Community Resources and Attractors

To determine where people want to bicycle and walk, a number of attractions in downtown Trenton were mapped. Locations included schools (elementary and secondary), colleges and universities, parks and open spaces, bodies of water (rivers and creeks), sports venues, the public library, and transportation stations and lines.

SCHOOLS

Downtown Trenton has five elementary, two middle, one high school, and one alternative high school, all of which are public. Although there are no private schools within the downtown, there are a handful of private schools that lie right beyond the downtown border. Additionally, there are two state colleges and a vocational school within downtown.

DOWNTOWN LANDMARKS AND RECREATION

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Downtown Trenton has a variety of historic and recreational attractions. A few points of interest are shown below:

MILL HILL PARK

TRENTON BATTLE MONUMENT

SUN NATIONAL BANK CENTER

TRENT HOUSE

TRENTON FREE PUBLIC LIBRARY

RIVERWALK PARK AND ARM & HAMMER STADIUM

FIGURE 05: Community Attractors Map

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Sources: NJDOT, DVRPC, Mercer County, City of Trenton.

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PHOTO CREDIT: TRENTON CYCLING REVOLUTION

dvrpc

EXISTING transportation

Existing Transportation

This section is an overview of commuting patterns, bicycle and pedestrian counts, Trenton roads and bridges, and public transportation access. The specifics of the multi-use trails, street intersections, and on-road bicycle network will be discussed in the recommendations section.

Downtown Trenton is in a unique regional transportation location, with three bridge crossings into Pennsylvania, a major transportation center with connections to the Northeast Corridor and Camden via the River Line, and an interconnection of major state and national highways.

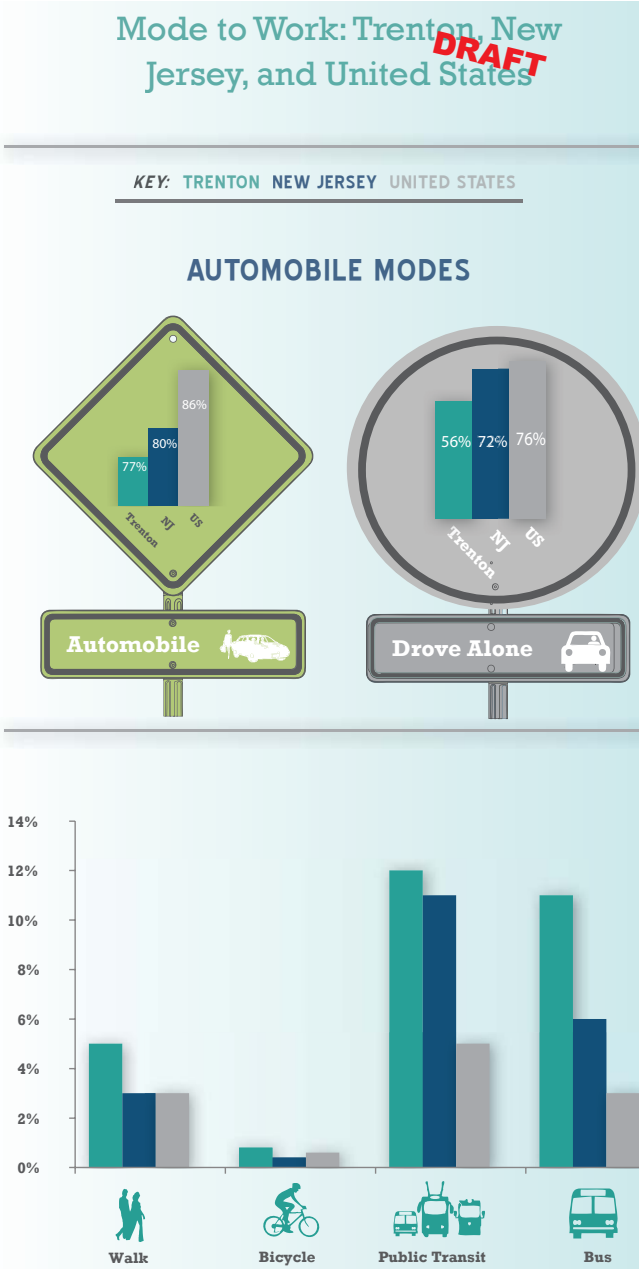
However, there are still large numbers of residents who use non-motorized transportation and public transportation, particularly buses, to commute to work.

