



TIP ACTIONS

Transportation Improvement Program
New Jersey TIP (FY2020-2023)
Pennsylvania TIP (FY2021-2024)

PHOTO CREDIT: PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

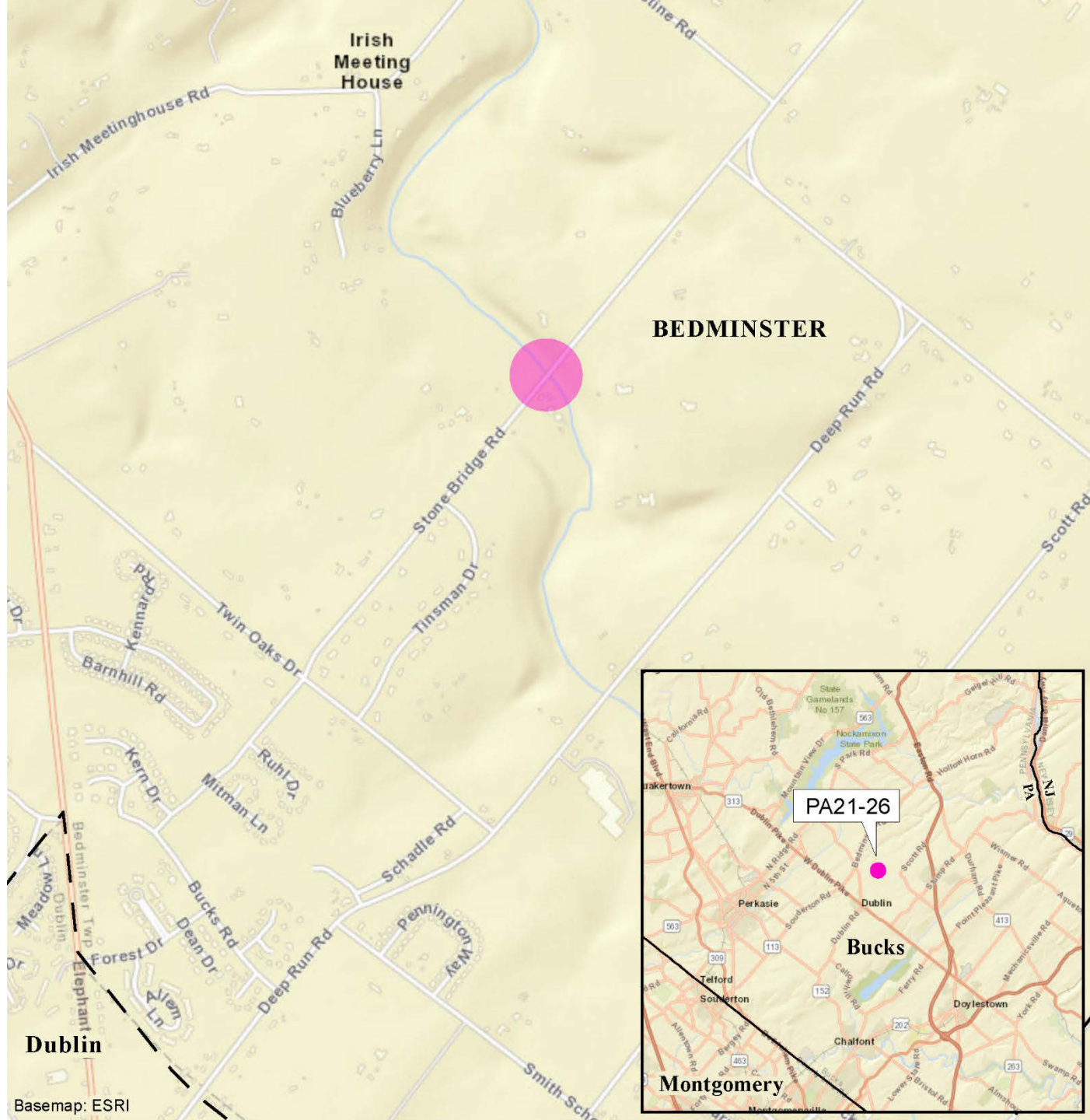
DVRPC RTC | March 2021



Stone Bridge Road (Bridge) (CB #45)

Bucks County | Add CON Phase Back into TIP

- **TIP Amendment**
- **Action:** Add CON phase back into TIP in FY21 for \$1,758,000 (\$1,406,000 State 183/\$352,000 Local)
- **Reason:** Programmed for CON in FY2019 TIP;
- Expected to be obligated/encumbered during FY2021 TIP Update;
- Structure and traffic control approval clearances delayed;
- Final approvals issued December, 2020
- **Background:**
 - *Total estimated cost = \$1,992,000*



Replacement of bridge carrying Stone Road over Deep Run;

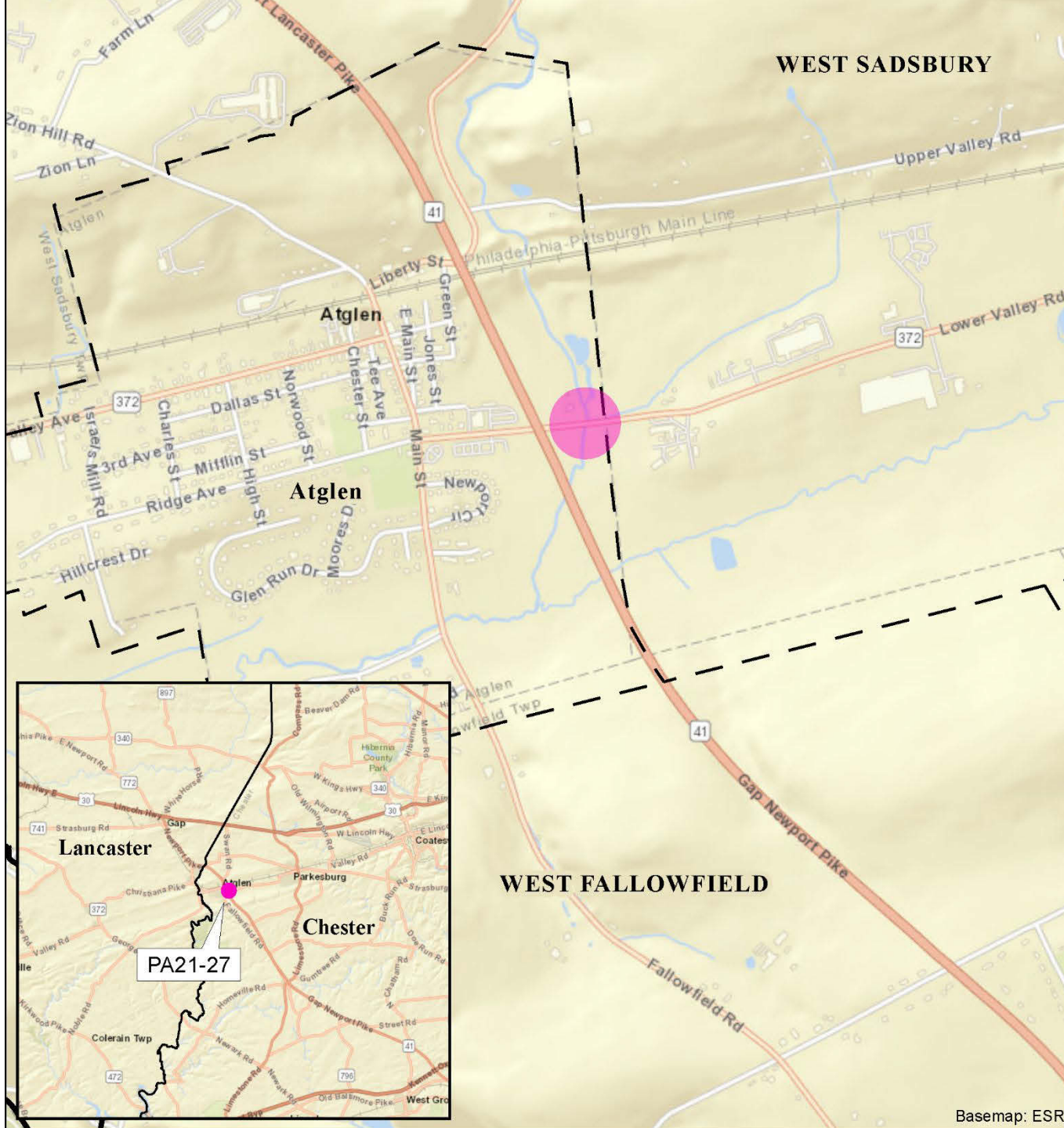
Existing bridge less than 16 feet wide;

Proposed structure will have 12 foot lanes with four-foot shoulders on each side for a total of 32 feet.

PA 372, Lower Valley Road Bridge Over Officers Run

Chester County | Add PE and CON Phases Back into TIP

- **TIP Amendment**
- **Action:** Add PE and CON phases back into TIP in FY21 for \$3,512,000 STU/Toll Credit; (\$12,000 for PE; \$3,500,000 for CON)
- **Reason:** Programmed for PE and CON in FY2019 TIP;
- Expected to be obligated/encumbered during FY2021 TIP Update;
- ROW clearance delayed due to COVID-19 and negotiations;
- Final ROW clearance issued December, 2020
- **Background:**
 - *Total estimated cost = \$4,452,000*
 - *PE phase to address \$12,000 Accrued Unbilled Costs*



Replacement of bridge carrying Lower Valley Road over Officer's Run;

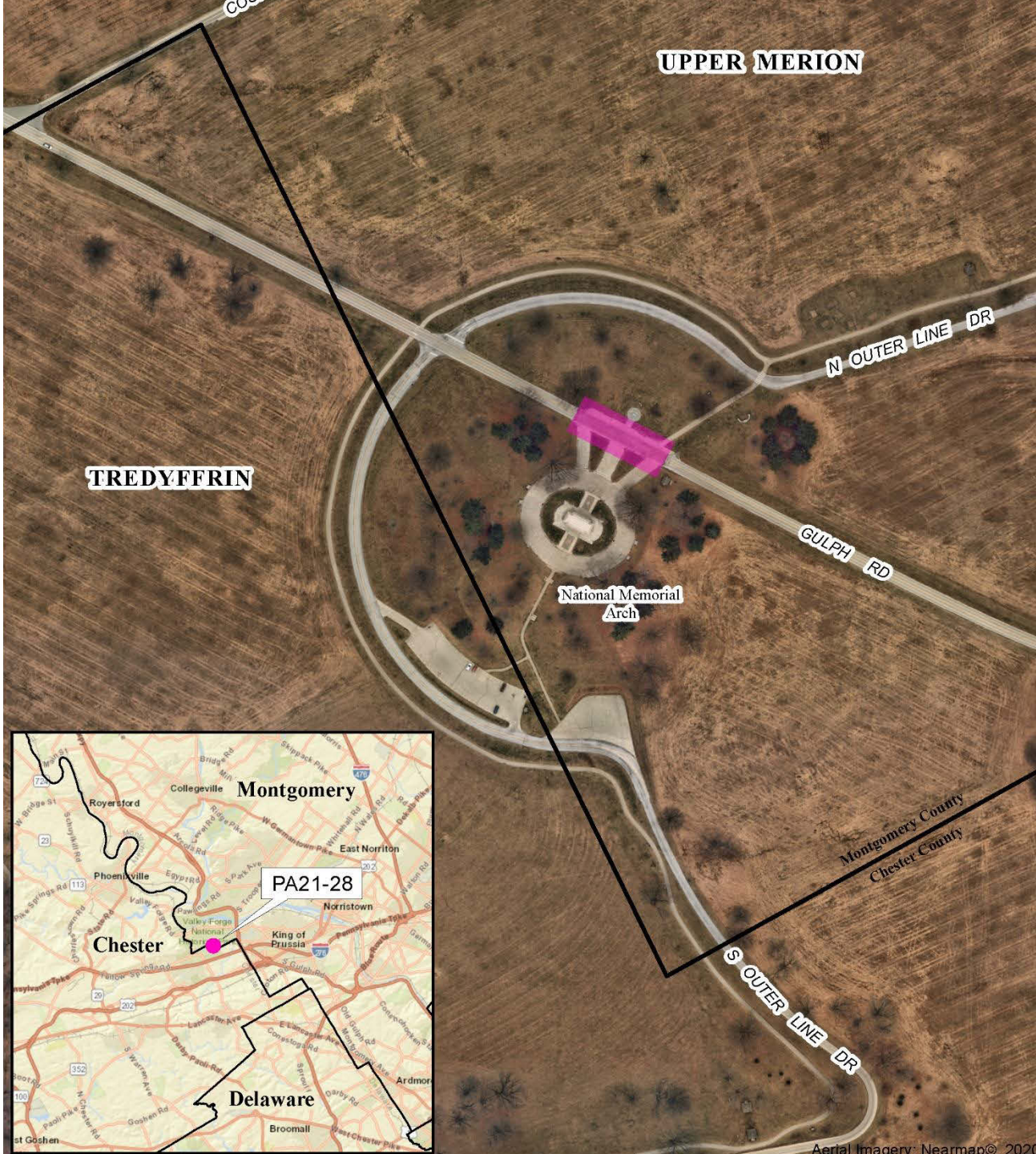
Existing bridge lane widths are 12 feet with four-foot shoulders for a total of 32 feet;

Proposed structure will have 12-foot lanes with five-foot shoulders on each side for a total of 34 feet.

