◀ Bound Brook, Somerset County

4

Transportation System Performance

THIS CHAPTER LOOKS AT how well the transportation system serves the residents, visitors, and businesses that rely on it. Understanding system performance is a critical step towards identifying strategies and investments to improve the system and reach the region's economic, equity, environmental and other goals. ■ The extensive public outreach for this plan, described in Chapter 2, provided insights into transportation system performance from the perspective of users. The NJTPA also employs a wide-ranging set of benchmarks and data to measure other aspects of transportation system performance. Many of these are national measures, established in federal regulations. MPOs, state departments of transportation, and transit agencies are required to regularly use the measures to track progress toward short-term performance targets relating to critical aspects of safety, congestion, air quality, and the condition of highway and transit infrastructure. The

NJTPA works with NJDOT and NJ TRANSIT to analyze data and set performance targets for the region. The national performance measures are listed in Table 4-1 and discussed in Appendix B, the NJTPA System Performance Report. The NJTPA uses additional measures to supplement and provide regional context to national measures, particularly in the areas of: livability; natural environment and resiliency; freight and economy; infrastructure condition; and mobility, congestion, reliability, and systems operations—see ***njtpa.org/Planning/measures.aspx***.

This chapter looks at performance of the system using data collected prior to the pandemic. This is generally the most recent data available, reflecting pre-pandemic trends that this plan anticipates will reassert themselves as the economy recovers. The chapter also considers issues the transportation system faces in meeting the demands of a growing and changing economy over the long-term.

TABLE 4-1: National Performance Measures

	MEASURE	METRIC
Roadway Safety	5-yr rolling average	# of Fatalities (F)
	5-yr rolling average	rate (per 100 MVMT) of F
	5-yr rolling average	# Serious Injuries (SI)
	5-yr rolling average	rate (per 100 MVMT) of F
	5-yr rolling average	# of Non-motorized F+SI
NHS Infrastructure Management	% pavement lane-miles	pavement in good condition
	% pavement lane-miles	pavement in poor condition
	% bridge deck area	bridge in good condition
	% bridge deck area	bridge in poor condition
NHS Performance	% person-miles-traveled (PMT)	with reliable travel times (LOTTR)
Freight	Index	truck travel time reliability (TTTR)
Congestion	Annual hours per capita	peak hour excessive delay (PHED)
	%	non-SOV travel
Emissions	Total (cumulative) emissions reduction (kg/day)	reduction in emissions of criteria pollutants (carbon monoxide, fine particulate matter, volatile organic compounds, and nitrogen oxides) from CMAQ projects in corresponding carbon monoxide, particulate matter, and ozone nonattainment or maintenance areas
Transit Asset Management	4 measures	• % service vehicles met or exceeded use benchmark (ULB) • % revenue vehicles met or exceeded U • % track segments w/performance test • % facilities rated below condition • 3 or (by asset class)
Transit Safety	7 measures	• # reportable fatalities by mode • rate of reportable fatalities per total • # reportable injuries by mode • rate of reportable injuries per TVR • rate of reportable safety events per mean distance between major mech

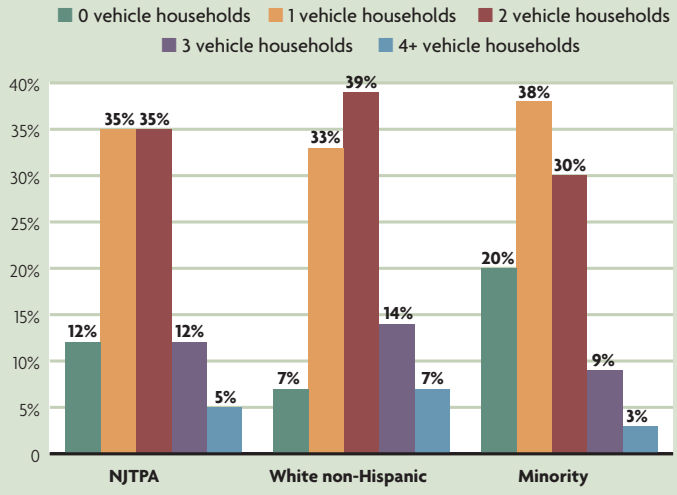
Source: *njtpa.org/Planning/Plans-Guidance/Performance-Measures/Regional-Performance-Measures.aspx*

Accessibility

The NJTPA region's success stems from its accessibility and locational advantages. Activities and destinations—jobs, culture, commerce, education, health care and so on—are in relatively close proximity within one of the world's largest metropolitan areas. For many, the transportation system makes it easy to travel to and from these destinations and to access services.

Accessibility varies greatly throughout the region, partly by design. In general, denser, more developed areas offer a wide mix of transportation modes which allows people to get to their destinations by walking, biking, driving, or riding a bus or train, although even

Figure 4-1:
Vehicle Availability by Race



Source: Census Transportation Planning Package (CTPP) 2012-2016

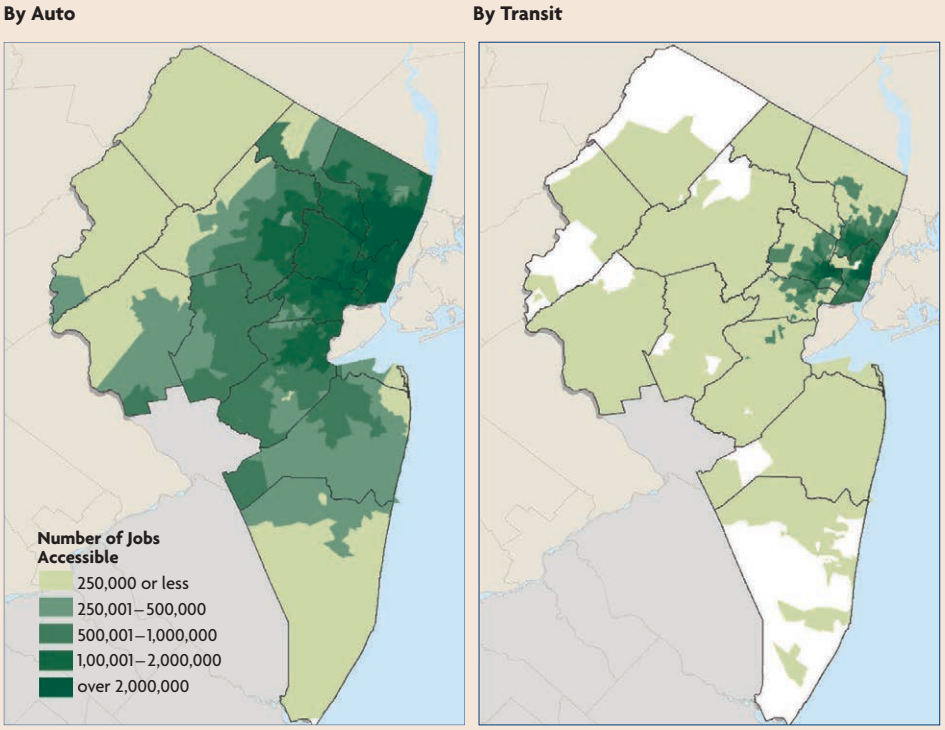
within these areas there are places that are difficult to get to without a personal vehicle. Rural areas are less developed, with fewer travel options and further from job centers. Yet all travelers, in all areas, have expectations about the times and costs for getting where they need and want to go. They want their mobility to be reliable, with travel times that are predictable from day-to-day.

