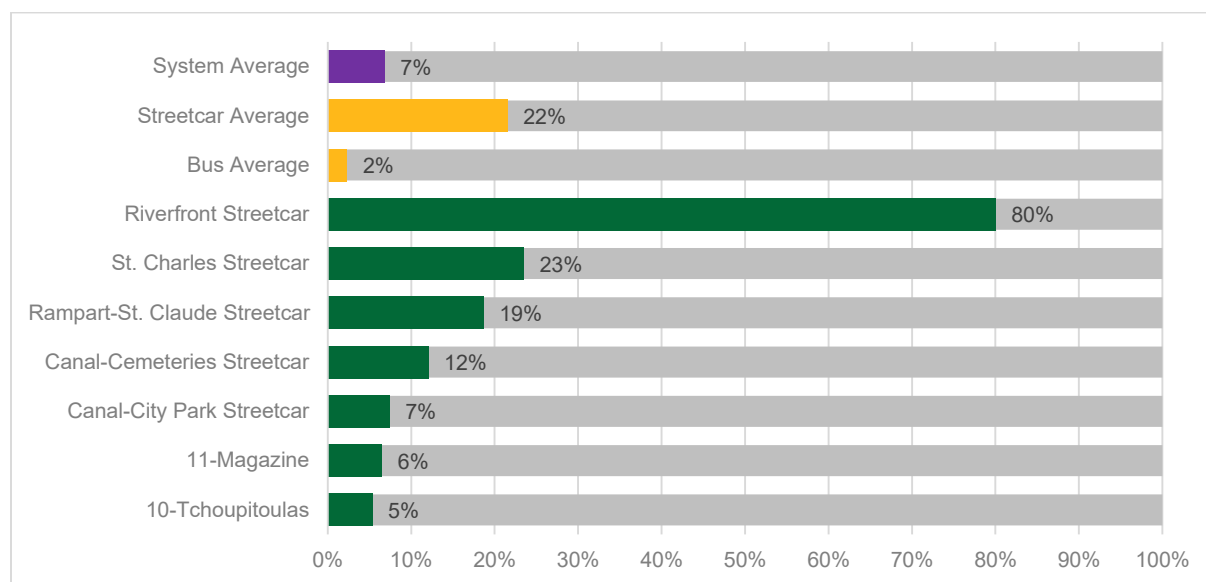
Source: RTA

Tourist Ridership on Buses and Streetcars

Recent survey data indicate that tourists account for approximately seven percent of all riders on RTA buses and streetcars. However, this percentage varies significantly by mode, with tourists accounting for about 22 percent of streetcar riders and just two percent of bus riders.

As shown in Figure 14, there is also considerable variation by route, with only seven routes having five percent or more of their ridership coming from tourists. Only one route, the Riverfront Streetcar, has a majority (80 percent) of its ridership coming from tourists. The next highest, the St. Charles Streetcar has slightly less than one-quarter of its ridership coming from tourists.

Figure 14: Tourist Ridership



Source: 2011 Comprehensive Operations Analysis and 2016 Loyola/UPT Streetcar Before/After Study

Note: Survey data excludes ferries and paratransit.