Valley Forge Granite Block Restoration

Montgomery County | Add CON Phase Back into TIP

- **TIP Amendment**
- **Action:** Add CON back into TIP in FY21 for \$600,000 STU/Toll Credit
- **Reason:** Programmed for CON in FY2019 TIP;
- Expected to be obligated/encumbered during FY2021 TIP Update;
- ROW and FD delayed due to coordination with National Park Service;
- Final submissions expected to meet anticipated May, 2021 let date
- **Background:**
 - *Total estimated cost = \$600,000*



Full depth restoration of existing granite block roadway on Gulph Road in front of the National Memorial Arch within the Valley Forge National Historical Park;

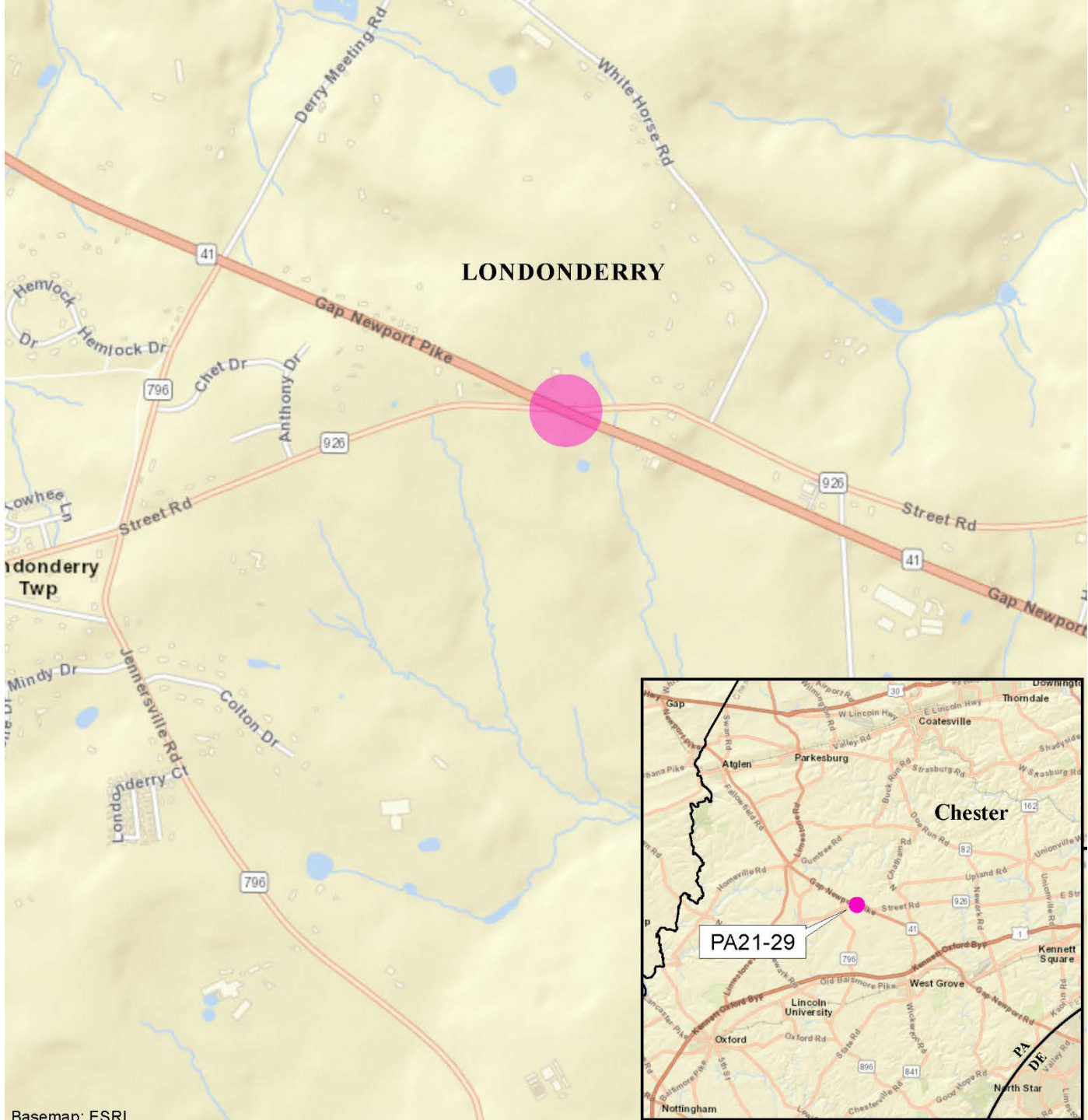
Granite block installed around 1921;

Partially replaced with new block in 1997.

PA 41 & SR 926 Improvements

Chester County | Add FD Phase Back into TIP

- **TIP Amendment**
- **Action:** Add FD back into TIP in FY21 for \$450,000 STU/Toll Credit
- **Reason:** Programmed for FD in FY2019 TIP;
- Expected to be obligated/encumbered during FY2021 TIP Update;
- FD delayed due to Section 106 (historic preservation) process and COVID-19 impacts;
- Categorical Exclusion Evaluation (CEE) approved
- **Background:**
 - *Total estimated cost = \$2,731,000*



Basemap: ESRI

Project involves replacement of existing skewed 4-way intersection with a roundabout;

Work includes:

- Wetland mitigation;
- Stormwater management facilities;
- Roundabout lighting;
- Curb and guide rail installation.



TIP ACTION | Proposed - PA

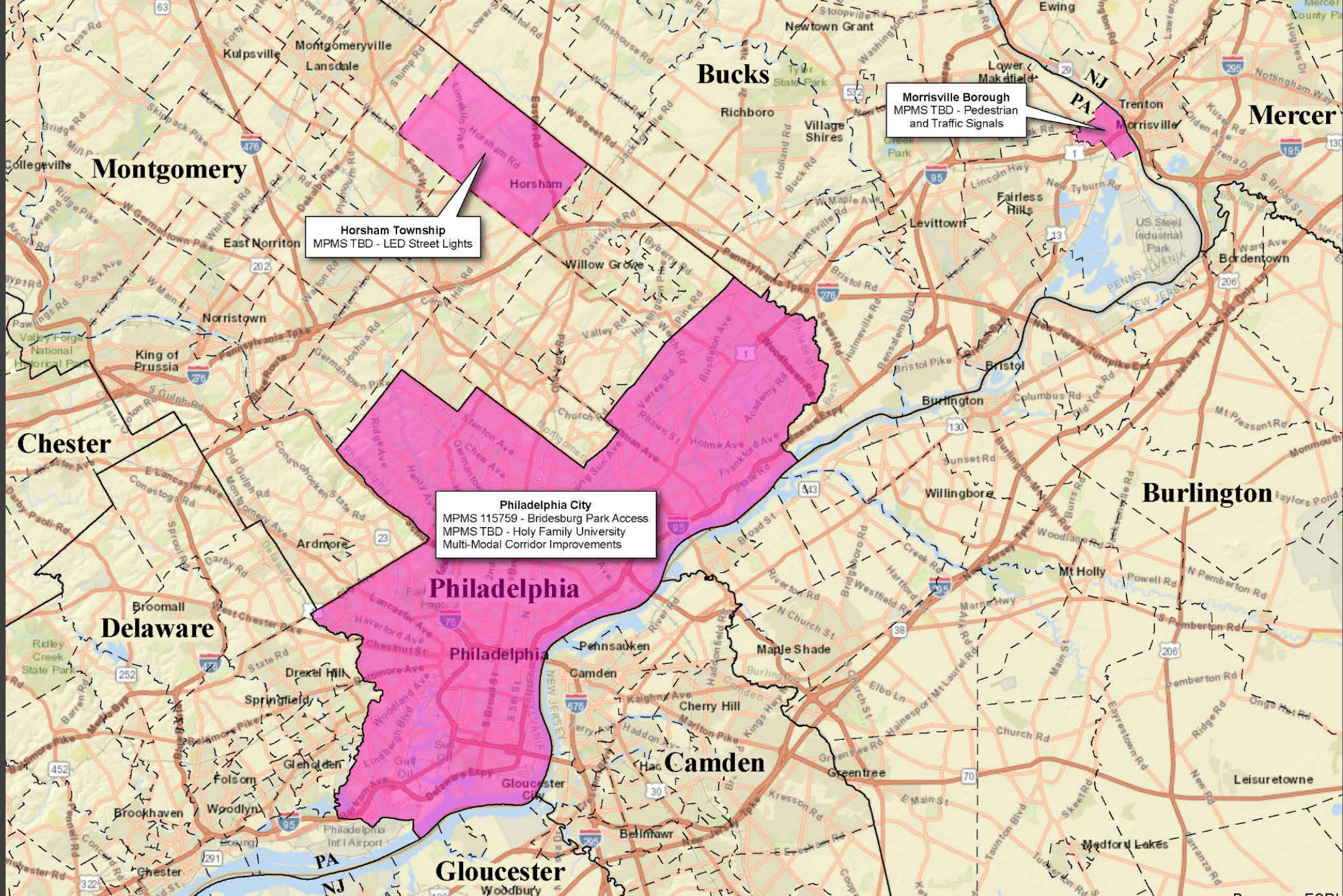


- **Request RTC Recommend Board Approval of TIP Amendments**
- **Stone Bridge Road (Bridge) (CB #45)** Add CON phase back into TIP in FY21 for \$1,758,000 (\$1,406,000 State 183/ \$352,000 Local)
- **PA 372, Lower Valley Road Bridge Over Officers Run** Add PE and CON phases back into TIP in FY21 for \$3,512,000 STU/Toll Credit; (\$12,000 for PE; \$3,500,000 for CON)
- **Valley Forge Granite Block Restoration** Add CON back into TIP in FY21 for \$600,000 STU/Toll Credit
- **PA 41 & SR 926 Improvements** Add FD back into TIP in FY21 for \$450,000 STU/Toll Credit

2020-2021 Statewide Multimodal Transportation Fund Projects

Various Counties | Accept New Projects into TIP

- **TIP Amendment**
- **Action:** Accept listed 2020-2021 Statewide Multimodal Transportation Fund (MTF) projects and their additional funds into FY2021 TIP for PA
- Four projects totaling \$6,347,000 (\$3,582,000 State 411/\$2,765,000 Local) will be added for CON
- **Reason:** MTF is a competitive statewide program established by Act 89 of 2013 that provides grants to improve transportation assets and enhance communities, pedestrian safety, and transit revitalization
- **Background:**
 - *Funds are additional to the region*



Horsham Township
MPMS TBD - LED Street Lights

Morrisville Borough
MPMS TBD - Pedestrian
and Traffic Signals

Philadelphia City
MPMS 115759 - Bridesburg Park Access
MPMS TBD - Holy Family University
Multi-Modal Corridor Improvements

Montgomery

Bucks

Mercer

Chester

Burlington

Delaware

Philadelphia

Camden

Gloucester

Bucks County

- Morrisville Borough Pedestrian and Traffic Signals (MPMS #TBD) - \$228,000 State 411

Montgomery County

- Horsham Township LED Street Lights (MPMS #115757) – \$1,379,000 State 411

City of Philadelphia

- Bridesburg Park Access (MPMS #115759) – \$4,180,000 (\$1,415,000 State 411/\$2,765,000 Local)
- Holy Family University Multi-Modal Corridor Improvements (MPMS #115758) - \$560,000 State 411

TIP ACTION | Proposed - PA



- **Request RTC Recommend Board Approval of TIP Amendment**
- **2020-2021 Statewide Multimodal Transportation Fund Projects** Accept listed 2020-2021 Statewide Multimodal Transportation Fund (MTF) projects and their additional funds into the FY2021 TIP for PA
- Four projects totaling \$6,347,000 (\$3,582,000 State 411/\$2,765,000 Local) will be added for CON
- Funds are additional to the region



Thank

Connect With Us!     

You!

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www.dvrpc.org/TIP



HSIP IMPLEMENTATION PLAN OVERVIEW

GAVIN GRAY, P.E.

HIGHWAY SAFETY SECTION CHIEF

PA DEPARTMENT OF TRANSPORTATION

MARCH 9, 2021

2018 STATEWIDE TARGETS

Performance Measure	5-year Rolling Averages			Target Achieved?	Better than Baseline?	Met or Made Significant Progress?
	TARGET	ACTUAL	BASELINE			
	2014-2018	2014-2018	2012-2016			
Number of Fatalities	1,177.6	1,182.0	1,220.2	No	Yes	No
Fatality Rate	1.161	1.169	1.220	No	Yes	
Number of Serious Injuries	3,799.8	3,839.6	3,434.0	No	No	
Serious Injury Rate	3.746	3.797	3.433	No	No	
Number of Non-motorized Fatalities and Serious Injuries	654.4	679.0	602.4	No	No	

* Future VMT estimated to be 1% higher per year starting in 2017



HSIP IMPLEMENTATION PLAN



- Analysis of fatal and serious injury crashes
- Reviewed 324 projects (over \$400 million in HSIP funds)
- Noteworthy practices from other states and Pennsylvania
- Solicited input from a sampling of key stakeholders
- Identified deficiencies and opportunities for improvement



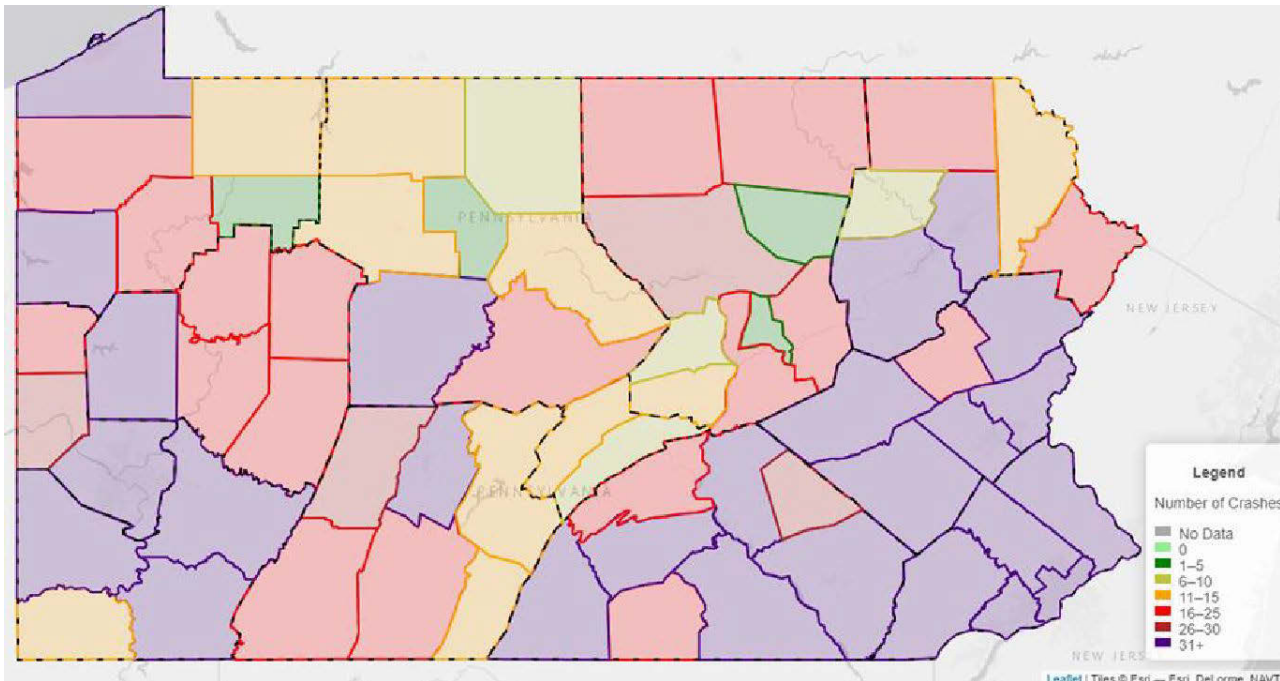
REGIONAL ANALYSIS

MPO/RPO	F+SSI Crashes	Daily VMT	F+SSI Crashes per 100,000 Daily VMT
Lehigh Valley	1,054	14,593,107	7.2
Centre County	298	3,931,072	7.6
Southern Alleghenies RPO	596	7,703,770	
Harrisburg Area Transportation Study	1,343	16,876,342	
DVRPC	5,603	67,662,775	
Lackawanna/Luzerne	1,078	12,684,852	
Southwestern PA Commission MPO	5,021	56,760,666	
Erie County	531	5,917,750	
York County	852	9,040,293	
Reading	900	9,368,480	
Mercer County	320	3,327,707	
Lycoming County	279	2,841,126	
Lancaster	1,210	12,317,136	
Wayne County	109	1,107,489	
Northwest RPO	645	6,340,949	
SEDA COG	1,060	10,348,403	
Johnstown	281	2,724,327	
Franklin County	417	3,934,929	
Northeastern PA Alliance	1,261	11,798,323	
Northern Tier RPO	587	5,421,488	
Lebanon County	372	3,387,090	
Adams	272	2,471,433	
North Central RPO	764	6,380,524	
Altoona	339	2,827,032	