Challenges to accessibility are greater for some residents of the region than others. Minority and low-income communities, as well as people with disabilities, have faced greater barriers to jobs, healthy food, health care, and education. The use and availability of different modes varies greatly by income level. For example, 44 percent of bus riders on key routes through Newark do not have a personal vehicle, and 58 percent have household incomes below $35,000. Minorities regionwide have lower vehicle ownership, as noted in Figure 4-1. People with disabilities (over 11 percent of the regional population) make more trips to health care facilities than the general population and have greater reliance on walking, riding a bus, or riding as a passenger. Facilitating mobility options and access for these population segments remains a challenge throughout the region.

Measurements of travel time to work indicate the variability of transportation system performance in terms of commuting accessibility (Figure 4-2). While most work trips in the NJTPA region are made by single occupancy vehicle, nearly three times as many people in the NJTPA region use transit to commute compared to the national average. Walking and biking account for 4 percent of commute trips, compared to 3 percent nationally ACS- 2014-2018).

The NJTPA's Accessibility and Mobility Strategy Synthesis, a study completed in 2021, provided a detailed assessment of accessibility as it varies around the region—including equity considerations—and identified potential strategies for improvements. The study was an update to the region's Congestion Management Process (see Appendix F).

Figure 4-2:
Number of Jobs Accessible by Auto within 45 minutes and by Transit within 60 minutes, 2020



Source: NJTPA estimates, North Jersey Regional Transportation Model–Enhanced (NJRTM-E)

WHAT WE HEARD

"I think the most important step is enabling local mobility without the use of cars. Next would be maintaining or improving the network of regional hubs accessible via mass transit."

—MONMOUTH COUNTY RESIDENT, ONLINE SURVEY

As shown in Table 4-2, some needs identified in the study are shared across urban, suburban, and rural areas, such as roadway reliability, a need for bicycle and pedestrian safety and infrastructure, and congestion on freight corridors. All areas benefit from transit supportive infrastructure, such as bus shelters. Other needs are more tied to geography. In terms of access to transit, for instance, urban areas, with their potential for greater transit ridership, have greater needs for supportive transit infrastructure such as bus shelters and benches; in the suburbs, increased transit-oriented development and first/last-mile connections can help bolster transit access; and in rural areas, park-and-ride opportunities are particularly important.

From an equity standpoint, issues such as access to private vehicles and concentrations of minority populations far from some suburban job centers are highlighted by the study. These and the other types of needs are the focus of strategies and actions described in Chapter 5.

Efficiency and Safety of the Road Network

The public road network is the region's transportation backbone. With approximately 26,000 miles of road and close to 4,900 bridges, the network is the principal means of regional travel for most trips, including most goods moved in the region. At the beginning of 2020, the network handled an estimated 151 million vehicle miles of travel (VMT) daily. The NJTPA forecasts that this will increase 11 percent to 168 million VMT by 2050.

This volume of travel over the road network indicates that the system, overall, is performing its essential function of moving goods and people to support the regional economy—despite significant congestion and reliability issues as discussed below. About 80 percent of person miles traveled on the National Highway System (NHS) meets national reliability standards in the NJTPA region, according to the NJTPA Regional Performance Measures Dashboard.

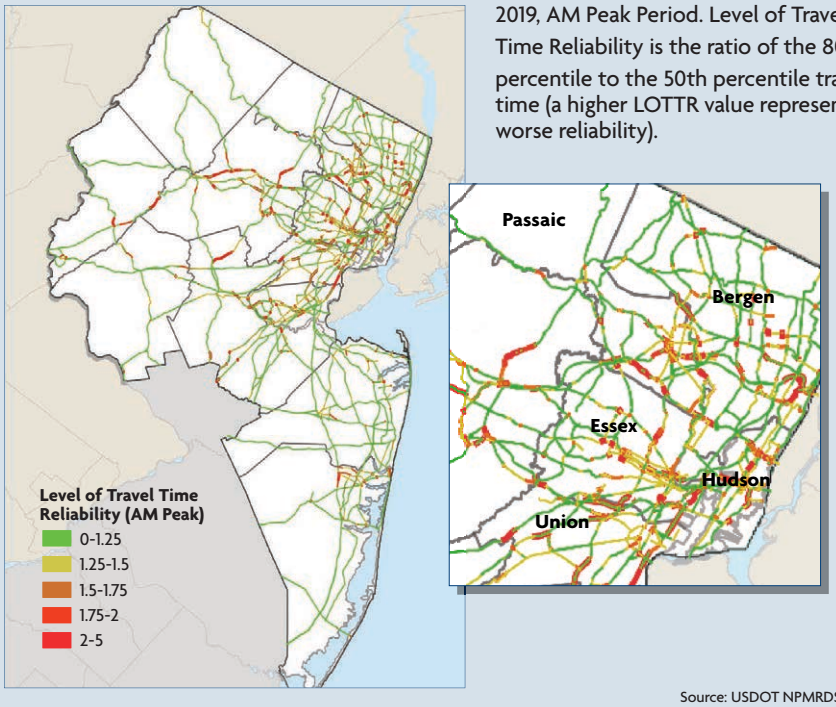
For individuals, however, the road system provides highly variable access depending on location and, importantly, the ability to afford the price of entry—that is, buying, maintaining and operating a private vehicle. More than one in 10 households in the region do not own a private vehicle (ACS 2014-2018). Hudson and Essex counties contain the highest concentrations of households without vehicles (about a third and a quarter of households, respectively). For some, this may be an outcome of better transit options and more compact, pedestrian-friendly land uses (especially in the cities of Jersey City and Newark), but this data also reflects higher rates of poverty and the inability to afford vehicle costs.