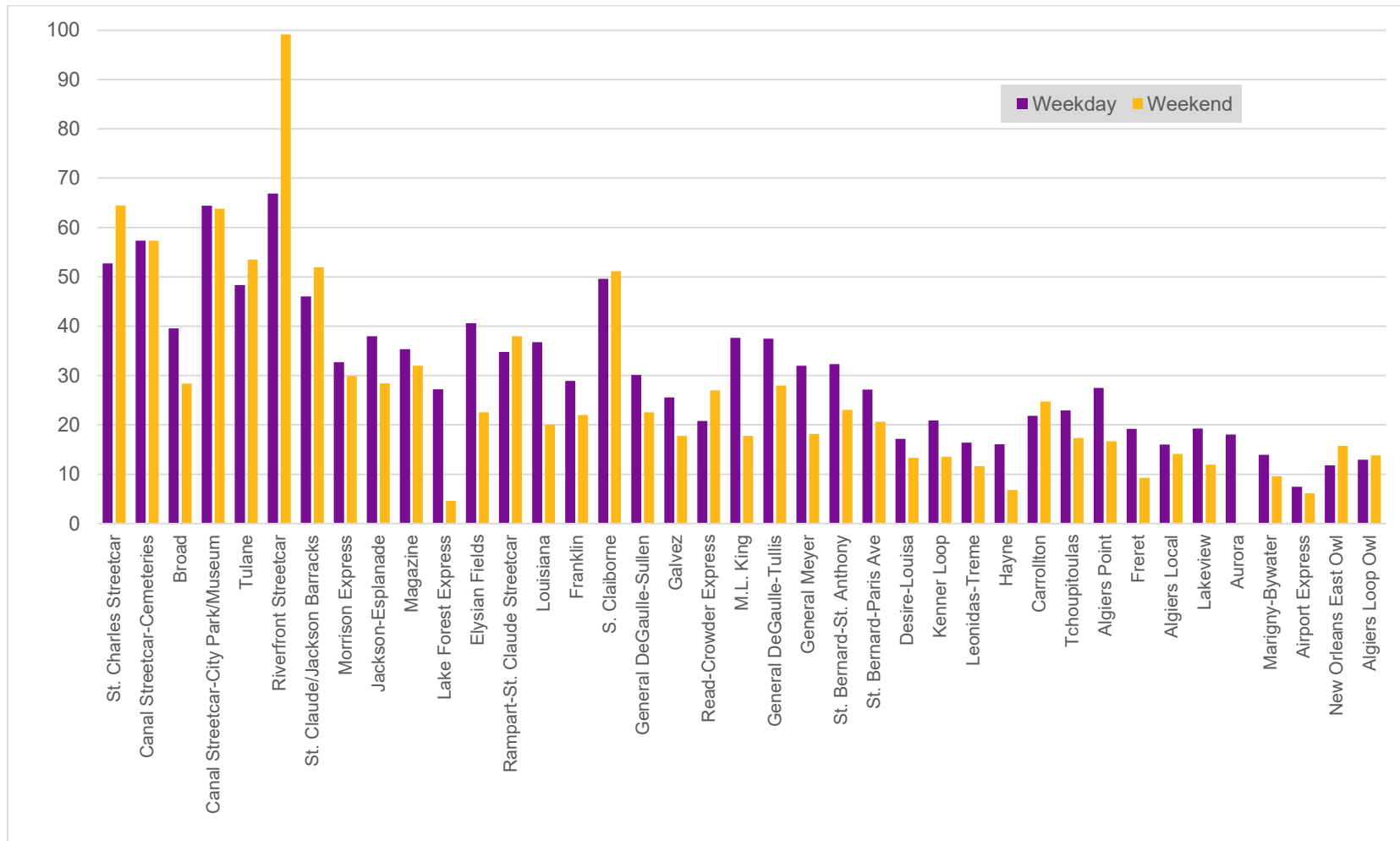
Bus and Streetcar Productivity

Route performance is also measured in passengers per revenue hour. This is the average number of passengers who board a transit vehicle every hour it is in service. A high ratio shows that the route is highly productive, while lower numbers show that while the route may provide decent coverage, it picks up relatively fewer passengers during operation.

Figure 15 shows the average number of passengers per revenue hour for streetcar and bus routes by weekday and weekend averages. Streetcars stand out for their high productivity rates, in many cases despite operating nearly 24/7, covering times with lower demand.

Three bus routes stand out for high performance: S. Claiborne, Tulane, and St. Claude/Jackson Barracks. It is important to note that comparing productivity by route is difficult due to different service spans, or hours of operations for the route. Routes with less non-peak service tend to be more productive. Furthermore, many routes may operate with low productivity rates but they serve an important role of providing access to transit in particular areas.

Figure 15: RTA Average Passengers per Revenue Hour by Route (October 2016)



Source: RTA

4.0 RTA FUNDING TRENDS

CHALLENGES

- Uncertainty over future federal funds may hinder RTA's ability to plan future improvements.
- Creating a ballot initiative requires a good reputation and may require a lengthy campaign lasting multiple years.
- Fare increases require City Council approval.

OPPORTUNITIES

- Ballot initiatives, as well as regional integration efforts, can unite a region of stakeholders for a common goal.

TRENDS ANALYSIS

Like most public transit agencies, RTA is funded by a mix of federal, state, and local sources. The exact mix is different for capital costs and for operating costs.