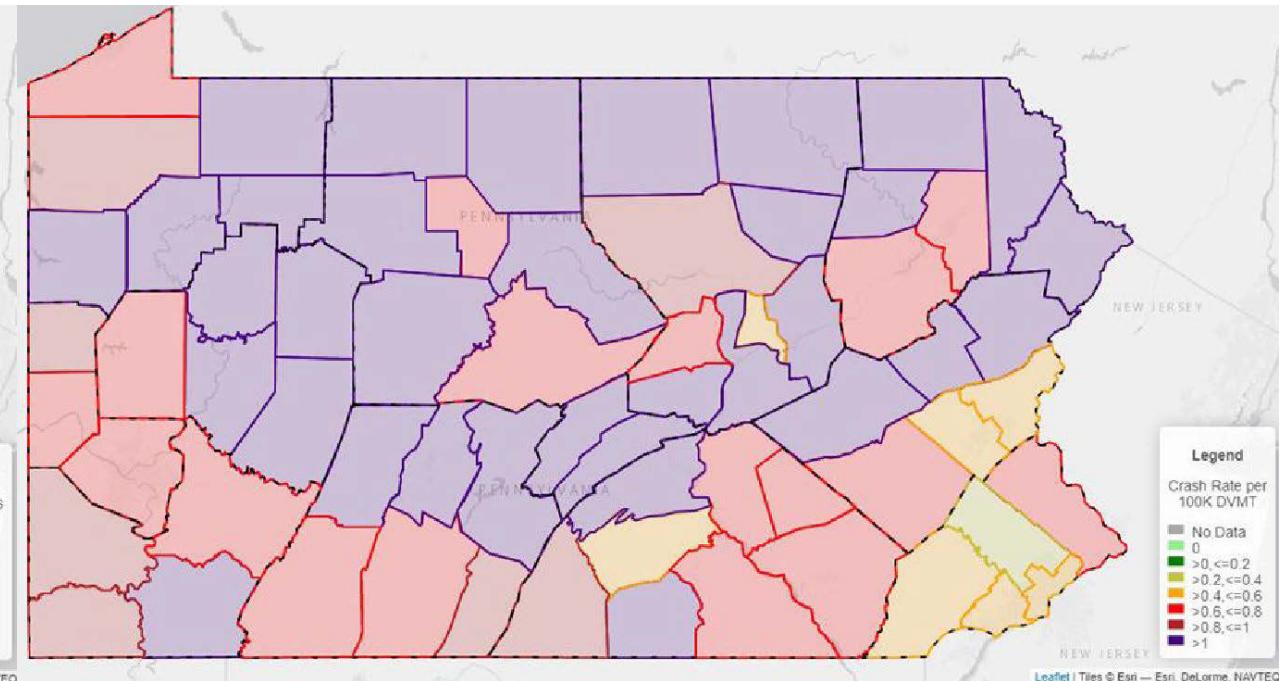
MPO/RPO	F+SSI Crashes	Licensed Drivers	F+SSI Crashes per 100,000 Licensed Drivers
DVRPC	5,603	2,745,991	204
Lehigh Valley	1,054	493,165	214
York County	852	333,747	255
Wayne County	109	41,243	264
Southwestern PA Commission MPO	5,021	1,850,170	271
Lackawanna/Luzerne	1,078	372,175	290
Johnstown	281	96,774	290
Erie County	531	182,666	291
Reading	900	290,743	310
Harrisburg Area Transportation Study	1,343	426,272	315
Lancaster	1,210	375,467	322
Centre County	298	89,845	332
Lycoming County	279	80,870	345
Adams	272	76,322	356
Lebanon County	372	103,178	361
Altoona	339	89,634	378
Franklin County	417	109,290	382
Northeastern PA Alliance	1,261	320,255	394
Mercer County	320	77,641	412
Northwest RPO	645	154,526	417
SEDA COG	1,060	249,085	426
Southern Alleghenies RPO	596	134,210	444
Northern Tier RPO	587	129,989	452
North Central RPO	764	156,314	489



SINGLE VEHICLE RUN OF THE ROAD COMPARISON



Average Annual Frequency of Fatal and Suspected Serious Injuries



Rate of Fatal and Suspected Serious Injuries per 100,000 Daily Vehicle Miles Traveled



REGIONAL SPENDING

Planning Partner	HSIP Funds Spent	HSIP Funds Spent Per 100,000 Daily VMT*	HSIP Funds Spent per 100,000 Licen	% Statewide F + SSI Crashes per
Lycoming County	\$26,345,576	\$927,293	\$38	
Erie County	\$23,982,702	\$405,267	\$16	
Centre County	\$14,788,312	\$376,190	\$15	
Altoona	\$10,117,294	\$357,877	\$14	
Northwest RPO	\$19,233,584	\$303,323	\$12	
North Central RPO	\$18,130,617	\$284,156	\$11	
SEDA-COG	\$29,311,006	\$283,242	\$11	
Lebanon County	\$9,586,313	\$283,025	\$9	
Northern Tier RPO	\$13,936,702	\$257,064	\$10	
Southern Alleghenies RPO	\$15,574,768	\$202,171	\$11	
Wayne County	\$2,143,408	\$193,538	\$5	
Mercer County	\$6,414,322	\$192,755	\$8	
Johnstown	\$4,881,924	\$179,197	\$5	
Lehigh Valley	\$22,380,514	\$153,364	\$4	
Tri County Planning Commission	\$24,178,546	\$143,269	\$5	
SPC MPO	\$72,371,135	\$127,502	\$3	
Lackawanna/Luzerne	\$16,144,687	\$127,275	\$4	
Northeastern PA Alliance	\$12,737,019	\$107,956	\$3	
Reading	\$9,365,616	\$99,969	\$3	
York County	\$5,943,420	\$65,744	\$1	
DVRPC	\$38,296,572	\$56,599	\$1	
Lancaster	\$6,912,058	\$56,117	\$1	
Adams	\$1,177,212	\$47,633	\$1	
Franklin County	\$1,397,561	\$35,517	\$1	

Planning Partner	Intersection Safety	Lane Departures	Pedestrians and Bicyclists	Other
Adams	20%	76%	0%	4%
Altoona	29%	53%	0%	18%
Centre County	3%	2%	0%	95%
DVRPC	63%	28%	9%	0%
Erie County	69%	8%	0%	23%
Franklin County	80%	16%	0%	5%
Tri-County Planning Commission	72%	3%	0%	25%
Johnstown	43%	57%	0%	0%
Lackawanna/Luzerne	40%	41%	0%	18%
Lancaster	94%	6%	0%	0%
Lebanon County	74%	4%	0%	22%
Lehigh Valley	83%	12%	0%	6%
Lycoming County	4%	31%	0%	65%
Mercer County	94%	6%	0%	0%
North Central RPO	76%	18%	0%	7%
Northeastern PA Alliance	15%	76%	0%	9%
Northern Tier RPO	10%	79%	0%	11%
Northwest RPO	47%	29%	0%	24%
Reading	63%	33%	0%	4%
SEDA-COG	32%	28%	0%	40%
Southern Alleghenies RPO	84%	16%	0%	0%
SPC MPO	63%	8%	0%	28%
Wayne County	15%	65%	16%	3%
York County	46%	37%	0%	17%



STATEWIDE PERFORMANCE: RURAL VS URBAN

	HSIP Funds Spent	Before F+SSI Crashes	After F+SSI Crashes	% Change F+SSI Crashes
Urban	\$225,187,838	677	654	-3%
Rural	\$178,358,231	933	772	-17%
Not Defined	\$1,804,797	128	123	-4%
Total	\$405,350,866	1,738	1,549	-11%

- Safety improvements on rural roads resulted in a greater decrease in F+SSI crashes, and were also more cost effective.



STATEWIDE PERFORMANCE: FUNCTIONAL CLASSIFICATION

	HSIP Funds Spent	Before F+SSI Crashes	After F+SSI Crashes	% Change F+SSI Crashes
08 – Rural Minor Collectors	\$8,947,897	62	37	-40%
07 – Rural Major Collectors	\$28,997,302	136	90	-34%
09 – Rural Local	\$8,964,638	22	16	-27%
02 – Rural Other Principal Arterials	\$67,545,603	153	117	-24%
06 – Rural Minor Arterials	\$56,134,569	240	190	-21%
16 – Urban Minor Arterials	\$62,278,019	139	116	-17%
17 – Urban Major Collectors	\$22,274,814	60	51	-15%
Not Defined	\$1,804,797	128	122	-5%
14 – Urban Other Principal Arterials	\$108,004,602	330	321	-3%
11 – Urban Interstate	\$11,430,789	43	43	0%
01 – Rural Interstate	\$7,768,222	320	322	1%
12 – Urban Other Freeways and Expressways	\$18,497,238	105	120	14%
19 – Urban Local	\$2,702,377	0	4	400%
Total	\$405,350,866	1,738	1,549	-11%



STATEWIDE PERFORMANCE: SPOT VS SYSTEMIC SAFETY

Type of Projects	HSIP Funds Spent (\$M)	Before F+SSI Crashes	After F+SSI Crashes	Cost per F+SSI Reduction (\$M)
Spot Improvements	\$301.3	339	301	\$7.92
Systemic	\$104.0	1,399	1,248	\$.69
Total	\$405.3	1,738	1,549	--

- 74% of HSIP spending was on Spot Improvement; 26% on systemic
- On a per F+SSI reduction, systemic improvements were **11 times** more cost effective than spot improvements



MOST EFFECTIVE COUNTERMEASURES

Improvement Type	Improvement Sub-Type	Before F+SSI	After F+SSI	Project Cost	Cost to Eliminate a F+SSI	Net Benefit	F+SSI B/C Ratio
Rumble Strips	Unknown or Both	116	110	\$700,000	\$116,667	\$46,491,600	66.4
Signing and Pavement Markings	Curve-Related	124	82	\$4,373,383	\$104,128	\$260,637,434	59.6
Modify Traffic Signal	Replace Existing Indications	28	17	\$616,787	\$56,072	\$26,680,853	43.3
Rumble Strips	Center Line	116	86	\$4,257,153	\$141,905	\$154,526,315	36.3
Signing and Pavement Markings	Intersection-Related	48	34	\$3,462,916	\$247,351	\$115,801,524	33.4
Rumble Strips	Edge Line	29	24	\$4,816,057	\$963,211	\$56,582,863	11.8
High Friction Surface Treatment	-	26	19	\$6,933,117	\$990,445	\$47,146,600	6.8
Signing and Pavement Markings	Interstate Signs	184	175	\$1,434,906	\$159,434	\$8,103,725	5.7



PLANNING PARTNERS: PROJECT PERFORMANCE

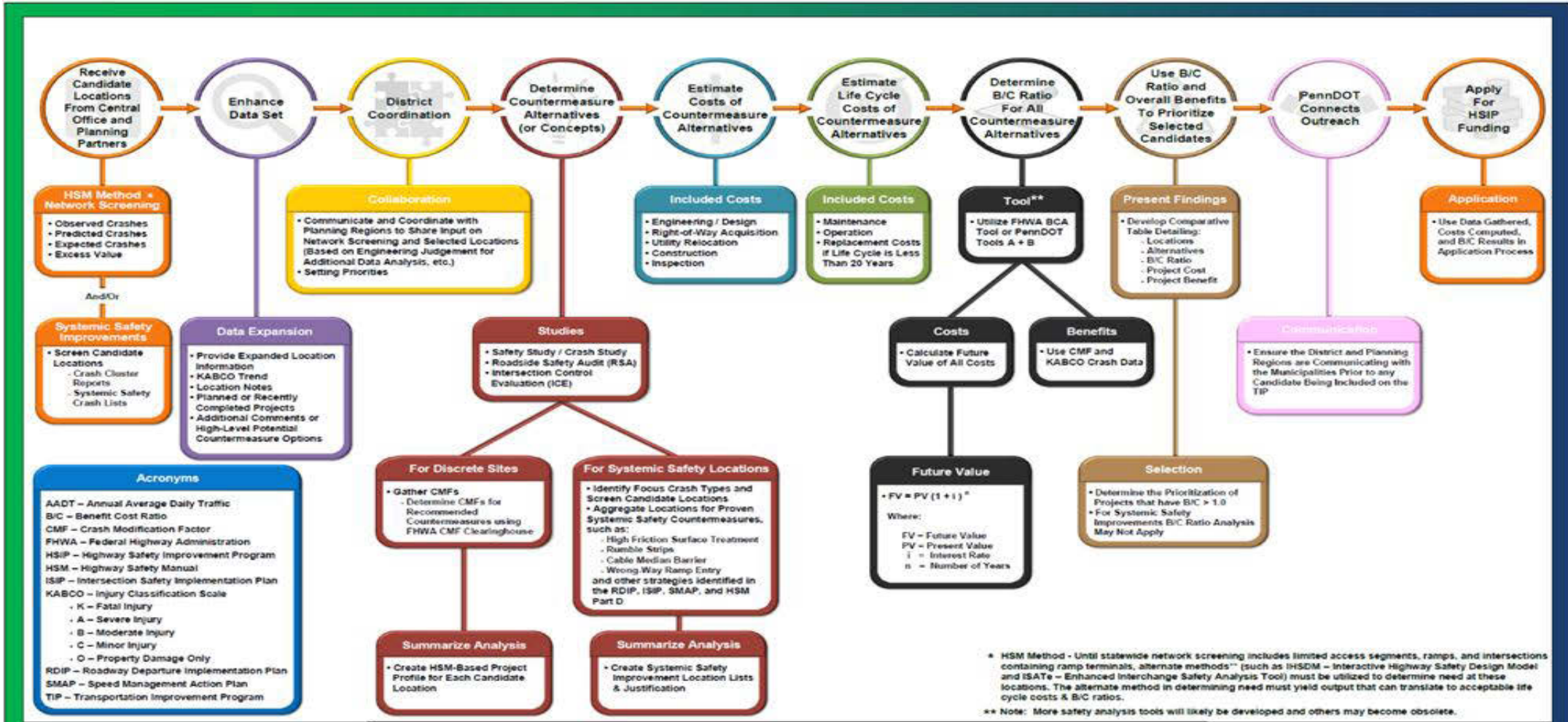
Planning Partner	HSIP Funds Spent	Before F+SSI Crashes	After F+SSI Crashes	% Change F+SSI Crashes
Northwest RPO	\$19,233,584	16	8	-50%
Johnstown	\$4,881,924	9	5	-44%
Northern Tier RPO	\$13,936,702	79	44	-44%
Mercer County	\$6,414,322	5	3	-40%
Tri County Planning Commission	\$24,178,546	30	19	-37%
York County	\$5,943,420	27	18	-33%
Lycoming County	\$26,345,576	51	36	-29%
Wayne County	\$2,143,408	17	12	-29%
North Central RPO	\$18,130,617	179	142	-21%
SEDA-COG	\$29,311,006	96	76	-21%
Reading	\$9,365,616	151	122	-19%
DVRPC	\$38,296,572	175	150	-14%
Lancaster	\$6,912,058	10	9	-10%
Lackawanna/Luzerne	\$16,144,687	127	118	-7%
Lehigh Valley	\$22,380,514	75	70	-7%
Northeastern PA Alliance	\$12,737,019	413	407	-1%
Centre County	\$14,788,312	48	48	0%
SPC MPO	\$72,371,135	138	139	1%
Lebanon County	\$9,586,313	34	36	6%
Franklin County	\$1,397,561	8	9	13%
Adams	\$1,177,212	7	9	29%
Erie County	\$23,982,702	27	39	44%
Altoona	\$10,117,294	7	11	57%
Southern Alleghenies RPO	\$15,574,768	9	19	111%
Total	\$405,350,868	1,738	1,549	-11%