TABLE 4-2: Congestion Management Process–Identified Needs (Appendix F)

TO/FROM URBAN AREAS AND NYC	WITHIN/BETWEEN URBAN AREAS	WITHIN/BETWEEN SUBURBAN AREAS	WITHIN/BETWEEN RURAL AREAS	FREIGHT TRANSPORT	EQUITY/NEEDS HIGHLIGHTED FOR VULNERABLE POPULATION GROUPS	
Trans-Hudson transit capacity	Pedestrian safety/ infrastructure	Limited Alternatives to Driving	Targeted transit needs/ opportunities	Interstate truck reliability	Pedestrian/ bicycle safety	Public transit, bus service
Transit crowding	Bicycle safety/ infrastructure	Park-and-ride capacity constraints	Park-and-ride availability	Congested freight corridors	Long travel times to work	Access to jobs by transit
Bottlenecks/ unreliable roadways	Transit reliability	First-mile-last-mile transit access	Pedestrian/ bicycle safety/ infrastructure	Truck access to warehouses/ distribution centers	Roadway congestion	Off-peak travel/ reverse commute
Longer transit travel times	Congested/ unreliable roadways	Congested/ unreliable roadways	Roadway reliability and safety	Rail capacity	Transportation costs	Access to warehouse districts
Fare payment connectivity	Supportive transit infrastructure	Opportunities to reduce SOV travel			Non-auto options	ADA issues
Reverse commute challenges	Micromobility opportunities	Supportive transit infrastructure				

Efforts to reduce auto dependence through denser, transit-friendly communities, while desirable throughout the region, can sometimes raise the cost of housing through gentrification, displacing low-income residents and adding to their travel hardships. Retaining and increasing housing affordability and accessibility as these areas redevelop is a key equity concern that all transportation and community development programs must consider.

Figure 4-3:
Roadway Travel Time Reliability



2019, AM Peak Period. Level of Travel Time Reliability is the ratio of the 80th percentile to the 50th percentile travel time (a higher LOTTR value represents worse reliability).

Source: USDOT NPMRDS, CATT Lab RITIS

ROADWAY RELIABILITY AND CONGESTION

Traffic congestion can hinder accessibility, impede travel, and impose economic costs. National performance measures focus on disruptions to the reliability of travel times and the extent of delays that are excessive compared to the normal functioning of the road system. These measures—which the NJTPA and its partners use as a basis for regional target setting—recognize that some level of congestion is a fact of life and even evidence of a robust, thriving region. NJTPA planning aims to prioritize investment where it can moderate unpredictable or extreme congestion (Figure 4-3) or provide travel alternatives to allow travelers to avoid congestion hot spots.

Savvy drivers in North Jersey know the real-world expression of performance measures well—including where congestion hot spots occur and how to avoid them. They also know that even the "best" routes can be unpredictable and gauge their reliability in planning trips. The NJTPA has used data to quantify and map these conditions as part of its performance-based planning.

Another measure of road network performance looks at vehicle occupancy to gauge how efficiently people are moving. It recognizes that buses, carpools or even two people sharing a trip make more efficient use of road space. According to the 2014-2018 five-year ACS, non-single-occupant vehicles account for 31 percent of trips to work, a slight increase over prior years. Trip modes include transit, biking and walking, and working from home. Travel by shared rides, such as car and vanpools, is slightly lower than the national average, perhaps due to the high use of transit in the region, which provides similar benefits for those without vehicles.

The NJTPA supports targets that aim for more shared trips. This and other measures of road network performance are sure to be affected by changes in travel patterns as a result of the pandemic. Over the long-term, connected and automated vehicle technologies could drastically change road use—for better or worse, depending on how they are deployed, as discussed in Chapter 5.

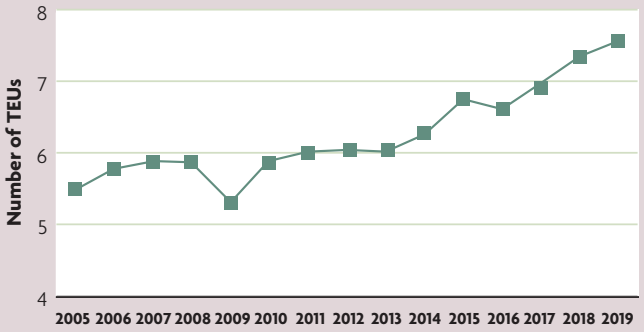
FREIGHT MOVEMENT

More than three-quarters of the region's tonnage moves by truck according to the NJTPA 2050 Freight Industry Level Forecasts Study and even goods arriving in the region by other modes are typically transferred to trucks to reach their final destinations—homes, businesses, warehouses, and factories.

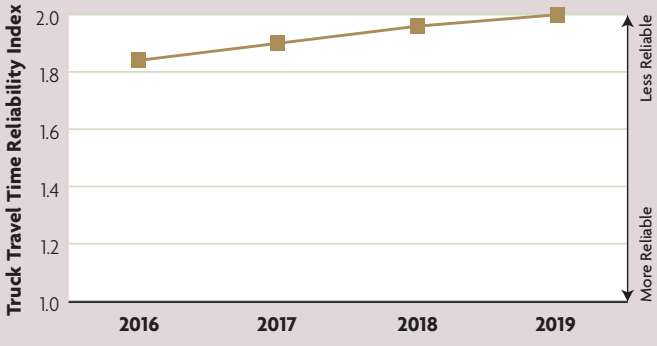
Performance data indicate that in recent years trucks have faced increased delays while also contributing more to traffic congestion. Truck travel time reliability on interstate highways—a national performance measure—worsened in recent years (through 2019), likely due to increased traffic levels (Figure 4-4).

The reliability problems extend to county and local roads as supply chains and freight movements evolve to meet growing e-commerce demands. The number of e-commerce packages is projected to increase to more than 390 million packages by 2050—growth of more than 400 percent (NJTPA 2050 Freight Industry Level Forecasts Study). The pandemic further accelerated e-commerce growth. As noted in Chapter 3, these changes have altered land uses in many areas to accommodate distribution activities, further impacting local road systems.

Figure 4-4:
Annual Movement of Twenty-Foot Equivalent Units (in millions)



Truck Travel Time Reliability on Interstate Highways



Source: NJTPA Regional Performance Measures Dashboard
njtpa.org/Planning/Plans-Guidance/Performance-Measures/Regional-Performance-Measures.aspx

Beyond trucking, the coordination of all freight modes is critical for maintaining the performance of the freight system and sustaining its substantial contribution to the North Jersey economy—including supporting hundreds of thousands of jobs.