Capital Costs

While Federal Transit Administration (FTA) grants have traditionally funded a large portion of local capital projects, FTA grants have become increasingly competitive in recent years. These grants now give higher value to projects that are “shovel-ready”, include higher local funding matches, and fit strict eligibility criteria. The number of federal grants awarded has decreased since 2006¹¹, but the total *amount* of federal funding has increased. This trend may be due to stricter eligibility requirements, preference to fund fewer but larger projects, and increased competition among the applicant pool.

Uncertainty over federal transportation funding has caused transit agencies around the country to look to state and local sources. In the 2016 general election, 55 of 77 transportation measures on local ballots passed.¹² Some of these ballot measures including funding solely for transit, while others allocated money for transit and surface transportation improvements (including bicycle and pedestrian projects).

In one notable example, Marion County, Indiana residents voted for a 0.25 percent income tax to fund up to a 70 percent service expansion, higher frequency, and three rapid bus projects. The additional funding is expected to raise approximately \$56 million annually for operations and capital projects.

Operating Costs

Slightly over half of RTA's operating costs are funded by a 1-percent sales tax. The remaining costs are funded by FTA grants (about 20%), fare revenue (about 15%), state funding (about 5%), reserve funding, and other sources.

¹¹ FTA Grants Awarded, 2006-2016. Retrieved March 28, 2017, from <https://www.transit.dot.gov/funding/grants/summary-grants-data-and-transit-trends>

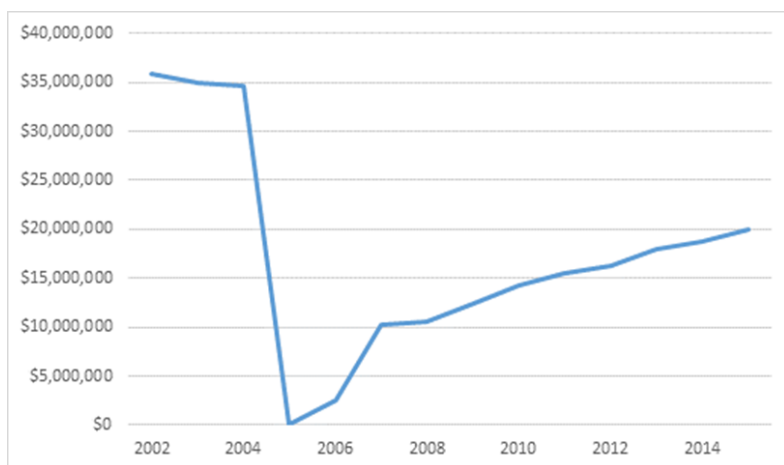
¹² Transportation Ballot Measures. Retrieved March 13, 2017, from <http://www.cfte.org/elections>

Fare Revenue

Fare revenue has risen steadily in recent years, tracking with ridership, to about \$20 million in 2016. However, fare revenue still falls far short of its pre-Katrina peak of over \$35 million.