This shows the impact HSIP had on fatalities and serious injuries for projects that were completed between 2002 -2015



BEST PRACTICES

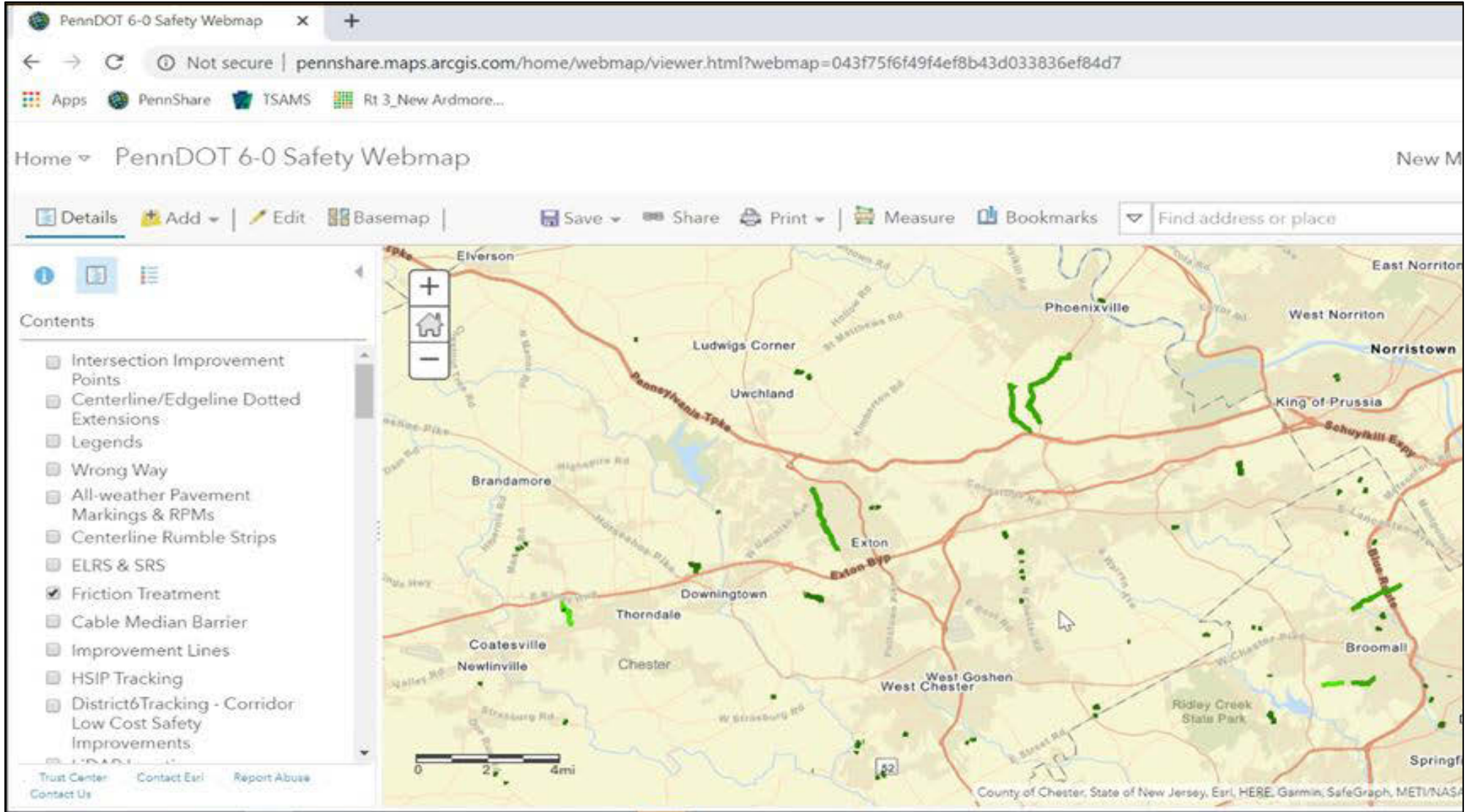
Best Practices
Next Exit 



BEST PRACTICES

Best Practices

Next Exit 



PROJECT SELECTION CHALLENGES

From 2002 to 2015, several locations showed no reduction or an increase in crashes.



Not all Districts and MPO/RPOs have been able to fully integrate the Highway Safety Manual into their project selection processes



Assist in identifying types of projects with a high probability of reducing serious crashes



LOCAL ROAD SAFETY CHALLENGES

In 2016, 17% of total fatalities and 25% of total crashes occurred on locally owned roads.



HSIP funds have been very limited in use on local roadway networks



Conduct pilot HSIP projects using Force Account



NON-MOTORIZED ROAD USER CHALLENGES

In 2018, pedestrian-related crashes accounted for 3.2% of the total traffic crashes; however, they accounted for 17% of all traffic crash fatalities.



Pedestrian crashes can seem to be random in occurrence, making it difficult to identify sites for spot improvement



Develop Pedestrian Action Plan



SYSTEMIC PROJECT CHALLENGES

Systemic projects were 11 times more cost effective than spot improvements.



Systemic projects accounted for only 26% of HSIP spending between 2002 and 2015.



Expand the use of HSIP funds to focus systemic safety issues that share common risk factors which can be addressed by common low-cost solutions



PROJECT TRACKING CHALLENGES



Inconsistencies in the way HSIP projects are described makes it difficult to identify the safety countermeasures implemented, as well as their effectiveness



Improve PennDOT's HSIP project tracking system to make it easier to evaluate the projects after they are completed



PROJECT PRIORITIES CHALLENGES



The following types of projects resulted in increased fatalities & serious injuries:

- Resurfacing,
- Replacing raised pavement markers,
- Pedestrian & bicycle spot improvements,
- Traffic signal retiming,
- Addition of right turn lanes



Refocus HSIP projects to increase investing in low cost strategies and countermeasures that have demonstrated their effectiveness



NEXT STEPS



- Solicit stakeholder input and ideas
- Provide additional guidance, training, and support
- Integrate the recommendations into the new Strategic Highway Safety Plan (SHSP)
- Continue to monitor progress and performance



Ruti ... a bike route planning tool

RTC Meeting
March 9th, 2021



Project Origins

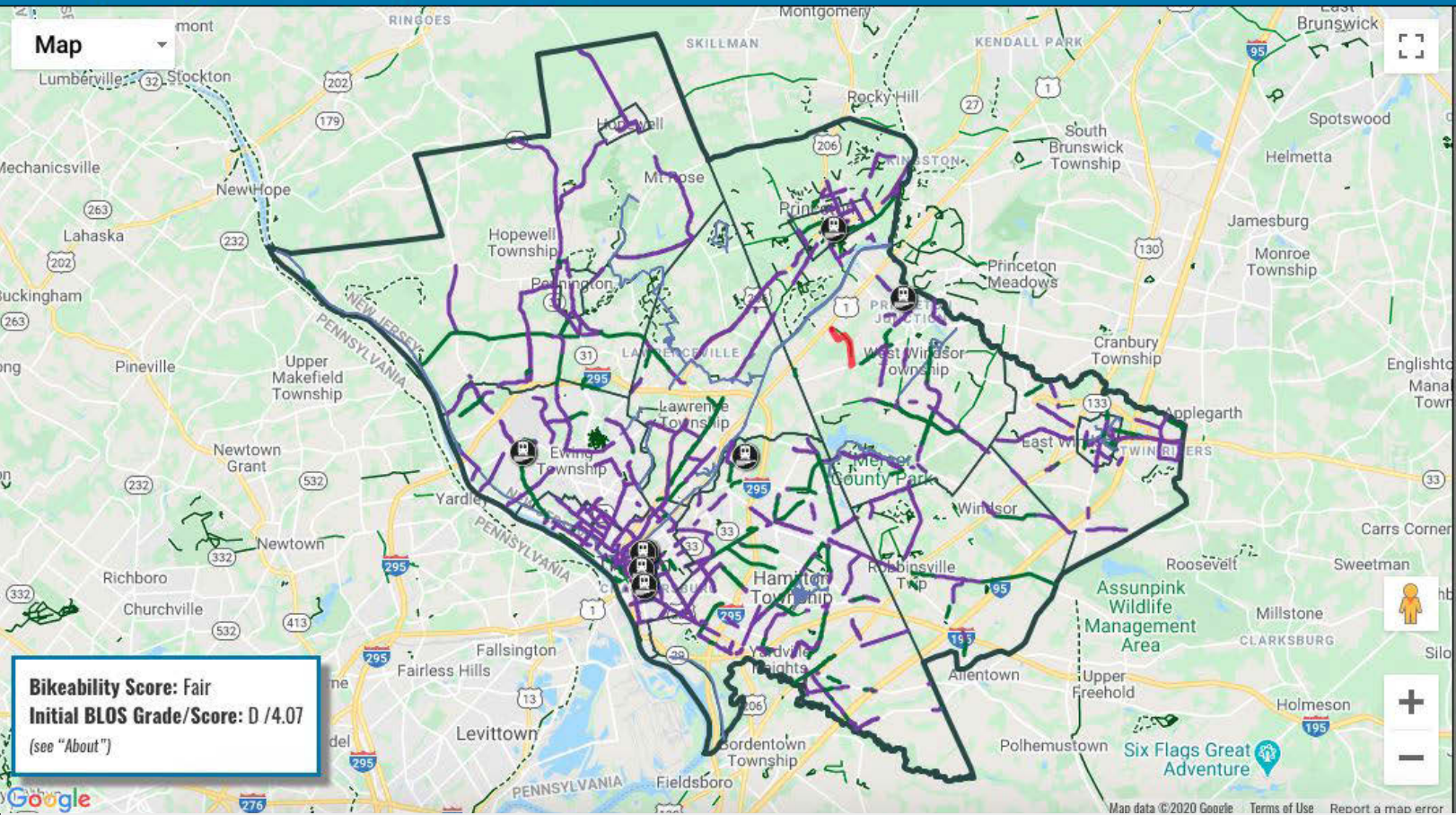
Dixi available on
whyabike.com

Delaware County requests a
bicycle routing app focused on
low-stress routes

Ruti



Ruti



Map

Bikeability Score: Fair
Initial BLOS Grade/Score: D / 4.07
 (see "About")

Data Layers

Bikeability Scores

Major Roads

- Excellent
- Fair
- Unfavorable
- Unbikeable

Minor Roads

- Favorable
- Unfavorable

Layers

- Bikeable Trails

Points of Interest

- Rail Stations
- Business Center
- Cultural
- Fire Department
- Post Office

Project Team

AG Strategic Design



DVRPC

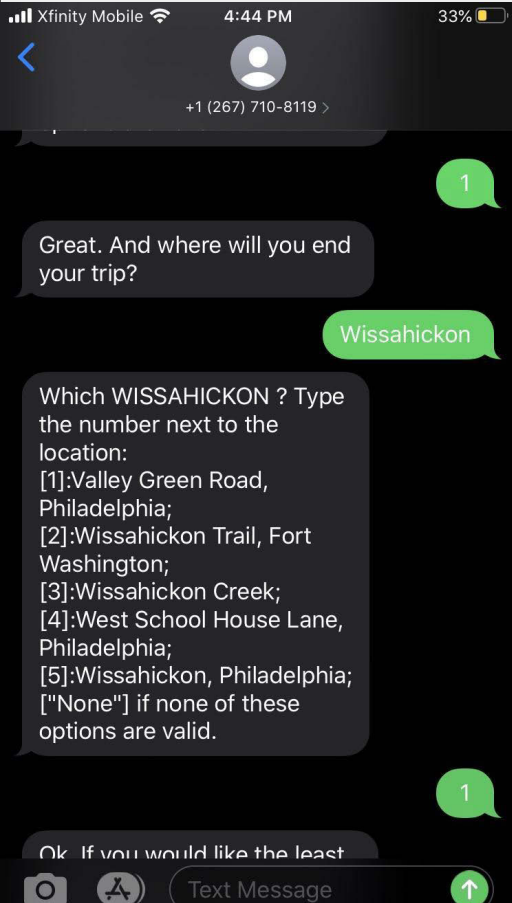
- Corey Acri
- Tim Hoenig
- Rob Goldberg

- Office of Transit, Bicycle, and Pedestrian Planning
- Office of Marketing and Commuter Services
- Office of Communications and Engagement
- GIS, Creative Services



Ruti

Wait, who's Ruti?