COMMUTE

Although commuting patterns are not a perfect means for analyzing transportation mode choice, they do indicate that generally Trenton uses automobile modes less than the state and national average: (77% Trenton, 80% New Jersey, 86% United States).

Furthermore, there are a substantially lower number of people driving alone to work (56% Trenton, 72% New Jersey, 76% United States) meaning that of those who commute to work by automobile, a larger percentage are carpooling.

In the City of Trenton, of workers over 16 years old, 12% rode public transportation to work (11% commuting by bus) 5% walked, and .8% biked.



Source: 2009-2013 American Community Survey 5-Year Estim

FIGURE 06: Journey to Work

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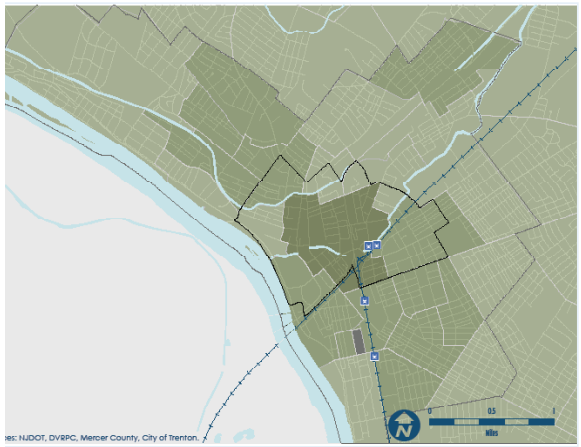
WALK TO WORK



Selected Tract-Level 5 year ACS Profiles - 2007-2011

Percentage Commuting by Walking

- *0% - 5.5%*
- *5.6% - 18.1%*
- *18.2% - 39.2%*
- *39.3% - 73.7%*

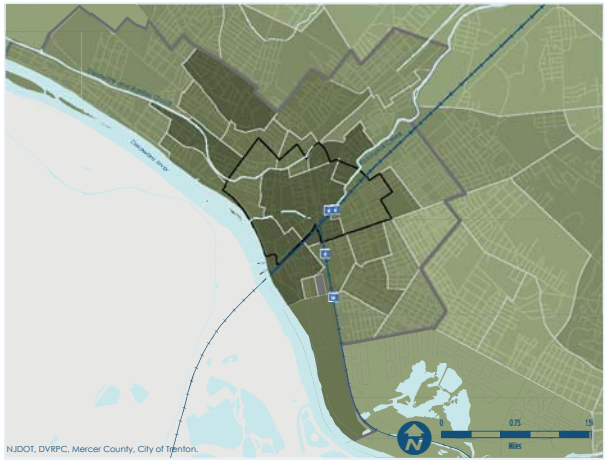
BICYCLE TO WORK

Selected Tract-Level 5 year ACS Profiles - 2007-2011

Percentage Commuting by Bicycle

- *0% - 1%*
- *1.1% - 3.8%*
- *3.9% - 8.9%*
- *9% - 19.7%*

NO VEHICLE HOUSEHOLDS



Selected Tract-Level 5 year ACS Profiles - 2007-2011

Percentage of No Vehicle Households

- *0 - 9.7%*
- *9.8 - 25.4%*
- *25.5 - 45.2%*
- *45.3 - 73.4%*

hese maps show by Census tract, where people are walking and bicycling o work in the City of Trenton. Walking o work is especially prevalent in the lowntown districts. Biking to work is most ommon in the area directly northeast f the downtown district.

18% **OF TRENTON WORKERS HAVE NO ACCESS TO A HOUSEHOLD VEHICLE**

Additionally, there are large portions of downtown with non-vehicle households: 18% of workers over 16 have no vehicle available, and 32% have only one vehicle available in their household.