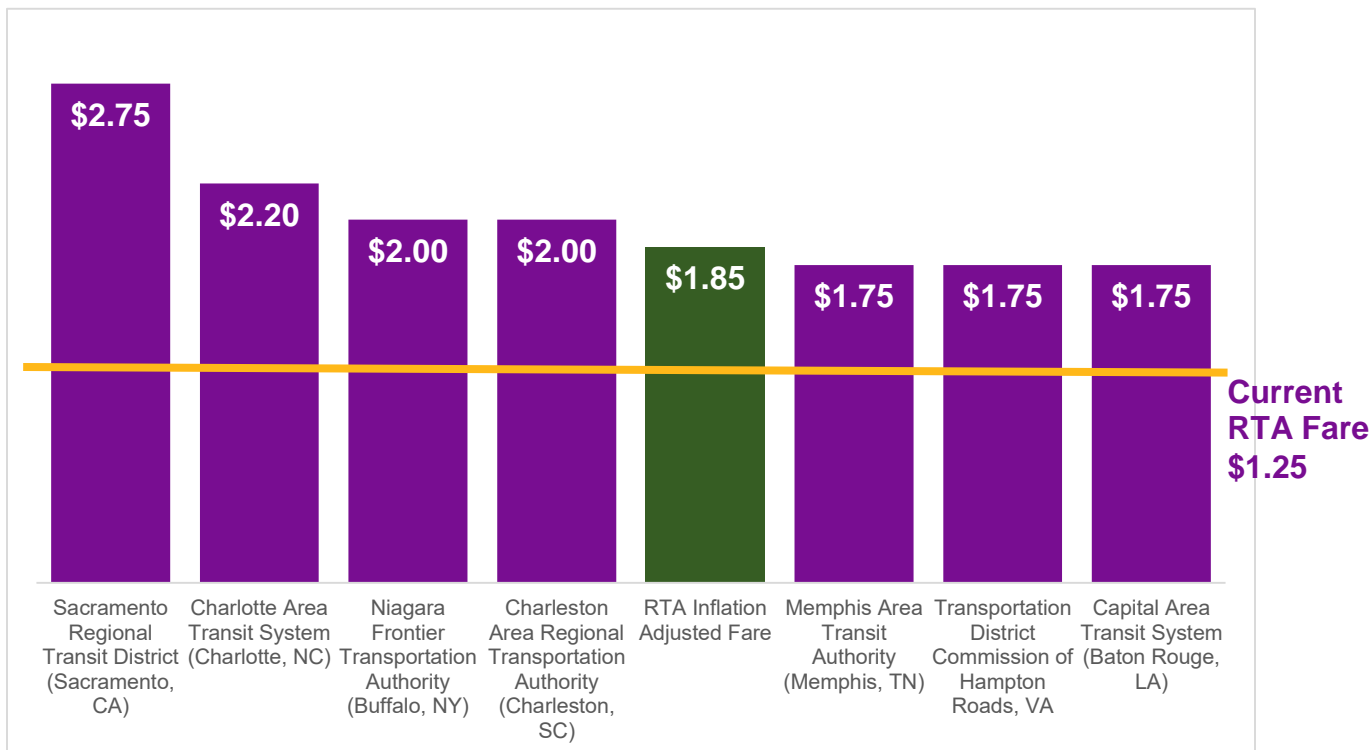
RTA's base fare – \$1.25 – has not risen since 1999, and is low compared to peer transit agencies. Most peer agencies charge base fares between \$1.75 and \$2.00, with some charging as much as \$2.75 or more. Adjusted for inflation, the real value of RTA's 1999 fare would be \$1.85, which would be comparable to current fares at peer agencies (Figure 17).

Figure 16: RTA Fare Revenue (2002 to 2015)



Source: National Transit Database

Figure 17: Comparative Base Transit Fares (in 2017)



5.0 TRADITIONAL AND EMERGING MOBILITY TRENDS

CHALLENGES

- Rapid bus and high-capacity transit require some capital investment and sometimes higher operating costs, which can redirect resources from other priorities.
- Some passengers prefer to walk short distances to and from transit stops, even at the cost of slower travel times. These passengers may favor traditional bus services over rapid bus and high-capacity transit.
- People without smartphones or bank accounts may not be able to use some new mobility services without additional accommodations.
- Research indicates that ride-hailing services can cut into transit ridership and add to congestion.
- The infrastructure and technology needed to accommodate AVs is unknown, making planning investments and land use difficult.
- AVs could increase congestion and encourage sprawl. Some vehicles may drive while unoccupied, clogging streets, and some owners may not be motivated to avoid traffic, since they can use time in their vehicles for entertainment or work. By decreasing transportation costs and making time spent in transportation more productive, AVs could encourage low-density development and urban sprawl.

OPPORTUNITIES

- Rapid bus, BRT, and LRT can reduce per-passenger operating costs while improving service quality.
- Better service quality on rapid bus and high-capacity transit could attract riders who currently drive their own cars.
- Rapid bus, BRT, and LRT can spur economic development near transit stops. Increased tax revenue or value-capture financing could in turn provide more funding for investments in transit.
- Mobility hubs and new mobility services can attract new transit riders with flexibility and convenience, and can provide better first- and last-mile services.
- RTA can add more mobility services to the GoMobile app, such as bike share, as they become widely available throughout New Orleans.
- Connected vehicles could increase roadway capacity and provide dramatic improvements in safety and travel times for transit vehicles.
- Connected vehicles will improve datasets for planning and provision of transit and mobility services and provide real time travel information to users and system operators.
- Without the need for a human driver, autonomous fleets can significantly reduce operating costs.