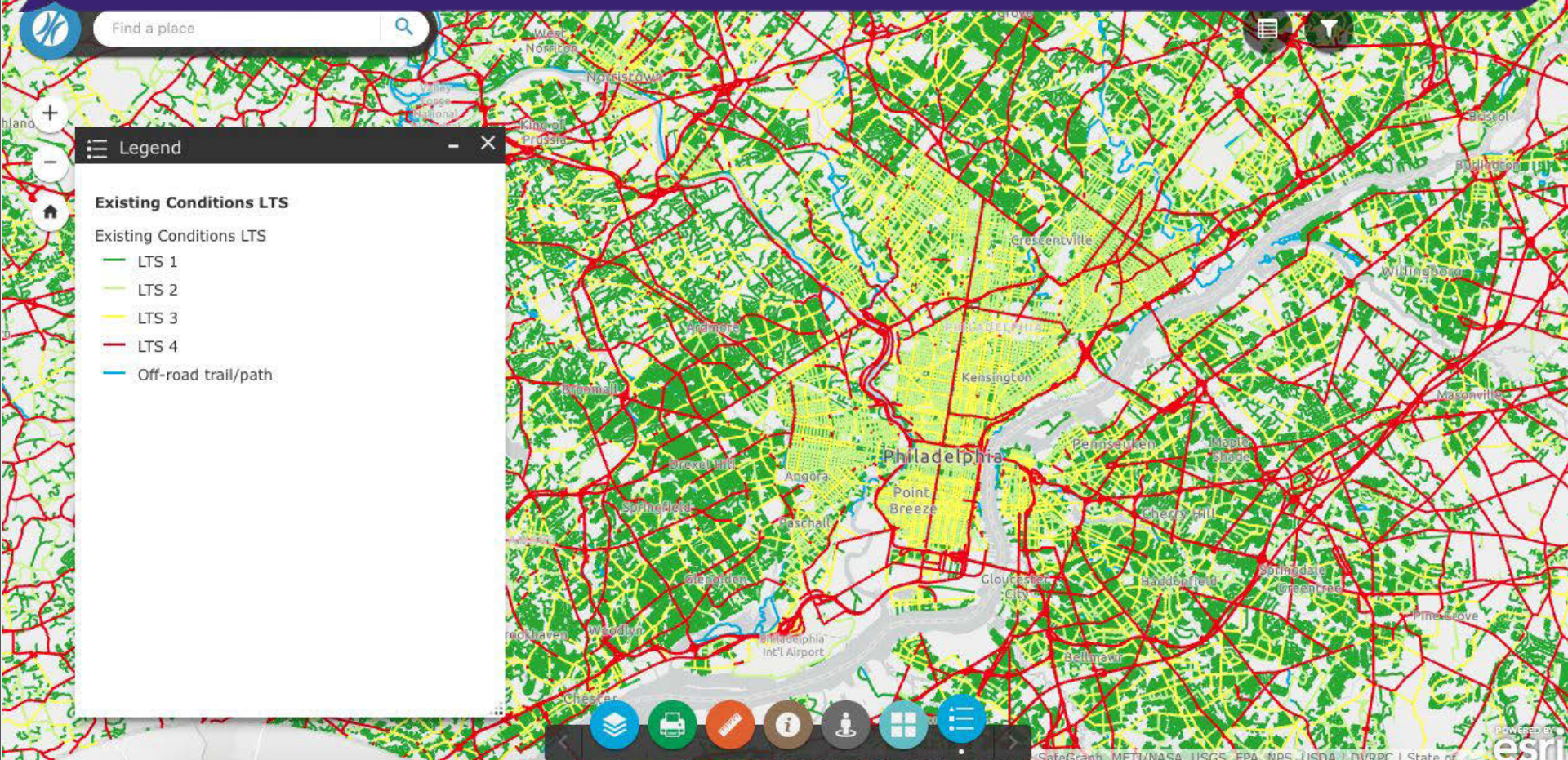


- Text messaged based
- Focus on simplicity
- Provide lower stress routes
- Audience: anyone, but also the interested and concerned



Ruti

DVRPC LTS Analysis



LTS... what's that?

LOW STRESS TOLERANCE

HIGH STRESS TOLERANCE



Interested but Concerned (51-56%)

Somewhat Confident (5-9%)

Highly Confident (4-7%)

Children

Adults

LTS 1

LTS 2

LTS 3

LTS 4

Greenways
Separated bike lanes
Low speed/volume streets

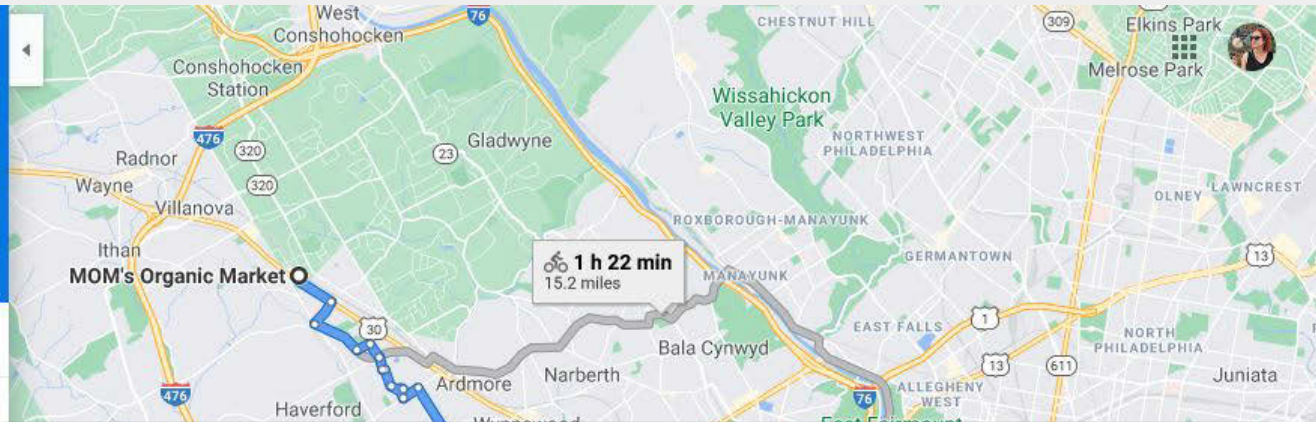
Bike lanes
Moderate speed/volume streets

Climbing lanes
30mph streets
High volume streets

Fast, high volume, wide streets
No separation

MOM's Organic Market, 1149 E Lancaster Ave
 MOM's Organic Market, 34 S 11th St, Philadelphia, PA

Add destination



Send directions to your phone

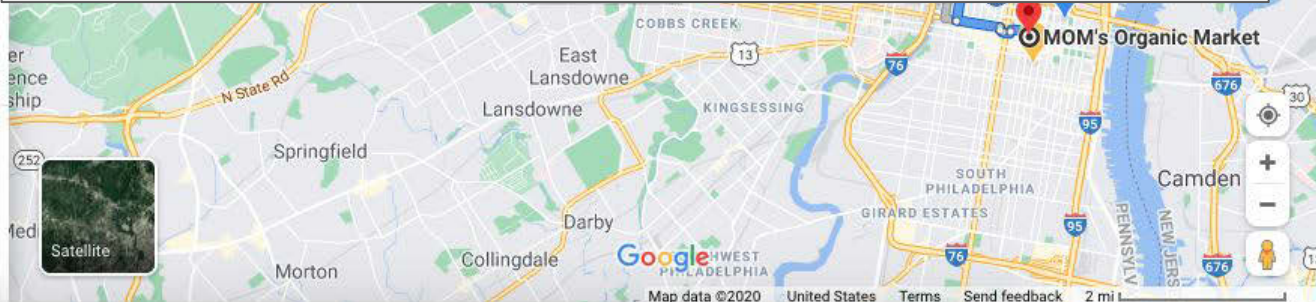
via Haverford Rd 1 h 11 min
12.4 miles
[DETAILS](#)

via Lancaster Ave 1 h 15 min
13.2 miles

via Schuylkill River Trail 1 h 22 min
15.2 miles



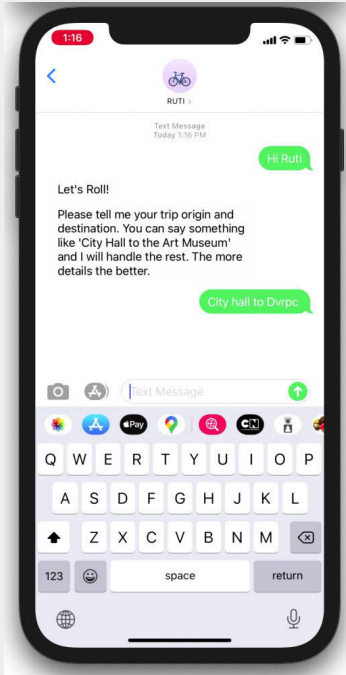
Trip Scoring = $\frac{\text{sum of (Segment LTS} \times \text{Segment distance)}}{\text{Trip distance}}$



Using Ruti

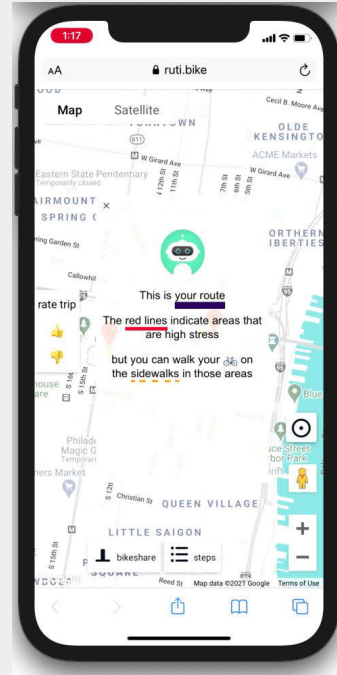
Step 1

You send Ruti a text message telling Ruti where the where you trip starts and ends.



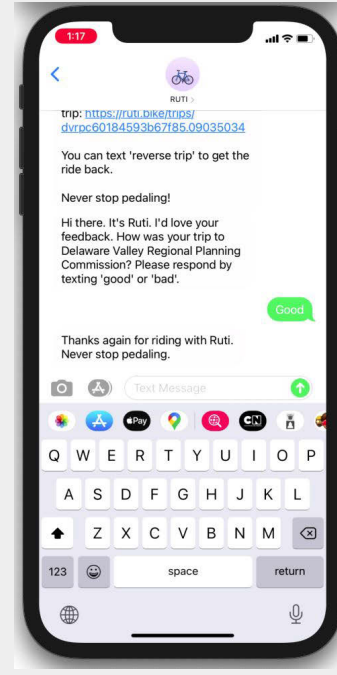
Step 2

Ruti texts you back and with step by step directions and a link to a custom map

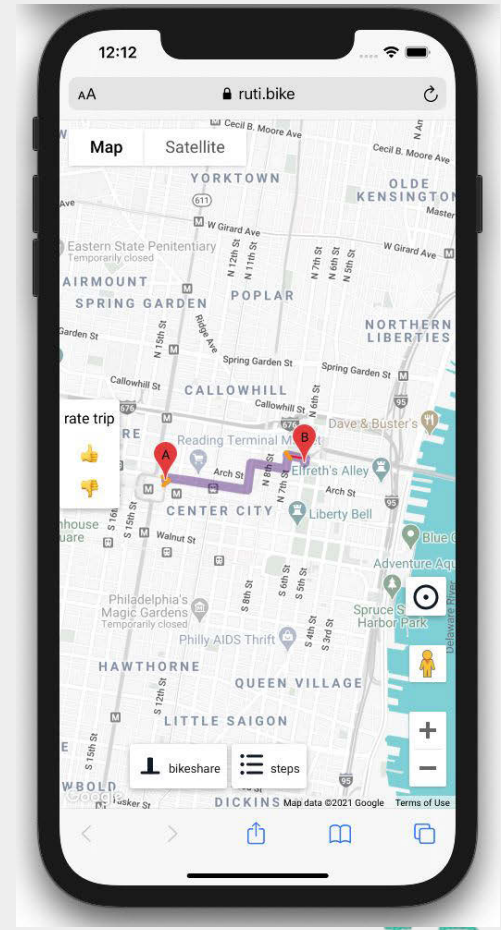
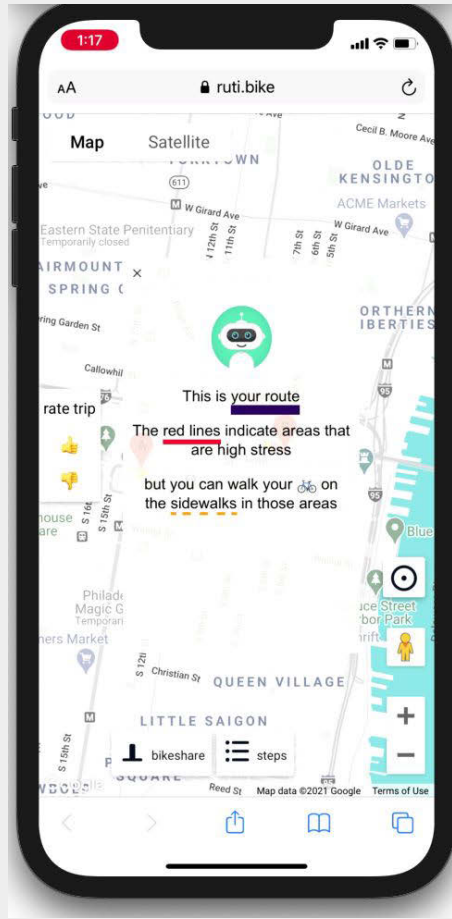
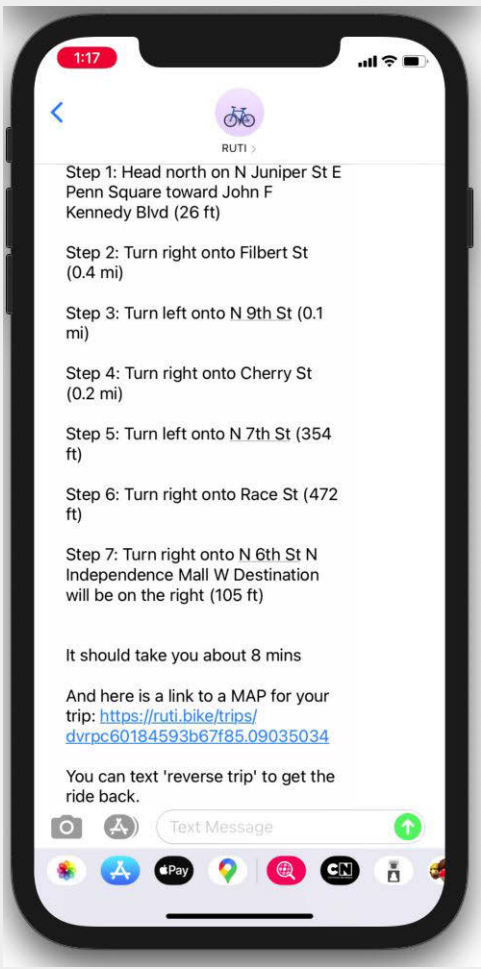


Step 3

You rate the route favorably or unfavorably



Ruti



Gathering Feedback - User Testing

- Met in September with planning partners
- Participants tests the service before using Lookback
- Heard lots of feedback on how it worked, features, bugs, etc.



Gathering Feedback - Focus Groups

FOCUS GROUPS!

- Three groups with people who are less experienced riders
- Goal of identifying strong marketing messages and “call to action” to use
- Individuals will be directed to fill out an interest form to ensure that we’re talking to the “right” people



Project Timeline

Fall 2020 → Recruit for and conduct focus group sessions
Soft launch/app available for use

Spring 2021 ⇒ Full roll out of the app

Summer/Fall 2021 ⇌ Decide on Ruti 2.0 and any next steps or further investment



How You Can Help Make Ruti a Success

- Promote focus group recruitment
- Share information on any other groups that might be interested in promoting Ruti or getting the word out about the focus groups
- Help share the news about Ruti when it rolls out in the spring



Ruti ... a bike route planning tool

Cassidy Boulan
cboulan@dvrpc.org





The Philadelphia Transit Plan

A Vision for 2045



RTC Presentation
March 09, 2021



City of
Philadelphia



What is in this plan?

- Why Transit Matters
- Policy Platform
- Bus Corridors
- Better Trolleys and Regional Rail





Our Vision:

A City Connected By Transit



Why Transit Matters

- Transit Improves Equity
 - Residents of color spend an average of 12 minutes per day longer than White residents getting to and from work
 - Transit is a tool to addressing health inequities
- Transit Makes Philadelphia Competitive and Will Help Us Recover
 - Our transit infrastructure is a competitive advantage
 - Investing in transit creates jobs and reduces congestion
- Transit is Critical to Tackling Climate Change
 - Every possible trip in the city must shift to public transit, walking, or biking.