D OWNERSHIP

Jersey has four tiers of road ownership: onal, state, county, and local roads. Road ership determines maintenance and sion making about each roadway segment.

al Trenton City Roads:
majority of the roads in downtown Trenton are l roads (shown in gray) such as Montgomery et and Clinton Street.

cer County Roads:
mbers, Hamilton, State Street (east of Clinton nue) and Calhoun Street (shown in red) are ed by Mercer County.

Jersey State Roads:
enwood Avenue that runs northeast through downtown is a New Jersey owned road wn in black). State Route 129 travels along same route as the River Line Realignment, n of the Northeast Corridor. State Route 29 along the shoreline with the Delaware River ne entirety of downtown.

onal United State Roads:
major US Route 1 reaches downtown Trenton the US Route 1 toll bridge from Pennsylvania e east. From this point, US 1 runs northeast ugh downtown Trenton . Additionally, Warren et and Broad Street are portions of US Route running north-south through downtown ton. These national roads are shown in blue.

FIGURE 07: Road Ownership

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ources: NJDOT, DVRPC, Mercer County, City of Trenton.

Lower Trenton (Trenton Makes) Bridge

Calhoun Bridge

Trenton Morrisville Route 1 Toll Bridge

Photo credit: Delaware River Joint Toll Bridge Commission

BRIDGES

Trenton connects to Morrisville, Pennsylvania across the Delaware River at three different bridge crossings controlled by the Delaware River Joint Toll Bridge Commission: The Lower Trenton Bridge (also known as the "Trenton Makes" bridge), the parallel Trenton-Morrisville Route 1 Toll Bridge, and the Calhoun Street Bridge.

- The Lower Trenton Bridge was built in 1928 and features the iconic "Trenton Makes The World Takes" signage.

- The US 1 bridge was built in 1952 and has a toll when entering Pennsylvania.

- The Calhoun Bridge was constructed in 1884 and recently renovated in 2010.

Additionally, other smaller Trenton bridges cross US 1, the Northeast Corridor rail line, the Assunpink Creek, and the former Delaware & Raritan Canal.

PUBLIC TRANSPORTATION

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Trenton Transportation Center, located on Wallenberg Avenue between Clinton Avenue and East State Street, is a major hub for bus and train connections. The transportation center was originally built in 1891 and was renovated in both 1972 and 2009. The transportation center has train connections to New York, Philadelphia, Washington DC and other cities in New Jersey through New Jersey Transit, SEPTA, and Amtrak. The station serves approximately 60 trains daily. The River Line, a light rail (opened in 2004) between Camden and Trenton, also serves the Trenton Transportation Center.

Twelve New Jersey Transit buses serve Trenton, ten of which serve the transportation center. The 409 is a bus that connects Trenton to Philadelphia and Camden, while the other routes are more local ones. Additionally, one SEPTA bus serves Trenton and travels to Oxford Valley Mall.

Trenton Transportation Center
Photo Credit: Ron Reiring

FIGURE 08: Existing Transportation

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Sources: NJDOT, DVRPC, Mercer County, City of Trenton.

TRAFFIC VOLUMES

The highest traffic in downtown Trenton is along US 1 and New Jersey 29 along the river. The connection along Market Street between these two streets is also very high.

The second highest level traffic volumes are along the east-west bridges that connect to the bridge crossings: Calhoun Street and US 1. Other streets with high traffic include NJ 129, Perry Street, State Street, and South Broad Street.

Local urban arterial roads include State Street, Broad and Warren Streets, Hamilton and Clinton Street, and Pennington Avenue.

The recommendations in this plan reflect the existing traffic patterns. On roadways with high traffic, additional safety measures are added to make these roadways safer for bicycles and pedestrians (buffered or protected bicycle lanes, pedestrian islands, etc.) Conversely, areas with lower traffic are more suitable for less physical pedestrian traffic interventions because these streets tend to already be safer. Standard bicycle lanes, sharrows or neighborhood bicycle routes, and standard sidewalks and crosswalks are more appropriate for this traffic level.