Containerized cargo handled at the port -- the largest container port on the East Coast—initially dropped in volume due to canceled sailings during the early months of the pandemic, followed by record-breaking growth in the last quarter of 2020, ending the year with a gain over 2019 (Port Authority of New York and New Jersey). As discussed in Chapter 5, meeting this continued growth requires ongoing investments at the port, landside road and rail connections, and marine highways. Air cargo, principally handled at Newark Liberty International Airport, had declined for several years but is now growing again with the expansion of e-commerce movements.

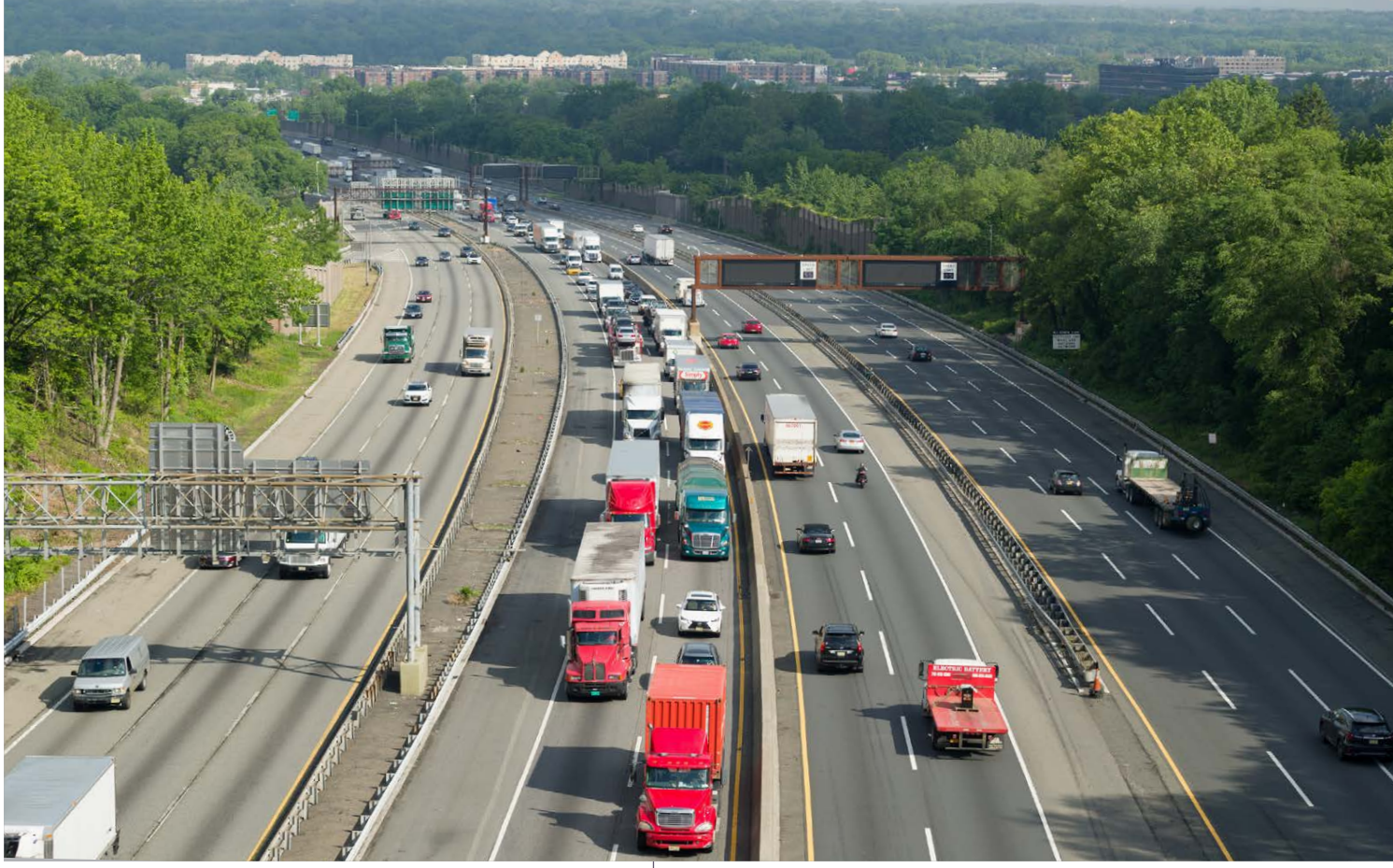
The industrial real estate market, primarily involving the sale and development of distribution, warehousing and manufacturing facilities, has seen significant investment growth in the NJTPA region. Looking to capitalize on increased e-commerce, companies increasingly want facilities close to large numbers of customers.

As discussed in Chapter 5, addressing the accessibility of freight in the region requires taking a holistic approach that considers the interplay of all modes and a host of interconnected issues—the need for truck parking, channel deepening at the port, terminal upgrades, improved rail infrastructure, the introduction of new technologies, and much more.

ROAD SAFETY

Travel can entail considerable risk. The loss of life, injury, and property damage due to traffic crashes impose untold economic and social costs that demand attention and action.

The Federal Highway Administration designated New Jersey as a "focus state" for its high rate of intersection crash fatalities and serious injuries as well as those involving pedestrians. The City of Newark is also a "focus city" for pedestrian fatalities and injuries. Improving safety is a top priority at the NJTPA and is factored into all aspects of transportation investment decision making.



Leonia, Bergen County

Motorists are the largest segment of roadway users injured and killed in crashes in the state and region, but pedestrians remain the most vulnerable. Pedestrians and cyclists account for about 9 percent of non-commute trips in the region (ACS 2014-2018) but comprise more than 30 percent of those killed in crashes (NJDOT Crash Database). New Jersey's pedestrian fatality rate is nearly double the national average.

The majority of pedestrian and bicycle crashes (70 percent) in New Jersey occurred on higher traffic roads, many of which lack sufficient pedestrian and bicycle accommodations such as continuous sidewalks, safe crossings, or bicycle lanes. Targeted safety investments have helped address this disproportionate risk, but there is more work to do.

According to Smart Growth America's 2020 "Dangerous by Design" report, low-income and minority travelers face greater risks as pedestrians. Nationally, African American and Native American pedestrians were 89 percent and 111 percent more likely to be killed while walking than white pedestrians, respectively. Lower income pedestrians (earning less than $41,000 per year) were two times more likely to be killed. New Jersey ranked 19th in the nation in 2019 in terms of its danger for pedestrians.