SEPTA serves diverse riders



57 percent
Of riders are persons of color and/or Hispanic



47 percent
Of riders make less than \$37,000 per year



61 percent
Of riders are female

Source: SEPTA 2018 Customer Satisfaction Survey



Goals and Select Strategies

Goals

- **Transit for Safety, Reliability, and Cleanliness**
- **Transit for the Environment**
- **Transit for an Equitable & Just Philadelphia**
- **Transit for Today's Challenges**
- **Transit for the Future**

Transit for Safety, Reliability, and Cleanliness

Speed up buses on priority corridors

Enhance cleanliness and safety on vehicles at stations

Improve bus stop infrastructure, such as shelters and lighting

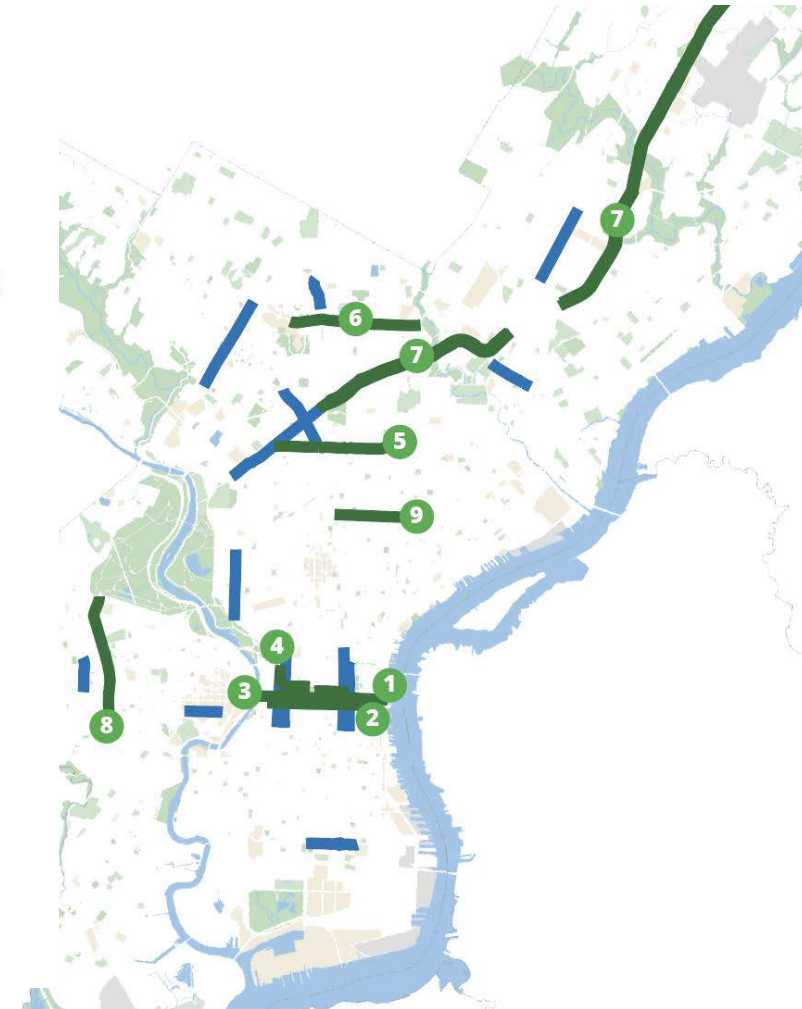
Final Corridor List

Tier 1 corridors for near-term implementation:

1. East Market Street
2. Chestnut St / Walnut St
3. Market Street & JFK Boulevard
4. 20th Street
5. Erie Avenue
6. Olney Avenue
7. Roosevelt Boulevard
8. 52nd Street
9. Lehigh Avenue

Tier 2 corridors for longer-term implementation:

10. 19th Street
11. 7th/8th Street
12. Spruce Street (40th - 33rd)
13. 56th Street
14. 29th Street
15. Germantown Avenue
16. Cheltenham Avenue
17. Arrott Street
18. Old York Road
19. Oregon Avenue
20. Castor Avenue
21. Hunting Park Avenue

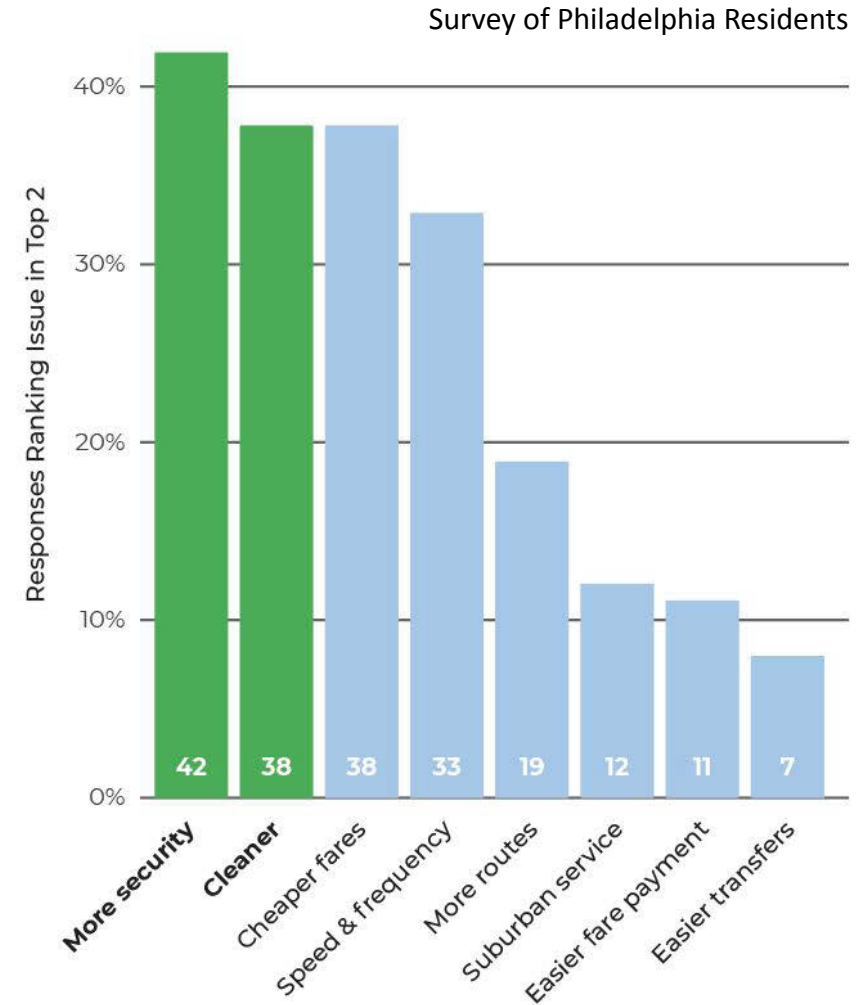


Transit for Safety, Reliability, and Cleanliness

Speed up buses on priority corridors

Enhance cleanliness and safety on vehicles at stations

Improve bus stop infrastructure, such as shelters and lighting



Transit for Safety, Reliability, and Cleanliness

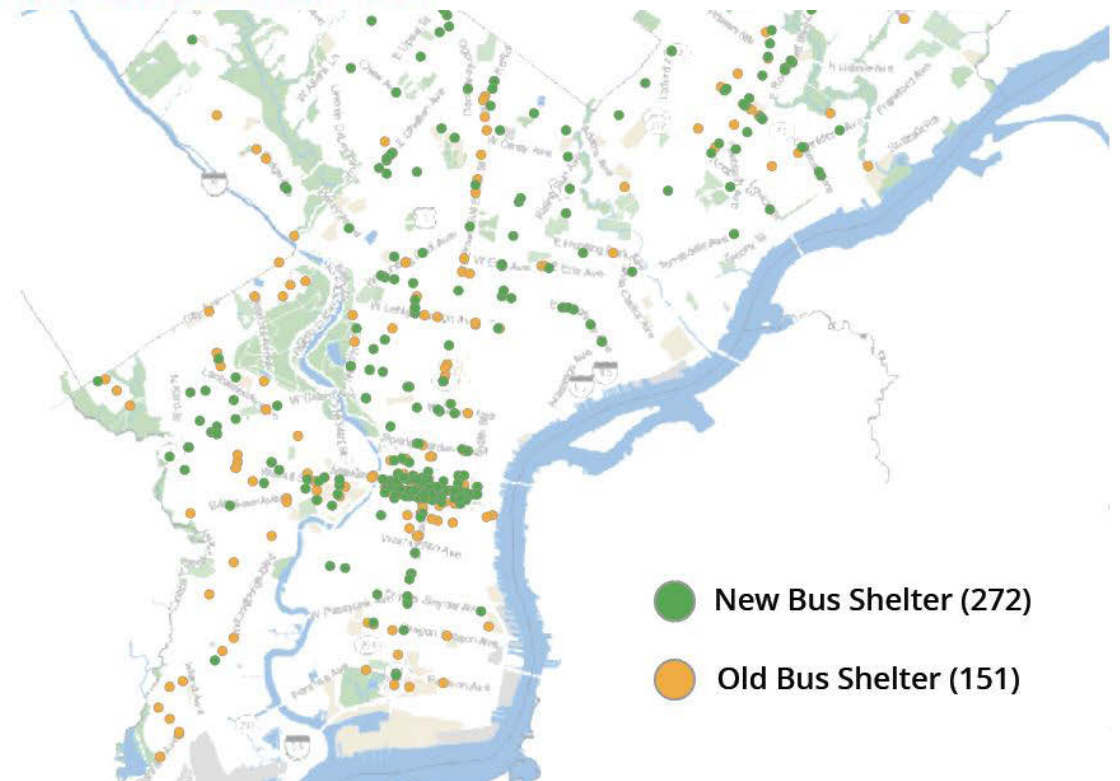
Speed up buses on priority corridors

Enhance cleanliness and safety on vehicles at stations

Improve bus stop infrastructure, such as shelters and lighting

INCREASE THE NUMBER OF RIDERS SERVED BY BUS SHELTERS FROM 32% TO 40%

While also replacing all old-style bus shelters and growing the total to 600 BUS SHELTERS

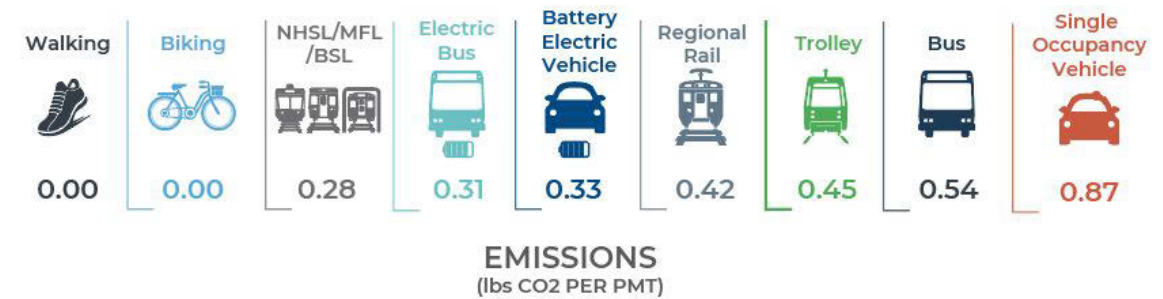


Transit for the Environment

Shift car trips to walking, biking, and transit

Adopt electric buses when the technology is ready

Transit, Walking, and Biking Reduce our Carbon Emissions³



Transit for an Equitable & Just Philadelphia

Low-income fare pass

Frequent weekend bus service

Full ADA Accessibility on MFL, BSL,
PATCO



Transit for the Future

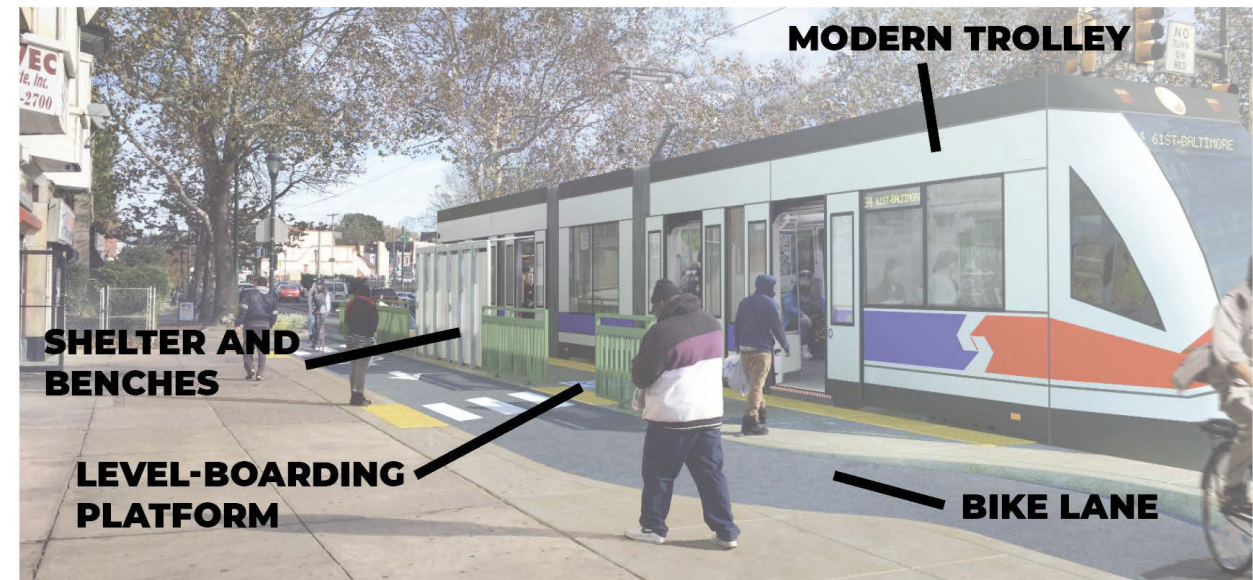
Work with regional partners on sustainable funding

Modernize the trolley fleet

Reimagine Regional Rail for the future of work

Expand High Capacity Transit

Rendering of Modern Trolley Station (DVRPC Modern Trolley Station Design Guide)