FIGURE 09: Downtown Trenton Traffic Volumes

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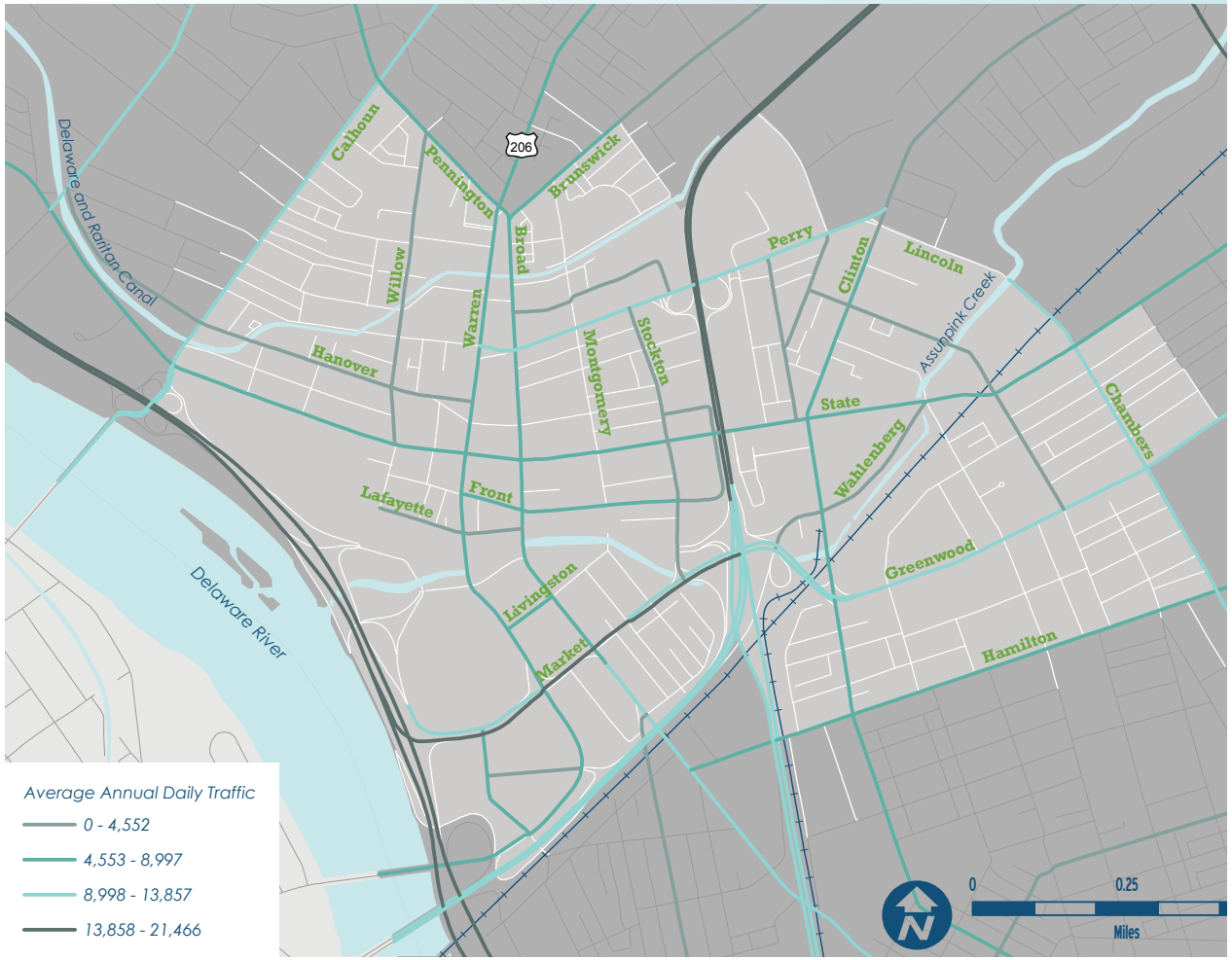


Sources: NJDOT, DVRPC, Mercer County, City of Trenton.