The NJTPA and partner agencies monitor the number of fatalities and serious injuries on public roads and set statewide targets for those measures. According to the most recent complete year of data from NJDOT (an average covering the five year period of 2015–2019) for national performance measures, statewide there have been an average of: nearly 600 roadway fatalities annually (0.76 fatalities per hundred million vehicle miles traveled); 1,500 serious injuries (1.9 per hundred million vehicle miles traveled); and among these, a combined total average of 465 non-motorized fatalities and non-motorized serious injuries involving a motor vehicle. As part of the state's Strategic Highway Safety Plan discussed in Chapter 5, New Jersey established a target of 3 percent per year reduction in the five-year rolling average of fatalities and serious injuries, which would reduce serious injuries and fatalities by 14 percent over the next five years. Other targets are discussed in Appendix B.

Preliminary 2020 data for the NJTPA region from the NJDOT Crash Database shows fatal crashes increasing despite a dramatic plunge in VMT resulting from COVID-19 stay-at-home protocols. Total crash

WHAT WE HEARD

"I think the most important step is enabling local mobility without the use of cars. Next would be maintaining or improving the network of regional hubs accessible via mass transit."

—MONMOUTH COUNTY RESIDENT, ONLINE SURVEY

"High quality transportation for all that connects inter-regional destinations should be a priority. Affordability and access of transportation services will drive regional competitiveness. Technology can help be an enabler for all populations." —JERSEY CITY RESIDENT, ONLINE SURVEY

"Improve travel times when using public transit in order to make the choice more competitive to driving as well as a more equitable way to get around. Some residents are dependent on transit as their primary means of travel, and I feel it should be affordable and convenient to use."

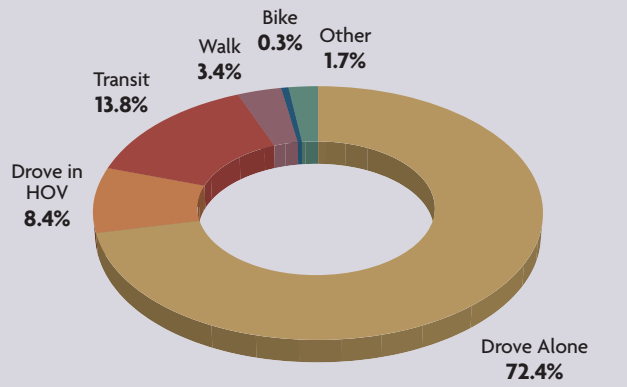
—PASSAIC COUNTY RESIDENT, ONLINE SURVEY

fatalities increased to 367. Pedestrian fatalities spiked to 121, an increase of more than 20 percent over 2019. Preliminary analysis suggests that higher speeds may be contributing factors, as roads had fewer vehicles and less congestion, allowing for recklessness.

The region experienced a slow but steady decline in fatalities for nearly a decade, until 2015 when the number of fatal crashes began fluctuating year to year. The trend in serious injuries followed a similar pattern, declining until spikes in 2015 and again in 2018. In 2019, the federal government changed the way it classifies injuries, including more in the "serious" category than previously. Because of this change, it is difficult to compare older and newer data to establish long-term trends. However, preliminary NJDOT data for 2020 shows there were 780 serious injuries caused by motor vehicle crashes, an increase from 2019, when the new metrics went into effect.

Injuries and fatalities are far less frequent on public transit but do occur, and measurement of these incidents involves another required set of performance measures, as discussed in Appendix B.

Figure 4-5:
Transportation Mode used by NJTPA Commuters
Excludes those who worked from home



Source: CTTP 2012-2016

Transit and Travel Options

Many North Jersey residents have a variety of options for travel besides driving. The region is served by the nation's third largest transit system in terms of ridership, making wide areas accessible by bus or rail. Prior to the pandemic, NJ TRANSIT provided 260 million passenger trips each year on buses, trains and light rail. Many communities are making walking and biking easier for local trips—an option valued more than ever during the pandemic.

The region also has ferries, park-and-rides, shared bike and scooter systems, shuttle buses, and more. Many residents without cars also have the option of car share services, car and vanpools and on-demand ride hailing such as Uber or Lyft.

All these options improve the transportation system's performance and efficiency, and most reduce environmental impacts. Yet much of the region—and the nation—remains oriented to accommodating autos as the primary mode of travel (Figure 4-5). This plan

supports efforts to steadily expand travel options as opportunities present themselves and through balanced transportation investments.

Over the long-term, this plan looks to foster "mobility as a service" in which residents can routinely choose among a variety of options based on cost, destination and convenience, helping reduce system inefficiencies and dependence on private autos.

Travel options keep the region competitive in attracting and retaining employers and the high-quality workforce businesses rely on. New Jersey's eight non-profit Transportation Management Associations help facilitate access to transportation choices, as discussed in Chapter 5.

Overall transportation system performance is particularly impacted by access to transit services and walking and biking opportunities.

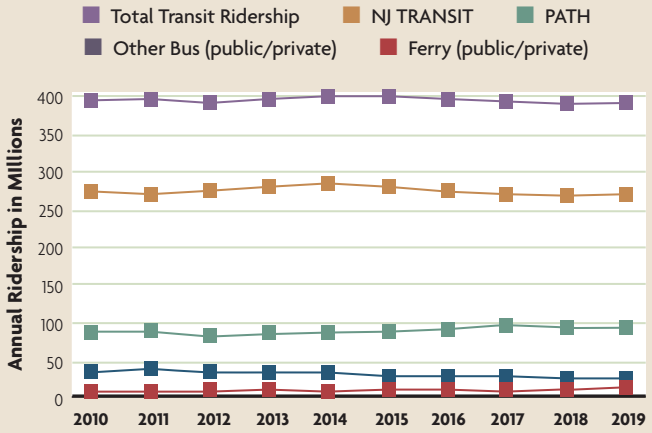
PUBLIC TRANSIT SERVICE AND RELIABILITY

Ridership on the bus and rail transit system remained fairly steady in recent years prior to the pandemic (Figure 4-6 and 4-7), despite funding constraints limiting NJ TRANSIT's ability to increase frequency or expand service, as discussed in the Chapter 7, Financing Plan 2050.

According to preliminary data from NJ TRANSIT, ridership dropped 90 percent on NJ TRANSIT system-wide in early 2020 amid the COVID-19 pandemic, grew back to about 40 percent of pre-pandemic levels by summer 2020, and then stayed fairly steady through early 2021. Rail ridership was significantly more suppressed than bus ridership, likely representing the differing abilities of respective riders to either work remotely or use other travel options. For the state fiscal year ending June 2021, fare box revenues were about one-third of that for the pre-pandemic year (NJ TRANSIT). How quickly and to what extent transit ridership fully rebounds will be affected by riders' health concerns and changes in work arrangements. After 2023, the system could see an increase in transit demand from the commencement of congestion pricing in Manhattan south of 61st Street.