TRENDS ANALYSIS

Traditional Mobility Modes

Rapid Bus

Rapid bus, sometimes called select bus service or skip-stop service, operates on existing routes but does not serve all stops. By skipping some stops, rapid bus can reduce travel times and improve reliability. Rapid bus does not necessarily require substantial infrastructure or system changes such as off-board fare collection or dedicated lanes, but it does benefit from transit signal priority and bus queue jump lanes. Rapid bus service stops more frequently than express service but less frequently than local service along its route.

Many transit agencies are expanding rapid bus to improve services at low costs. For example, the Washington Metropolitan Area Transit Authority (WMATA) in Washington, DC now runs rapid bus services on many high-ridership routes. Rapid buses stop at intervals of about one-third to one-half of a mile, bypassing intervening stops that continue to be served by local buses. The service operates only during peak times on some routes and all day on other routes. WMATA's rapid bus services have proven popular with riders.

High-Capacity Transit

Many transit systems in the United States are dominated by traditional fixed-route bus service. Transit vehicles operate in mixed traffic and stop frequently. As a result, travel times are relatively slow and transit agencies struggle to provide reliable service.

Some larger cities also have heavy rail networks. This includes legacy systems such as those in New York City, Chicago, and Boston, as well as newer rail networks in San Francisco, Washington, DC, and Atlanta. Heavy rail operates on exclusive rights-of-way and multi-unit trains accommodate very high passenger volumes.

For many systems, traditional bus service provides inadequate capacity on high-ridership corridors. However, building new heavy rail lines can be prohibitively expensive.

As a result, transit agencies are increasingly looking to other high-capacity transit options, such as light rail transit (LRT) or bus rapid transit (BRT). Both modes use longer vehicles than traditional buses, which allows greater passenger capacity and reduces crowding. They also have some combination of features that speed up travel times, improve reliability, and improve the passenger experience. Common features include:

- Either exclusive rights-of-way or a combination of transit queue jump lanes and signal prioritization.
- Off-board fare collection, which speeds up boarding.
- Elevated platforms, which make vehicles easily accessible for people with reduced mobility.
- Fewer stops than traditional bus service.

When ridership is high, per-passenger operating costs are often lower for BRT and LRT than for traditional bus service.

More than 50 transit systems across the United States operate some form of high-capacity transit. Some cities have emphasized building out BRT¹³ or LRT¹⁴ networks, while other cities have built both.¹⁵ There is not one high-capacity transit mode that is best for all cities and corridors. Rather, the best choice for each community should match its needs and context.

Emerging Mobility Services

Recent innovations have led to emerging mobility services, ranging from shared rides to new tools for trip planning. In New Orleans, we are already using some of these services, such as bike share.

Bike Share

More than 75 cities in the United States have bike share systems. These systems use a range of different technologies, ranging from:

- Basic informal sharing, such as the system in Georgetown, TX.
- Simple text-based systems, used on many corporate and university campuses.
- Dock-based systems in many larger cities. New Orleans launched a dock-based system, Blue Bikes, in December 2017.
- Dockless systems in which riders use their smartphones to unlock bikes, then leave them anywhere a bike may legally be parked. These systems have grown rapidly since early 2017. The systems tend to be privately financed and run, with no public subsidy.



Figure 18: New Orleans' Blue Bikes system.

Source: Blue Bikes

Bike share can add redundancy and resilience to a transit system by providing 24/7 access and flexible routing options. Many systems report that bike share and transit complement each other, with users routinely combining or substituting trips between the two systems.

In addition to locating bike share stations near transit stops, many agencies are looking for ways to share fare media and payment systems across bike share, transit, and other mobility services. LA's Metro Bikeshare, a joint effort between the city and LA Metro, was the first large bike share program to integrate fare payment with the transit system.¹⁶

Most bike share systems require payment by credit card, which creates some access barriers. Some bike share systems, such as Indego in Philadelphia, do offer integrated cash payment options and have worked hard to ensure equal access.¹⁷

¹³ Such as Cleveland, OH; Eugene, OR; and Orlando, FL.

¹⁴ Such as Denver, CO; Portland, OR; and Baltimore, MD.

¹⁵ Atlanta, GA and the Washington, DC area are two examples.