Transit for Today's Challenges

Implement bus priority corridors

Partner on Bus Network Redesign

Support recovery from pandemic

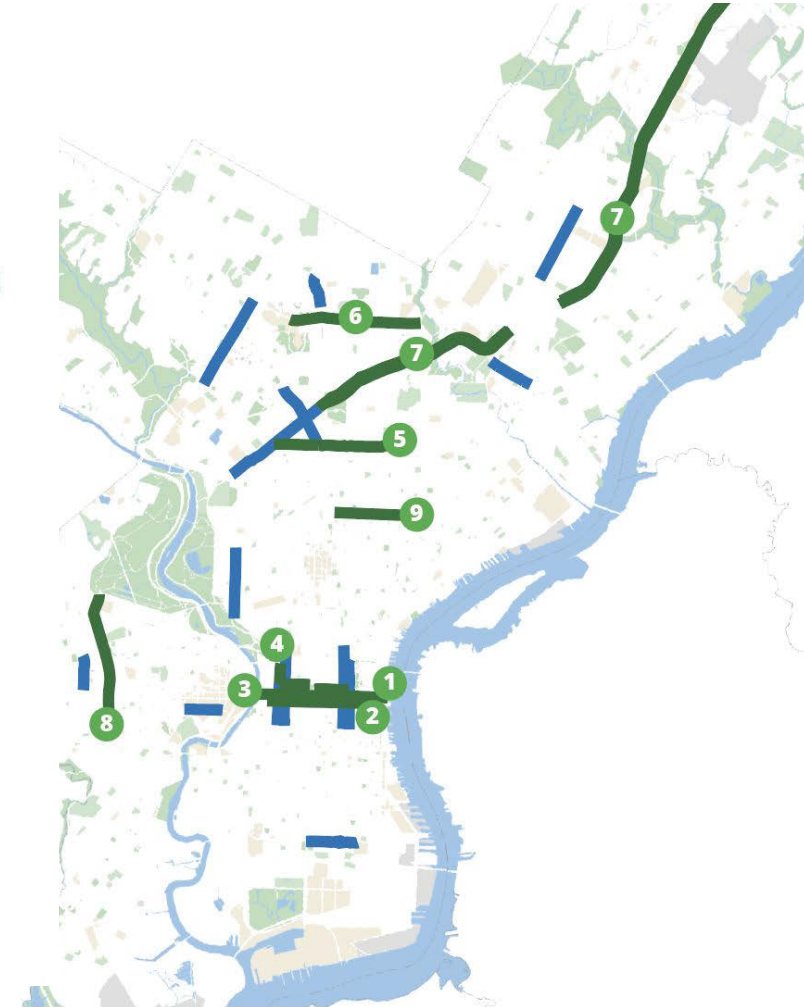
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Tier 2 corridors for longer-term implementation:

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Transit for Today's Challenges

Implement bus priority corridors

Partner on Bus Network Redesign

Support recovery from pandemic

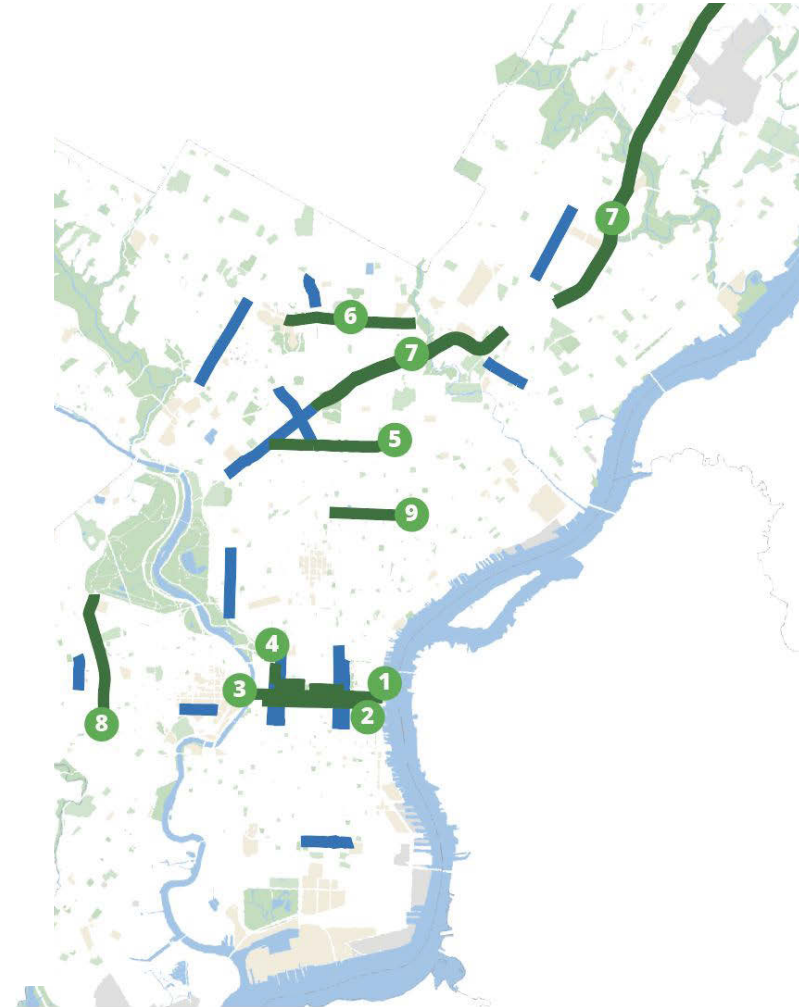
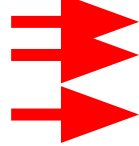
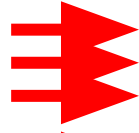
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From Network Priorities to Corridor Design

- **19th and 20th Complete Streets Corridor Study**
- **Defining the Corridor**
- **Cartway Constraints and Considerations**
- **Convening the Stakeholders**
- **Stakeholder Needs and Concerns**
- **Near-Term Tweaks and Long-Term Re-Imagining**

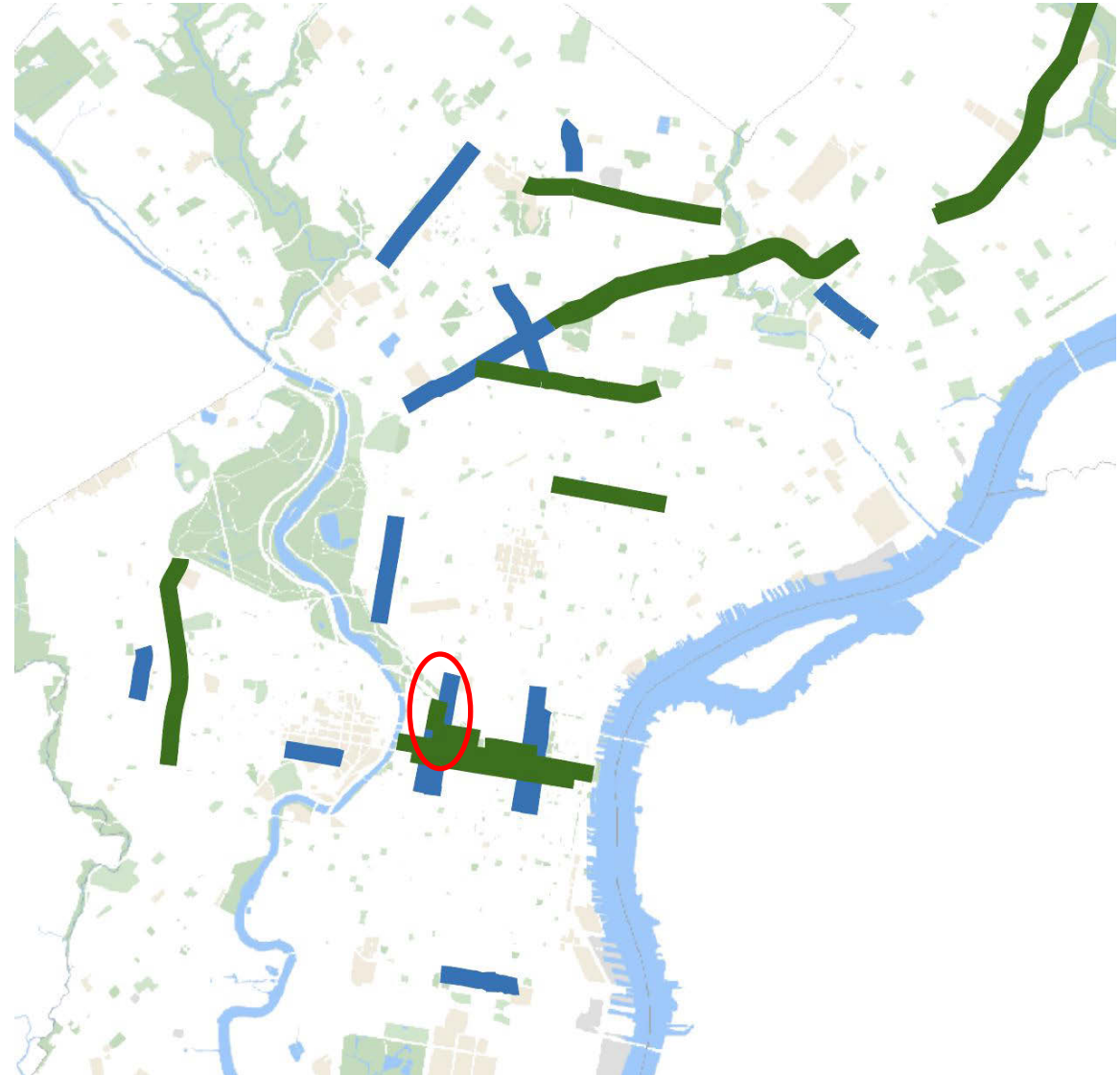
19th and 20th Complete Streets Corridor Study

**20th Street (Tier 1) +
19th Street (Tier 2)**

Complementary north-south
pairing

Market to Spring Garden

Balancing transit priority
with high-quality bike
network and institutional
needs