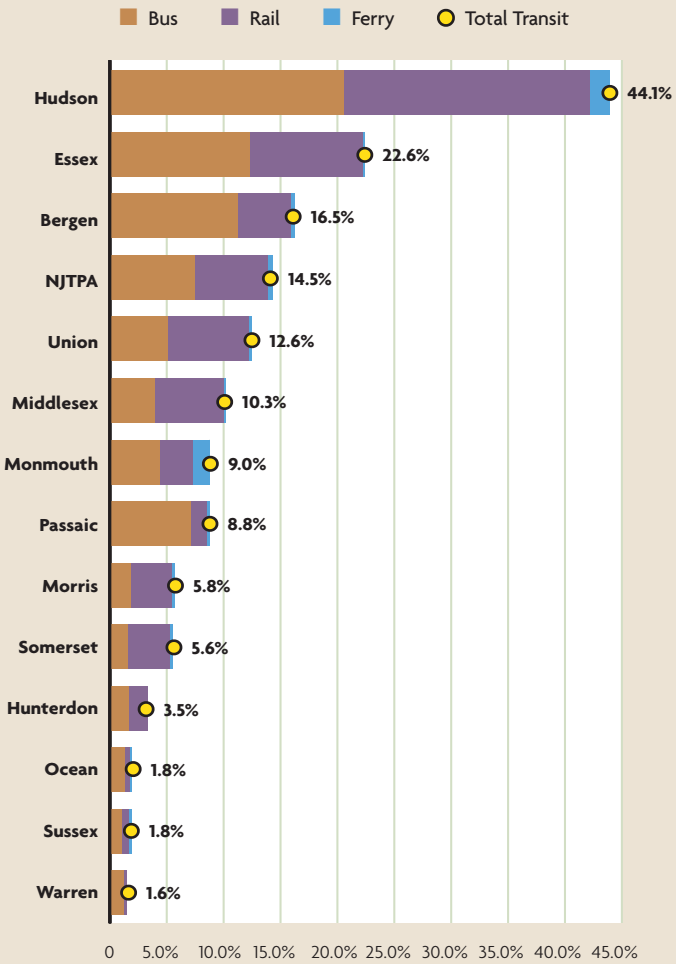
To track reliability, NJ TRANSIT reports on-time performance for its commuter rail, light rail and bus routes. These varied over the last decade but remained over 90 percent. Still, riders have experienced delays and incidents on their trips, prompting NJ TRANSIT

Figure 4-6:
Annual Transit Riders (in millions)



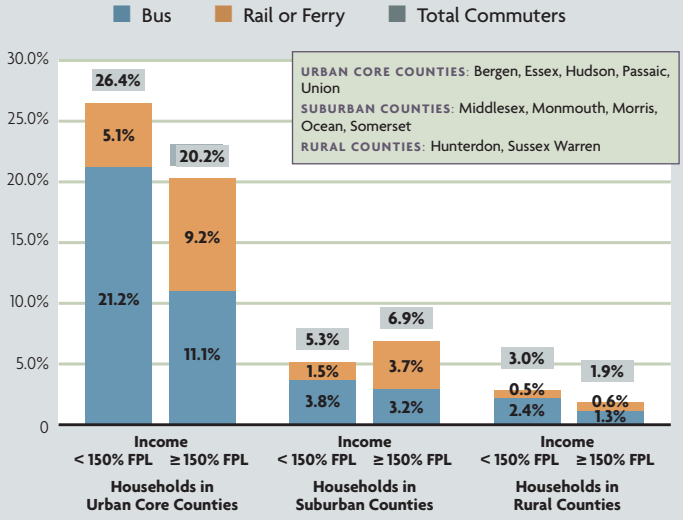
Source: NJTPA Regional Performance Measures Dashboard

Figure 4-7:
NJTPA County Transit Use



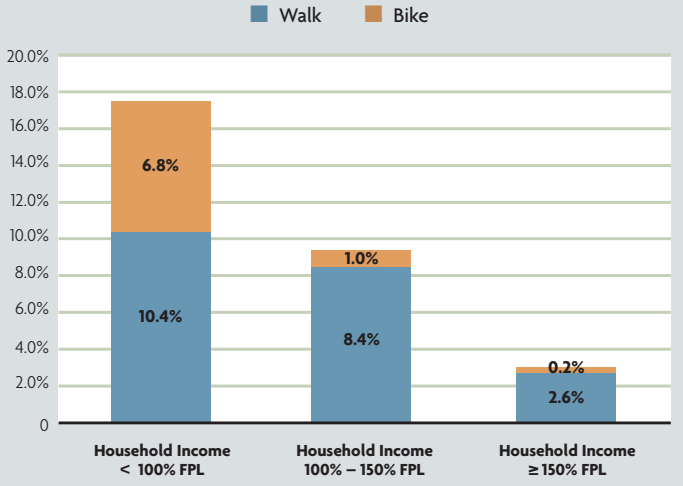
Source: ACS 2015-2019

Figure 4-8:
Transit Commuting in Urban, Suburban, and Rural Counties by Household Income Compared to Federal Poverty Level (FPL)



Source: ACS 2012-2016

Figure 4-9:
Walk/Bike Commuting in NJTPA Region by Household Income Compared to Federal Poverty Level (FPL)



Source: ACS 2012-2016

to redouble efforts to maintain and improve the system within its funding constraints. The rail system's ability to keep up with future demand—and avert worse system failures—is tied to completion of new rail tunnels under the Hudson River and the larger Gateway Program.

Regarding the bus system, traffic congestion, weather, and unplanned road incidents all affect its ability to run reliably on schedule. Overcrowding is also an issue, especially for local bus services to, from and within the region's urban areas. Various urban bus routes also have on-time performance substantially poorer than average, with six falling under 60 percent (NJ TRANSIT).

With a larger percentage of lower income people traveling by bus regardless of whether they live in urban, suburban, or rural areas, the lower reliability of the bus system is an important equity concern.

For much suburb-to-suburb and most rural travel, bus and rail service are less viable, and reverse commute/off-peak transit travel can be problematic. The traditional transit system, dependent on "mass" ridership, is not designed for dispersed locations. Supporting access to and use of existing stations and stops in these areas is a key strategy for the region. This can involve transit-oriented development, first and last mile connections, walking and biking infrastructure and addressing parking limitations.

Transit system performance has important equity implications (Figure 4-8). While socially vulnerable populations are generally more concentrated in areas with higher frequency transit, the ability to reach jobs at suburban or exurban sites can be very limited. In addition, getting to bus stops or rail stations can impose hardships on many residents, particularly in outlying neighborhoods in urban areas and suburbs where service may be limited. This can mean significantly longer commute times.