¹⁶ Los Angeles Metro Bike Share. Retrieved March 13, 2017, from <http://www.bicycletransit.com/los-angeles/>

¹⁷ Indego Bike Share. Retrieved April 12, 2017, from <https://beta.phila.gov/press-releases/mayor/indego-bike-share-keeps-philadelphia-rolling-fills-transportation-void/>

Car Share

Car share systems allow users to rent vehicles for round-trips or one-way trips. Round-trip car sharing requires that the user return the vehicle to the same designated spot when finished with their rental period. One-way allows a user to take the car from one point within a service area and leave it at a different legal parking space within the service area. Users typically pay hourly or daily fees for round-trips and per-minute or per-mile fees for one-way trips.

The first national car sharing services in the United States launched in 2000, starting with Zipcar and Flexcar. Car sharing services have since expanded quickly. There are two car sharing companies in New Orleans – Enterprise CarShare and Zipcar – but they are not widely available throughout the City. Zipcar is only available at the New Orleans Airport, and Enterprise Carshare has three vehicles in the CBD and three vehicles on the Tulane University campus.

A single car share vehicle can replace between nine and 13 privately owned vehicles in an urban setting.¹⁸ For some households, a combination of transit and car share services can eliminate the need to own a vehicle and reduce transportation costs. Because they are used more often than private vehicles, shared vehicles may also reduce parking demands.

Many transit agencies offer free parking for shared vehicles at transit stops. In Washington, DC, WMATA allocates free parking spaces to Zipcar at many Metrorail stations. WMATA's informal monitoring indicates that Zipcars are used about 30 to 40 percent of the time during a typical 24-hour period. Vehicle demand is highest on weekends. Many residents in communities with lower car ownership, especially low-income communities, have attested to the importance of this mobility option.

Ride-hailing and Ridesharing

Ride-hailing services allow passengers to order a car to that takes them directly to their destinations. Taxis are the traditional form of this service, and allow passengers to call into a central dispatch or hail a clearly branded vehicle on the street. Around 2012, transportation network companies (TNCs) emerged. These companies use app-based platforms to connect passengers to drivers. The two largest TNC companies, Uber and Lyft, operate in approximately 250 and 350 North American cities, respectively.

Ride-hailing provides point-to-point, on-demand transportation, typically with minimal wait time. Generally, TNC rides are cheaper than taxi trips, though taxis are often cheaper at peak times. TNC rides are generally much more expensive than transit fares. Given the higher fares, ride-hailing is generally used to fill occasional mobility needs rather than as a routine commuting option.

A variation on ride-hailing is ridesharing – passengers use TNC platforms to share a ride with others going a similar direction. Two examples are UberPOOL and Lyft Line. Like individual ride-hailing, ridesharing is a door-to-door service, though average travel times are longer because other passengers can be picked up and dropped off along the way. By carrying multiple passengers, these services offer lower prices than standard ride-hailing services.

Ride-hailing services can complement transit, and many cities are working to partner with TNCs to fill gaps in their networks. In many cities, including New Orleans, paratransit providers have long contracted with taxi companies or TNCs to serve some trips. These partnerships can reduce costs and save time for passengers.

¹⁸ E. Martin, S. A. Shaheen, and J. Lidicker. Transportation Research Record: Journal of the Transportation Research Board, No. 2143, Transportation Research Board of the National Academies, Washington, D.C., 2010, pp. 150–158. Retrieved April 12, 2017, from http://sfpark.org/wp-content/uploads/carshare/Impact_of_Carsharing_on_Household_Vehicle_Holdings.pdf

Some cities are experimenting with subsidies to TNCs to serve neighborhoods with low demand or at off-peak hours, when there are not enough passengers to support fixed-route service. Service can be point-to-point to and from transit stops. Pilot partnerships have included:

- In Pinellas County, Florida, the local transit agency launched “TD Late Shift” program in August 2016. The program provides unemployed or low-income residents with up to 24 free rides with Uber or United Taxi per month – 23 for late night rides and one during daytime hours. The program is funded by a \$300,000 state-funded grant. As of 2017, the program’s weekly ridership is about 750 people.
- The transit agency in Tampa, Florida, has partnered with Transdev to increase transit access for communities without the density to support fixed-route bus service. The HyperLINK ride-hailing service began in November 2016. HyperLINK serves passengers in four zones, each with a three-mile radius. Within these zones, passengers can travel to or from transit stops for \$1, or from point-to-point for \$3. Passengers can book by app or by calling in, and the service is wheelchair accessible. HyperLINK serves about 5,000 passengers per month.