Existing Bicycle Network

Trenton's current bicycle network only includes a few high traffic streets within southwest downtown near the US 1 Bridge and the downtown government district. (See Figure 9 on previous page)

These streets include **New Warren Street, Market Street, Lafayette Street, and Broad Street.**

Despite new bicycle lanes, these streets can be uncomfortable for bicyclists due to high speeds and traffic volumes. The city currently does not have any other types of on-road bicycle infrastructure, such as sharrows.

Definitions

Mixed Traffic Route

Mixed traffic routes are low traffic, typically narrower streets, where bicycle traffic mixes in the same lane as automobile traffic. There are no striped bicycle lanes, but rather streets are marked with sharrows.

Sharrow, short for "shared lane arrow", is a pavement marking that typically includes a bicycle symbol and two white chevrons. (See right). This treatment is used to remind motorists that bicyclists are permitted to use the full lane.

Mixed traffic routes can also include advisory lanes, which look like dedicated bicycle lanes but have a dashed line on the traffic side.

Top: Standard bicycle sharrow marking. Bottom: A set of sharrows in Princeton, New Jersey
Photo Credit: Princeton Joint Pedestrian and Bicycle Advisory Committee

Dedicated Bicycle Facilities

A dedicated bicycle facility is a portion of the roadway designated by striping, signing, and pavement markings for the preferential and exclusive use of bicyclists.

A standard bicycle lane is one with two lines of white paint to indicate the lane, while buffered or physically separated lanes have additional lane markings, such as extra paint, bollards, or a raised surface.

Warren Street Bicycle Lane in downtown Trenton
Photo Credit: Trenton Cycling Revolution

FIGURE 10: Existing On-Street Bicycle Network

Sources: NJDOT, DVRPC, Mercer County, City of Trenton.

BICYCLE AND PEDESTRIAN COUNTS

To measure existing levels of bicycling and walking in downtown Trenton, DVRPC conducted bicycle and pedestrian counts at ten locations in the study area. DVRPC chose these locations based on the presence of trip generators, as well as input from the stakeholder group. In each case both sides of the street and both directions of travel were counted.

Pedestrians were counted at each location for a seven-day period by infrared sensors that detect the presence of a pedestrian based on their body heat signature. Bicycle counts were taken in two ways based on the particular behaviors that staff observed during field work. Across the study area, but especially in the core of downtown, most bicycling was being done on the sidewalk. DVRPC's standard procedure for counting bicyclists is to use pneumatic tubes placed in the cartway. It is agency practice not to place these tubes on the sidewalk, due to issues of safety and liability. So to effectively measure levels of bicycling, a two-pronged count strategy was used. Pneumatic tubes were laid in the roadway at each location. These tubes gathered data for a seven-day period. Video cameras were also set up to capture all bicycle activity at each count location. The video was then manually transcribed to arrive at a one-day bicycle count at each location. This ended up being an important data point since **video revealed that at some locations, as much as 60-70 percent of bicycle traffic was using the sidewalk.**

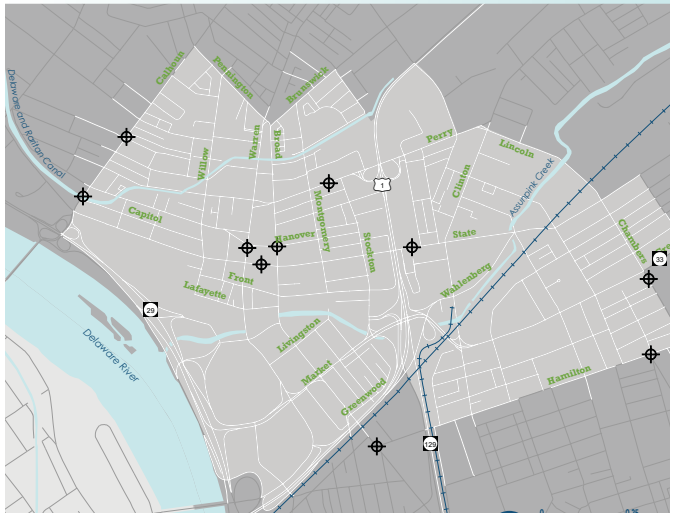
This behavior is also important to consider when selecting facilities for each route. A new in-street facility must provide a similar level of protection and perception of safety, and be clearly dedicated to bicycle traffic in order to change existing behavior and have bicyclists use new facilities.