WALKING AND BIKING

Walking and biking are integral to regional mobility as well as quality of life, economic vitality, healthy living and environmental protection. Residents throughout the region are increasingly walking and biking as part of active, healthy lifestyles.

Walking and biking account for 4 percent of commuter trips in the NJTPA region, according to the 2014-2018 ACS and 10 percent of non-commute trips, based on the NJTPA and New York Metropolitan Transportation Council (NYMTC) Regional Travel Household Survey. The poorest residents of the region walk much more than those with higher incomes both because of lack of access to cars and sometimes living in denser urban areas (Figure 4-9).

Keyport, Monmouth County

Walking and biking are also much more common for student travel to and from schools: a quarter of students who live within a mile of school walk or bike there. This rises to nearly 80 percent in some urban school districts (Jersey City School Travel Plan). Transit-related trips also tend to correlate with higher walking rates. Research shows that, nationally, 35 percent of transit users walk more than 30 minutes to and from transit each day (*Walking Associated With Public Transit,* American Journal of Public Health).

For walking, bicycling and other active transportation modes—as well as micromobility options such as scooters and electric bicycles—accessibility is often contingent on a basic foundation of complete streets (roads designed to safely accommodate all modes and users) that is lacking in many areas. As noted, fatalities and injuries among pedestrians and bicyclists are a serious concern in the region.

WHAT WE HEARD

"I want to be able to walk or bike for most local trips. A safe and comfortable environment is important to do so. For longer trips, I would like to be able to take a bus or train, but I need to know that it will be there when I need it."

—MONMOUTH COUNTY RESIDENT, ONLINE SURVEY

According to *BikeLeague.org*, bicycling is the nation's fastest growing mode of travel to work, with the number of bicyclist commuters increasing by 50 percent from 2000 to 2016. Bicycling gained even greater popularity during the COVID-19 pandemic, creating a potentially large base of new riders using the mode for commuting and shorter trips in coming years.

A background paper on active transportation for this plan (Appendix A), identified several impediments to walking and biking, including:

- Trails often lack connections to one another and to key destinations. While the NJTPA estimates that the region has a network of over 214 miles of paths and trails shared by bicyclists and pedestrians,

many of the longer trails—and rights-of-way that could one day become trails—span jurisdictions and require special efforts to fund and coordinate improvements.

- On-street network gaps—such as a missing section of sidewalk or a disjointed bicycle network—can pose a safety hazard and discourage people from cycling or walking to local destinations. Based on the NJTPA's Level of Bicycle Compatibility index, most roads in the region are unsuitable for people who are not already experienced bicyclists.
- Many roads act as barriers to connectivity. Their distribution throughout the region breaks up what otherwise could be a highly connected bicycling or pedestrian network.

Addressing bicycle and pedestrian network connectivity and related concerns must be a priority in order to meet increasing demand created by ongoing population and economic growth, as well as current trends favoring active transportation. Supporting walking and biking can improve transportation system performance and flexibility with zero emissions and provide social and health benefits for residents.

Infrastructure Condition and Resilience

North Jersey is home to some of the oldest transportation infrastructure in the country. Long before New Jersey's highways enabled and symbolized modern suburban living, the region had impressive transportation infrastructure. The Morris Canal, built in 1825, once stretched 107 miles, carrying freight from the Delaware River to the Hudson River; and carriageways, ferries and railroads offered innumerable connections within the state and beyond. Some of this infrastructure is still in use and maintained by counties. In the NJTPA region there are 89 bridges that are over 100 years old that have not been reconstructed (NJDOT Bridge Management System).

Somerville, Somerset County

Daily traffic and simple aging impose constant wear on roadways, bridges, rails, sidewalks, and trails. Aging infrastructure imposes a heavy financial burden, with 64 percent of all available funding in the TIP devoted to repairing and maintaining existing infrastructure, leaving less for improvements. Transportation agencies must play constant catch-up to keep pace with accumulating needs.

The effects of climate change and severe weather greatly compound preservation challenges and necessitate increased resilience-focused actions and policies to protect the entire transportation system, as discussed in Chapter 6, Environment.

To address infrastructure needs, the NJTPA works with NJDOT and NJ TRANSIT on federally required statewide asset management plans and processes covering highways, bridges, pavement and transit. The following are snapshots of key transportation system assets.

PAVEMENT AND BRIDGE ASSETS

Federal law requires special attention to assets on the National Highway System (NHS), a network of strategic roads, including all of the Interstate Highway System that serves major airports, ports, rail, truck terminals, and other transport facilities. It includes about 10 percent of the 51,000 lane miles of roadway in the region, including most of the heavily traveled routes (NJTPA GIS). Appendix B reports on the pavement condition on the NHS within the NJTPA region, using the national pavement condition performance metrics (good, fair, and poor condition).

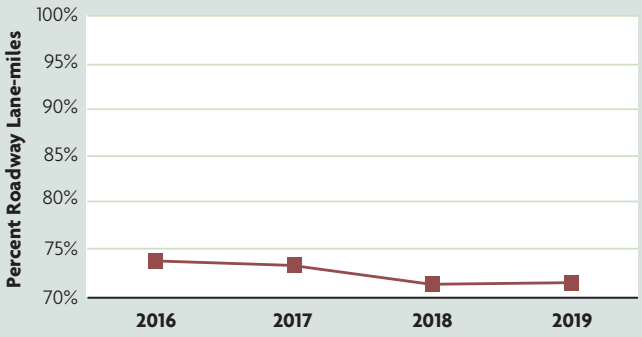
However, NJDOT uses slightly different methods and measurements to manage pavement condition on its system. The figures in this chapter use the NJDOT metrics (pavement in "Acceptable" condition) to report on the condition of roads within the NJTPA region. This includes roadways both on and off the NHS (including those maintained by the NJ Turnpike Authority).

As shown in Figure 4-10, in recent years road conditions have deteriorated, but bridges have improved on the NHS.

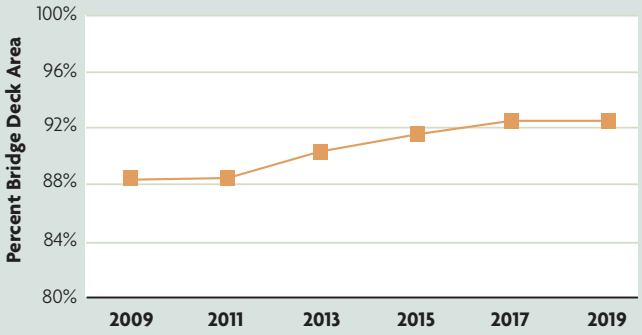
According to 2019 Pavement Management System data (Table 4-3), nearly 29 percent of road surfaces in the NJTPA region are deficient, and 48.5 percent are in fair condition. Over the span of four years, these pavement ratings have remained fairly consistent, indicating that paving projects are keeping pace with accumulating needs, though further investment will be needed to bring more roads into a state of good repair.