While there is potential for transit agencies to partner with TNCs, their rise could also cut into transit ridership and add to congestion. A recent study found that urban residents who use ride-hailing services are 6 percent less likely to ride buses, and the services increase cars on the road.¹⁹

Microtransit

Microtransit services use vehicles that are smaller than a bus but larger than a personal car – often 12- to 15-passenger vans. Many microtransit services don’t take passengers door-to-door. Some use dynamic routes, while others run along fixed routes. Microtransit can offer lower per-passenger costs than buses, while providing greater capacity than ridesharing.

Some publicly operated microtransit services are piloting first- and last-mile services. These services run to and from high-use transit stations or park-and-ride lots.

Microtransit services can be run by the public transit agency, or by private companies. In Nassau County, NY, the NICE Bus runs a flexible shuttle service. The shuttle runs a fixed route, but passengers can order a pick-up or drop-off at one of five flexible stops by calling two hours in advance.

One of the largest private microtransit companies is Chariot, which is owned by Ford and operates in five cities across the country. Chariot crowd sources its routes – once enough users have requested a new route in the Chariot app, the company adds it. To ride, passengers must guarantee a seat in advance by booking through the app.

Carpooling

There are many web- and smartphone-based applications that arrange carpooling regular basis or for a single trip. The New Orleans Regional Planning Commission offers a free web-based carpooling tool called GeauxRide NOLA (www.geauxridenola.com). GeauxRide NOLA matches registered users who commute to and from the same zip codes.

Some private services, such as Zimride and Ride Amigos, match drivers with passengers along pre-determined routes and at a planned time of day. Some services allow drivers and passengers choose matching characteristics, such as employment or student status, gender, age, and even music preferences.

¹⁹ Regina R. Clewlow and Gouri Shankar Mishra. *Disruptive Transportation: The Adoption, Utilization, and Impacts of Ride-Hailing in the United States*. UC Davis. October 2017.

Dynamic carpooling is the electronic equivalent of the traditional practice of “slugging”, in which drivers are spontaneously matched with passengers in real time along their intended routes. Under both models, drivers and passengers share costs and take advantage of high-occupancy lanes, where available.

Mobility Hubs

Mobility hubs are stations where passengers can link between different transportation modes, including mass transit, bikes, and cars. Mobility hubs are also information centers for transportation options, and can include Wi-Fi, trip-planning, and real-time transit information.

LA Metro is planning a series of mobility hubs. The hubs will serve as transit stations and offer complementary mobility services to improve options for surrounding communities. These mobility hubs are a partnership among LA Metro and the cities of Los Angeles and Long Beach. The cities are paying for them, and will contribute to planning, design, and marketing.

Apps for Planning and Payment

The best transit apps integrate planning and payment across multiple modes: including fixed-route transit, car and bike sharing, and ride-hailing and ridesharing. They also integrate real-time information on travel times and costs. With this information, users can sort through options immediately, and pick the best one for them – based on budget, timing, or the weather. These apps are most useful for people with smartphones, and who are comfortable downloading and using apps.



Figure 19: RTA's GoMobile app provides planning and real-time information. It also allows mobile payment.

Source: RTA

RTA's GoMobile app integrates transit planning and payment for RTA's buses and streetcars. Users can plan their transit trips on the bus and streetcar networks, get updates on route detours and service interruptions, and mark their favorite routes to receive automatic updates. GoMobile also allows users to buy one-day, three-day, five-day, or monthly passes for the buses, streetcars, and ferries. The second generation of GoMobile, which will be launched in 2018, will include real-time information on bus and streetcar locations. Future upgrades may include other mobility modes, such as bike share.

Autonomous Vehicles

Autonomous driving technology is improving quickly, and may soon be safer than human drivers. Autonomous vehicles (AVs) already operate successfully on limited access, predictable rights-of-way. For now, AVs have greater difficulty on fast-moving and dynamic urban streets, but several companies are testing AVs in these environments around the world.