The counts also inform the treatments recommended in plan. The clearest example being that the large number of pedestrians crossing at Hamilton and Anderson, partially as a result of students traveling to and from Trenton Central High School, necessitates large-scale interventions at this intersection to accommodate demand and improve pedestrian safety.

Count locations and totals are shown in Figure 11. More detailed count information can also be found at: www.dvrpc.org/webmaps/pedbikecounts.

Video count location at Hamilton and Anderson. Photo Credit: DVRPC

FIGURE 11: Bicycle and Pedestrian Counts



Average Bicycle and Pedestrian Counts

HIGH
MEDIUM
LOW

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LOCATION	BICYCLE	PEDESTRIAN*
1. WARREN BETWEEN HANOVER+STATE	38`	1407
2. BROAD BETWEEN HANOVER+STATE	99`	5618
3. STATE BETWEEN WARREN+BROAD	38	5449
4. PERRY NEAR MONTGOMERY+STOCKTON	36	860
5. HAMILTON BETWEEN ANDERSON+CHAMBERS	63	2109
6. GREENWOOD AND CHAMBERS	30	1749
8. HAMILTON AND ROUTE 206	59	1832

*Both sides of the street
`Indicates 1 way street

Existing Trail Network

An inventory of Trenton's existing trail network was one of the first steps in examining trail connections. Downtown Trenton has many trails that converge within its limits including the Assunpink Greenway, D&R Canal, and Delaware River Heritage Trail.

The D&R Canal is a completed historic towpath that follows the D&R Canal from Trenton to New Brunswick. This trail has a connected extension trail. The D&R Canal also currently has different extension proposals.

The Assunpink Greenway is a partially completed linear park maintained by the City of Trenton along the Assunpink Creek. The Delaware River Heritage Trail is a partially completed 60 mile loop that circles the Delaware River. This trail intends to connect 24 communities such as Trenton, Palmyra, Burlington, and Levittown.

Trenton also has additional proposed trails, such as the Delaware & Brook Bound Trail and the Trenton to Princeton Rail Trail. The Trenton to Princeton Rail Trail is a proposal to connect the two cities through a vacant rail right of way.

The Delaware and Bound Brook Trail is yet another proposal within a vacant rail right of way that aims to create a 3.5 mile greenway.

D&R Canal Towpath; Photo Credit: DVRPC

Definition: Multi-Use Trails

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Multi-use trails are off-road facilities which often accommodate multiple types of non-motorized users.
Multi-use paths can be paved or unpaved and are typically ten feet in width. Multi-use paths are most frequently used for recreation, but can also provide valuable links to transit stations. Costs can vary substantially based on construction materials, right-of-way acquisition, and other considerations.

TABLE 2: Existing and Proposed Trails

Existing Trails	
D & R CANAL TOWPATH AND EXTENSION	The D&R Canal is a historic towpath that runs along the canal from Trenton to New Brunswick. Maintained by the Delaware & Raritan Canal Commission.
ASSUNPINK GREENWAY	The greenway runs along the Assunpink Creek through downtown Trenton. Plans for expansion further east in the future. Maintained by the City of Trenton..
DELAWARE RIVER HERITAGE TRAIL	Upon completion, this 60 mile loop will connect 24 communities along the Delaware River in New Jersey and Pennsylvania such as Trenton, Palmyra, Burlington, and Levittown. Maintained by the Delaware & Raritan Canal Commission Delaware River Greenway Partnership
Proposed Trails	
TRENTON TO PRINCETON RAIL	This trail proposal envisions a trail two connect the to cities, partially within an unused rail right of way.
DELAWARE & BOUND BROOK TRAIL	This proposal aims to create a 3.5 mile greenway in an abandoned rail right of way.