Around 71 percent of the region's NJDOT-owned bridges will require significant improvements or replacements in 20 to 30 years. Approximately 10 percent of the region's bridges under NJDOT jurisdiction are considered structurally deficient (Table 4-4), which means that their deck or bridge structure is deteriorated (though such bridges may remain safe to use for many years). However, overall, about 19 percent of bridges are considered in good condition, again indicating that state and regional projects are addressing accumulating needs.

Figure 4-10:
Percent Roadway Lane-miles in Good or Fair (i.e., Acceptable) Condition



Percent Bridge Deck Area in Good or Fair (i.e., Acceptable) Condition



Source: NJTPA Regional Performance Measures Dashboard

Orange, Essex County

NJ TRANSIT also must address 15 percent of bridges throughout the rail system which are structurally deficient (Table 4-5). Problems on these bridges can, at times, lead to speed limit restrictions and subsequent delays. Drawbridges that remain stuck in the "up" position can also lead to service stoppages.

While the most heavily traveled roads and bridges in North Jersey are under the state's jurisdiction—mostly NJDOT but also the Turnpike Authority and NJ TRANSIT—county and local governments are responsible for maintaining and upgrading more than 90 percent of road miles (NJDOT Pavement Management System) and about 40 percent of bridges (NJDOT Bridge Management System).

Upkeep on these facilities imposes substantial costs on county and local governments, which rely on taxes and local aid from the State of New Jersey's Transportation Trust Fund, totaling just over $261 million per year. Nearly 7 percent of county-owned bridges are in poor condition (Table 4-6) and over 60 percent are in fair condition. Nearly 12 percent of all county-owned bridges are over 75 years old and over 250 of these bridges have yet to be reconstructed. As discussed in Chapter 5, NJTPA programs help counties access federal funds for key improvement projects.

PUBLIC TRANSIT ASSETS

The bus and rail transit network, like the road network, requires significant ongoing preservation, maintenance, and improvement.

Short-term targets are used to measure the performance of NJ TRANSIT and PATH transit assets, such as buses and trains. Among the measures are assessments of the useful life of transit vehicles (Table 4-7). According to the latest NJ TRANSIT Asset Management Plan, nearly 26 percent of all NJ TRANSIT-owned commuter rail vehicles have exceeded their Useful Life Benchmark (ULB), which is typically 30 years of service. An additional 119 units will exceed their ULB by 2025. Vehicles that exceed their useful life, but remain in service as these do, can break down more often, affecting system reliability.

TABLE 4-3: Roadway Pavement Conditions in the NJTPA Region

CONDITION	NHS	NON-NHS	TOTAL
Good	34%	6%	22.8%
Fair	24%	87%	48.5%
Deficient	43%	7%	28.7%
Total	**100%**	**100%**	**100%**

Source: NJDOT Pavement Management System (2019)

TABLE 4-4: NJDOT-Owned Bridges in the NJTPA Region (2019)

RATING	AMOUNT	PERCENTAGE
Good Condition / Not Deficient	361	19%
Fair Condition / Not Deficient	1,311	71%
Poor Condition / Structurally Deficient	179	10%
Total	**1,851**	**100%**

Source: NJDOT Bridge Management System (2019)

TABLE 4-5: NJ TRANSIT-Owned Bridges in the NJTPA Region (2019)

RATING	AMOUNT	PERCENTAGE
Good Condition / Not Deficient	12	13%
Fair Condition / Not Deficient	67	72%
Poor Condition / Structurally Deficient	14	15%
Total	**93**	**100%**

Source: NJDOT Bridge Management System (2019)

There are 2,814 buses that serve the NJTPA region. Nearly half (48 percent) of these vehicles have already exceeded their ULB, typically 12 to 14 years (Table 4-8). Because of the continual need for maintenance and replacement of vehicles, over 1,200 additional buses will exceed their ULB by 2025. As noted earlier, keeping these vehicles in use can affect reliability.

Additional priorities to achieve a state of good repair on the transit system include upgrading interlockings, retaining walls, bridges, rail yards and signals which can be the source of delays and reliability issues. Numerous stations must also be improved including access improvements for the disabled. Improvements must be made to ensure resiliency, including a drainage improvement program to mitigate flooding issues at key locations. These and other issues are addressed in NJ TRANSIT's 5-Year Capital Plan and 10-Year Strategic Plan.

New Brunswick, Middlesex County

TABLE 4-6: County-Owned Bridges in the NJTPA Region (2019)

RATING	AMOUNT	PERCENTAGE
Good Condition / Not Deficient	607	30%
Fair Condition / Not Deficient	1,272	63%
Poor Condition / Structurally Deficient	138	7%
Total	**2,017**	**100%**

Source: NJDOT Bridge Management System (2019)

TABLE 4-7: NJ TRANSIT Commuter Rail Inventory

VEHICLE STATUS	NUMBER OF VEHICLES
Active	1,151
Awaiting Disposition	81
Exceed Useful Life Benchmark (still in use)	157
Total	**1,389**

Source: NJ TRANSIT Asset Management System Plan (2018)

TABLE 4-8: NJ TRANSIT Bus Inventory

VEHICLE STATUS	NUMBER OF VEHICLES
2020	1,355
2025	1,274
2030	185
Total Owned Vehicles	**2,814**

Source: NJ TRANSIT TAM Plan (2018)

Performance-Based Planning

The NJTPA and its partners will continue to monitor and act upon the performance measures discussed in this chapter and in Appendix B. This is even more important now that traditional travel patterns and priorities for use of the system are being altered on many fronts—including by increased remote work, burgeoning e-commerce, concerns about equity and the need to combat climate change. In coming years, technology promises even greater changes. Performance-based planning allows the region to understand these changes and adapt plans and programs to implement cost effective solutions to support a growing population and expanding economy over the long-term. Monitoring progress and working toward the specific targets set cooperatively by NJDOT, NJ TRANSIT, PANYNJ, the NJTPA, and partner MPOs, as detailed in the appendix, are an important part of this process.

Performance measurement is also evolving to become more nuanced, drawing on new data sources such as anonymized "real time" cell phone data which provides detailed insight into how and where people travel. It enables the NJTPA and its partners to pursue improved strategies to address regional priorities as discussed in the next chapter.