Fully functioning AVs could dramatically improve mobility in New Orleans and in cities around the country. Shared AVs may help reduce traffic by decreasing parking needs and the percentage of time that private vehicles are empty. Autonomous technology could also drive down operating costs for mass transit. This would free up resources to expand service and increase frequencies during peak periods. Lower labor costs, could also enable close-to-peak service levels at all times, with little increase to operational costs.

There is also some possibility that AVs could increase traffic in urban areas. RTA and local governments should monitor the impacts and AVs closely.

6.0 FARE PAYMENT AND POLICY TRENDS

CHALLENGES

- Installing off-board fare boxes could be costly to RTA.
- Successful off-board fare collection requires that all ticket types be available for purchase by mobile phone and at ticket vending machines.
- Fare restructuring should be done carefully to avoid harming low-income households that rely on transit.
- Any major fare policy change is difficult to implement quickly, and requires a strong marketing and informational campaign to ensure a smooth transition.

OPPORTUNITIES

- Increasing off-board payments can dramatically reduce vehicle dwell times.
- More efficient ticketing may improve on-time performance and attract more riders.
- Simplified fare policies can streamline operations, reduce confusion, and provide a better rider experience.

TRENDS ANALYSIS

Fare Payment and Collection Systems

Fare payment and collection systems continue to improve, spurred by better consumer technology (especially smartphones) and technologies for transit agencies. The two newest payment innovations are smart cards and mobile ticketing. Both make payment and collections quicker and more secure. Many transit agencies use fare discounts to motivate passengers to use new cashless systems. The more convenient payments may also attract new riders.

About 87 percent of transit agencies either have or are planning to implement mobile ticketing. A survey of transit experts suggests that by 2021, mobile ticketing will be the leading transit fare purchase option.²⁰ As noted above, RTA's GoMobile app already allows mobile payment.

Off-board payment systems are also rising in popularity because they reduce vehicle dwell times. Off-board systems commonly accept a variety of payment methods.²¹ An off-board payment system has contributed to reducing dwell times by up to 50 percent on Select Bus Service (SBS) routes in New York City. For the SBS, off-board payment may also have reduced fare evasion, compared to regular bus routes.²² However, off-board payment systems require investments in new payment infrastructure, such as ticket vending machines.

²⁰ Mass Transit. *The Future of Fare Collection in Transportation*. 2016.

²¹ NACTO. *Better Boarding, Better Buses: Streamlining Boarding and Fares*. 2017.

²² Ibid.

Fare Policies

Across the country, inflation-adjusted transit fares have increased significantly in the last 20 years.²³ While average fares have risen, many transit agencies have worked to simplify their fare structures. Common strategies including eliminating price zones and streamlining transfers. Many agencies have also introduced one-day, weekend, weekly, and monthly passes for visitors and commuters. Some agencies offer reduced fares for seniors and children, while others have moved towards a single-fare system.

As one example, the Port Authority of Allegheny County (which serves Pittsburgh, Pennsylvania and the surrounding area), overhauled its fare policy in January 2017. The agency introduced a flat-fare structure, eliminating multiple zones (including the Downtown free fare zone). The agency also introduced pay-on-entry fare control, abolished paper transfers, and penalized cash payments.

²³ Transit Cooperative Research Program

7.0 REGIONAL COORDINATION TRENDS

CHALLENGES

- Full consolidation is logistically difficult, costly, and time-consuming. It requires merging financial management systems and information systems. Sharing labor or integrating fare collection systems could also trigger issues with collective bargaining agreements.

OPPORTUNITIES

- Better coordination and collaboration could make riding transit more convenient for existing riders and non-riders alike, even increasing ridership for RTA and surrounding transit agencies.

TRENDS ANALYSIS

Neighboring local governments can often improve the rider experience and reduce costs by integrating transit planning and service delivery. Figure 20 shows what various levels of integration look like.

At the lowest level of integration, transit agencies simply communicate with one another. At higher levels, agencies may coordinate services, collaborate to plan and provide services. In some cases, regions have even consolidated transit agencies into a single entity.

Figure 20: Levels of Integration for Multiple Regional Transit Providers



Adapted and modified from North Carolina Department of Transportation (NCDOT), KFH Group, Inc. 2012. Statewide Regionalization Study Final Report. As requested in Session Law 2011-145, Section 28.21.