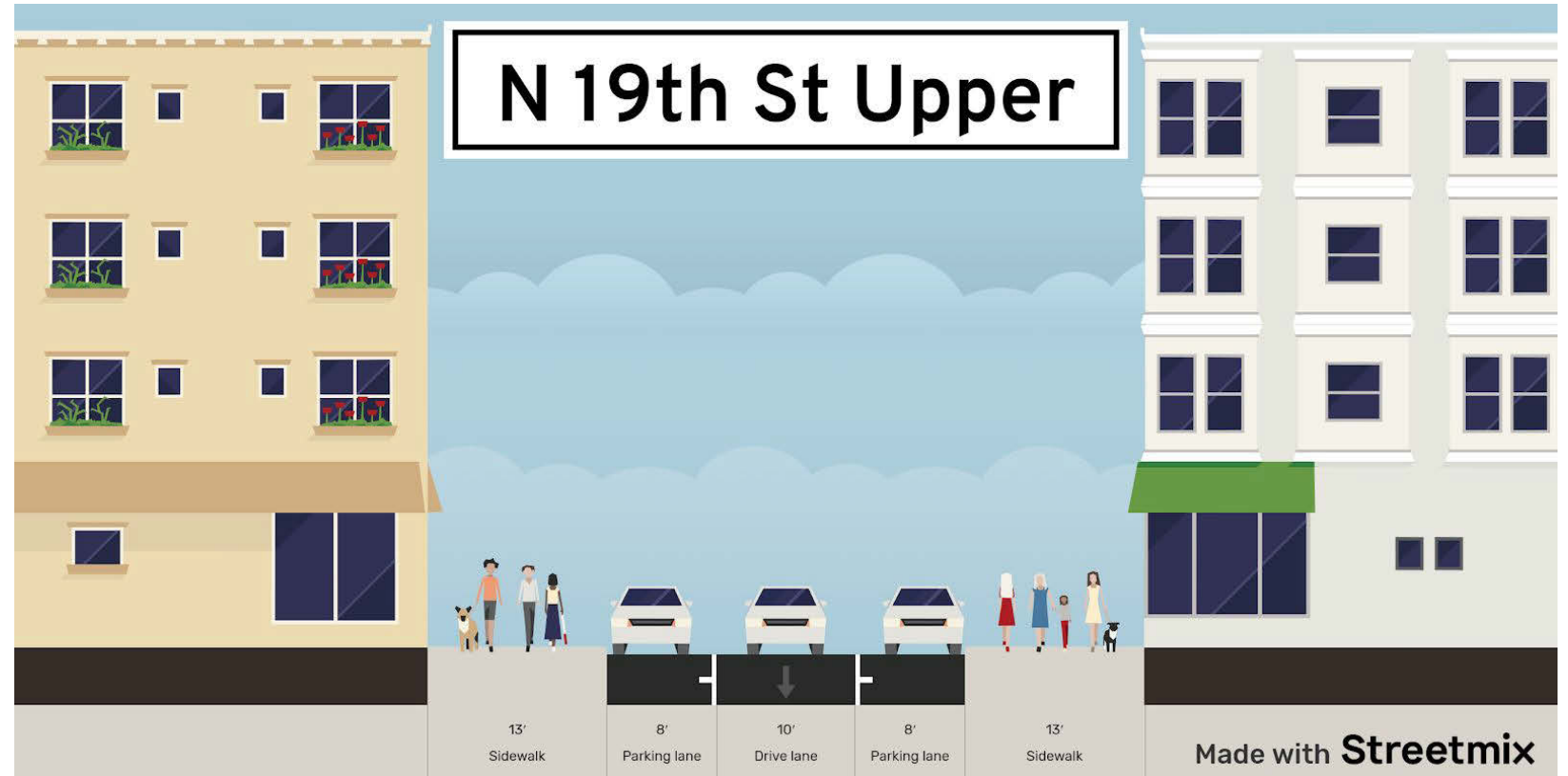


Cartway Constraints and Considerations

Limited width on 19th
and upper 20th

Need to reserve
space on 20th for a
two-way bike lane

Parking demand and
local interest in
preservation of
on-street parking



Convening the Stakeholders

The Barnes Foundation

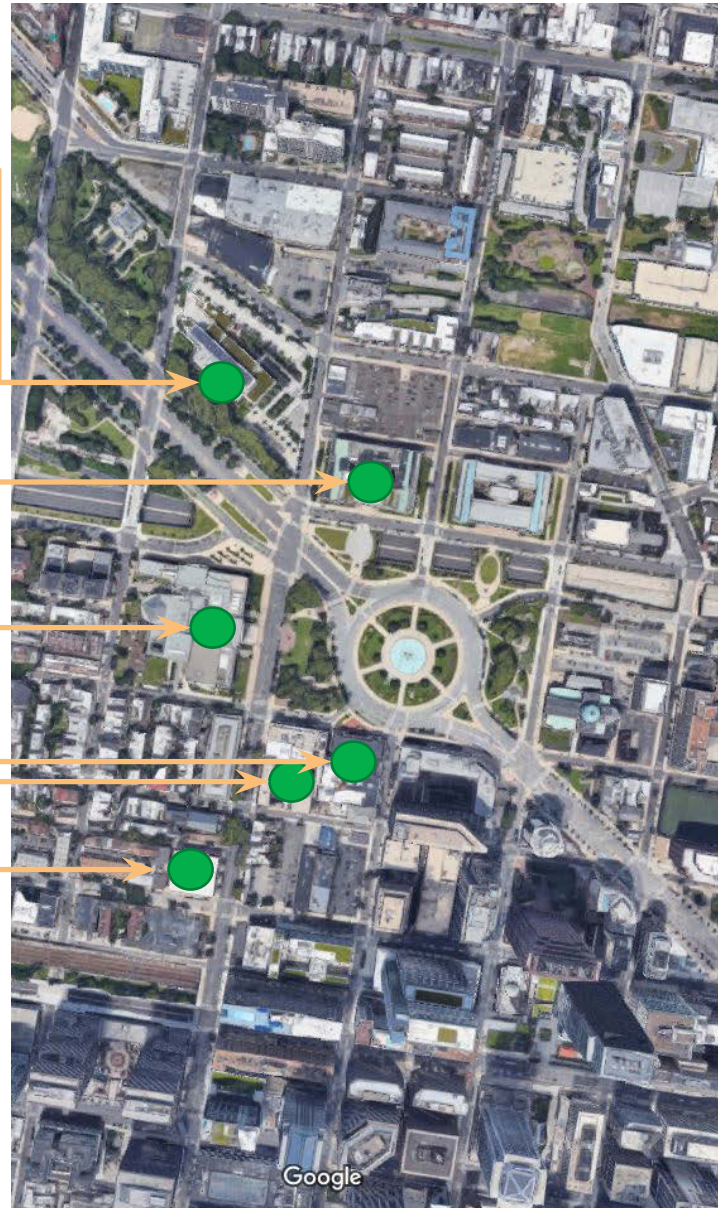
Philadelphia Free Library

The Franklin Institute

The Academy of Natural Sciences

Moore College of Art & Design

The Pennsylvania Horticultural Society



Additional Stakeholders

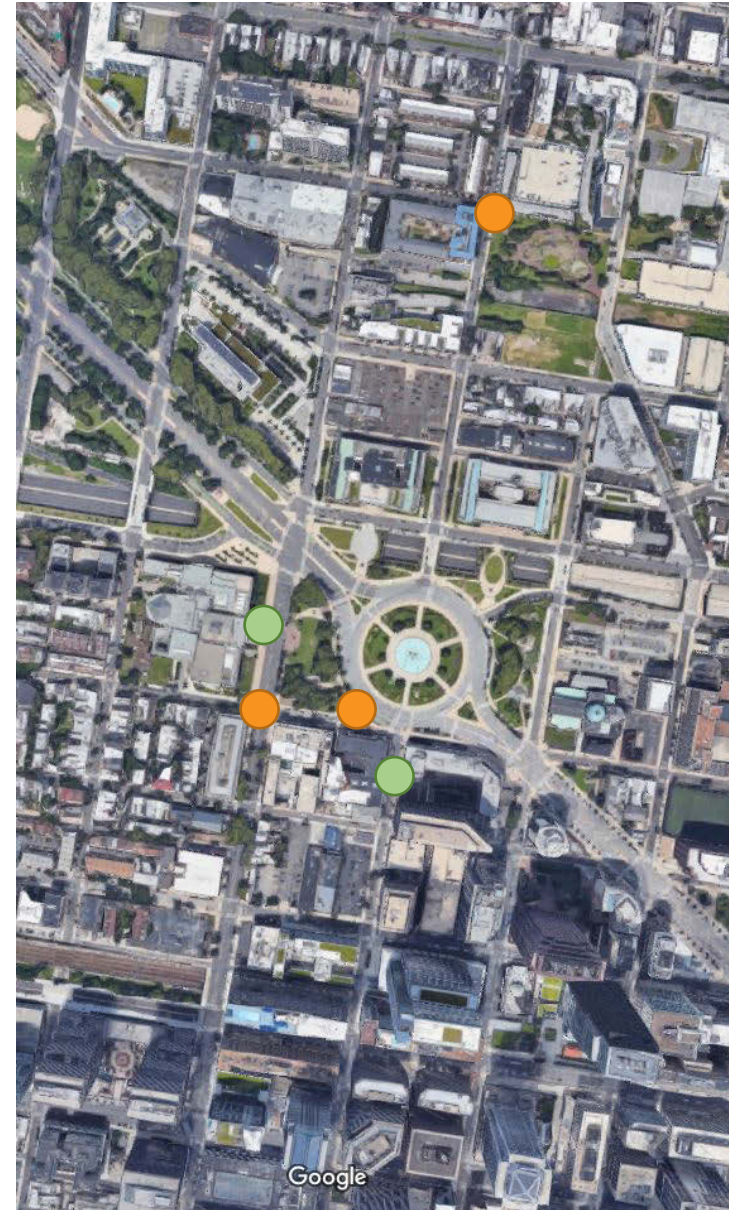
- Kennedy House
- CCD
- Fairmount RCO
- LSNA
- Russel Byers School
- SEPTA
- Bicycle Coalition
- Philadelphia Museum of Art
- The Parkway Council
- Streets Department
- Penn Center House
- CCRA
- Transit Coalition

Stakeholder Needs and Concerns

Safety for all street users, particularly at intersections

Loading at institutions – students/large groups

Legibility of Rerouting (all modes) during Parkway Events and Closures



Near-Term Tweaks and Long-Term Re-Imagining

Feasible short-term modifications

Improve transit service with minimal disruption to existing use patterns



Near-Term Tweaks and Long-Term Re-Imagining

Concept for radical redesign in long-term

Would require coordination with CBNR and broader rethinking of network





COVID-19 Impacts on Travel Trends using PM3 Travel Time Reliability and Congestion Measures



DVRPC Regional Technical Committee Meeting | March 9, 2021
Thomas K. Edinger, AICP | tedinger@dvrpc.org | 215.238.2865



Agenda



- MAP-21/FAST Act TPM
- PM3 Measure Data
- Comparing PM3 measures Year-Over-Year
 - Travel Time Reliability
 - Truck Travel Time Reliability
 - Annual Hours of Peak Period Excessive Delay
- Takeaways
- Moving Forward



MAP-21/FAST Act TPM



- **National Transportation Performance Management PM3**
 - System Performance
 - Freight Movement
 - Assessing the CMAQ Program
- **Why TPM Measures?**
 - Provide for efficient investment of Federal transportation funds
 - Focus on national transportation goals
 - Increase accountability and transparency
 - Improve decision-making through performance-based planning and programming



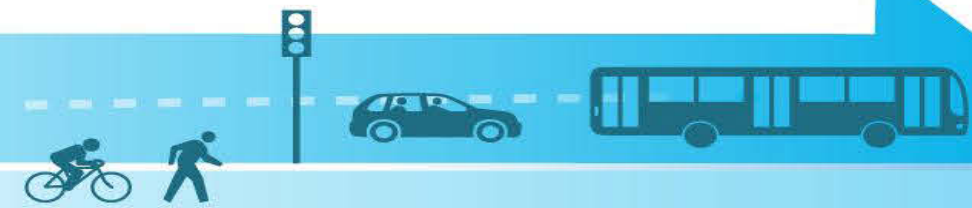
PM3 Measure Data



- **Data Sources**
 - INRIX - Speeds and travel times from anonymized GPS
 - DOT's - Highway Performance Monitoring Systems (HPMS)
 - U.S. Census and other national survey data
- **National Performance Management Research Dataset (NPMRDS)**
 - National Highway System (NHS) roadways
 - Traffic volumes, posted speed limits and other HPMS data is conflated to INRIX

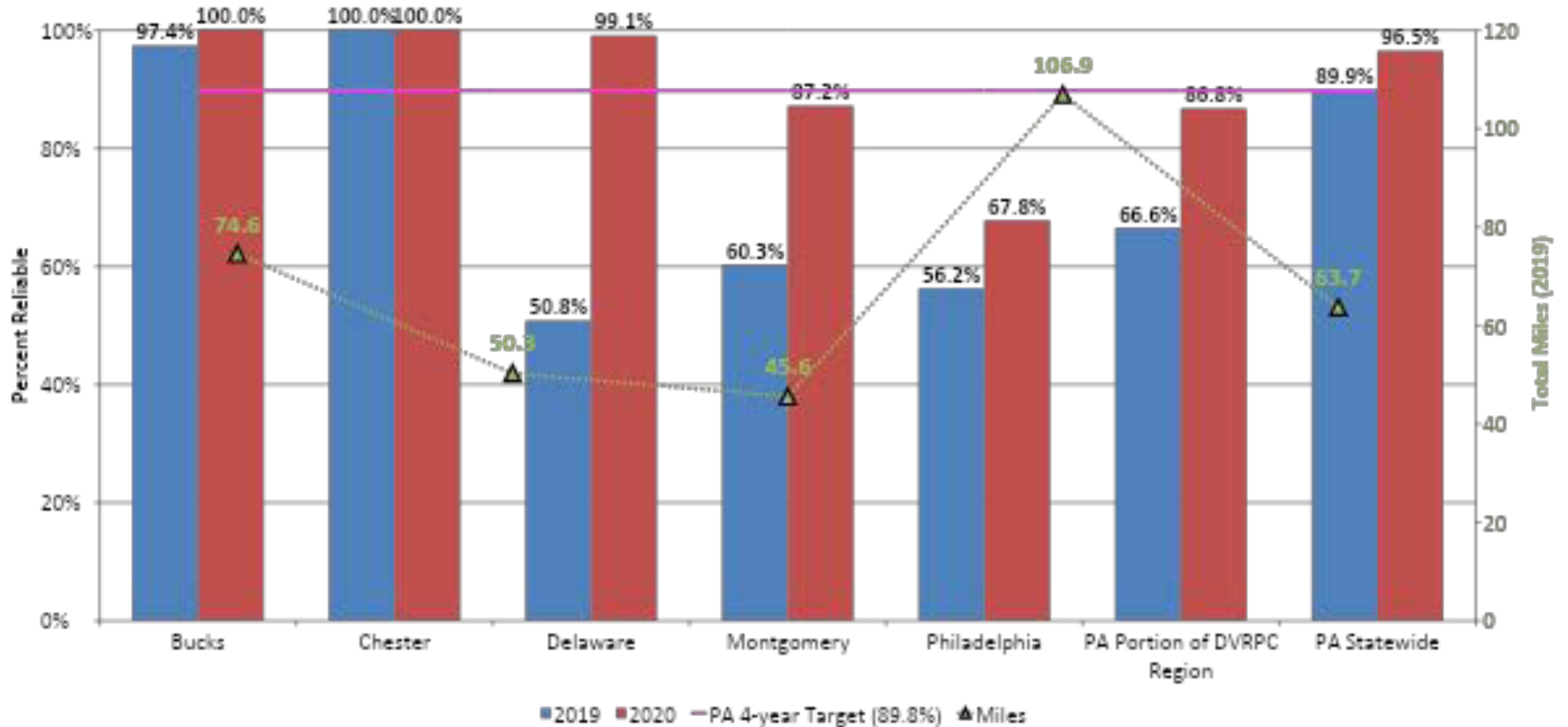


Travel Time Reliability

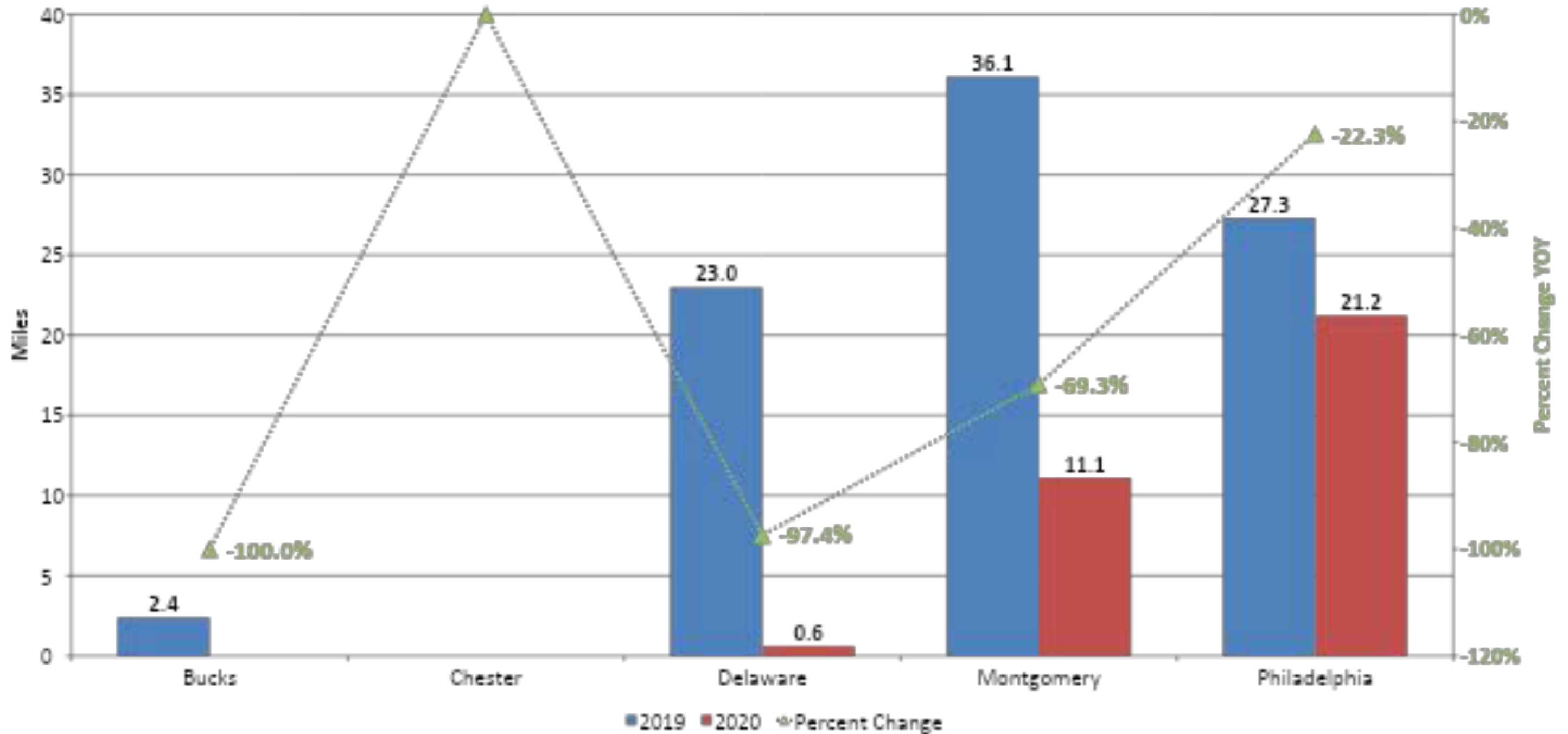


- Assesses the percent of person miles traveled that are reliable, separately for interstates and non-interstates
- Incorporates travel times, traffic volumes, road mileage, and a vehicle occupancy factor
- A Level of Travel Time Reliability (LOTTR) value is calculated which is defined as 80th percentile travel time / 50th percentile travel time
- Calculated for four time periods for the year
 - 6:00 AM – 10:00 AM, weekdays
 - 10:00 AM – 4:00 PM, weekdays
 - 4:00 PM – 8:00 PM weekdays
 - 6:00 AM – 8:00 PM, weekends
- A road segment is considered reliable if all four time periods are less than 1.50
- Overall Percent Reliability =
$$\frac{\Sigma (\text{Reliable person-miles})}{\Sigma (\text{Total person-miles})}$$

Pennsylvania — Percent Travel Time Reliability for Interstates

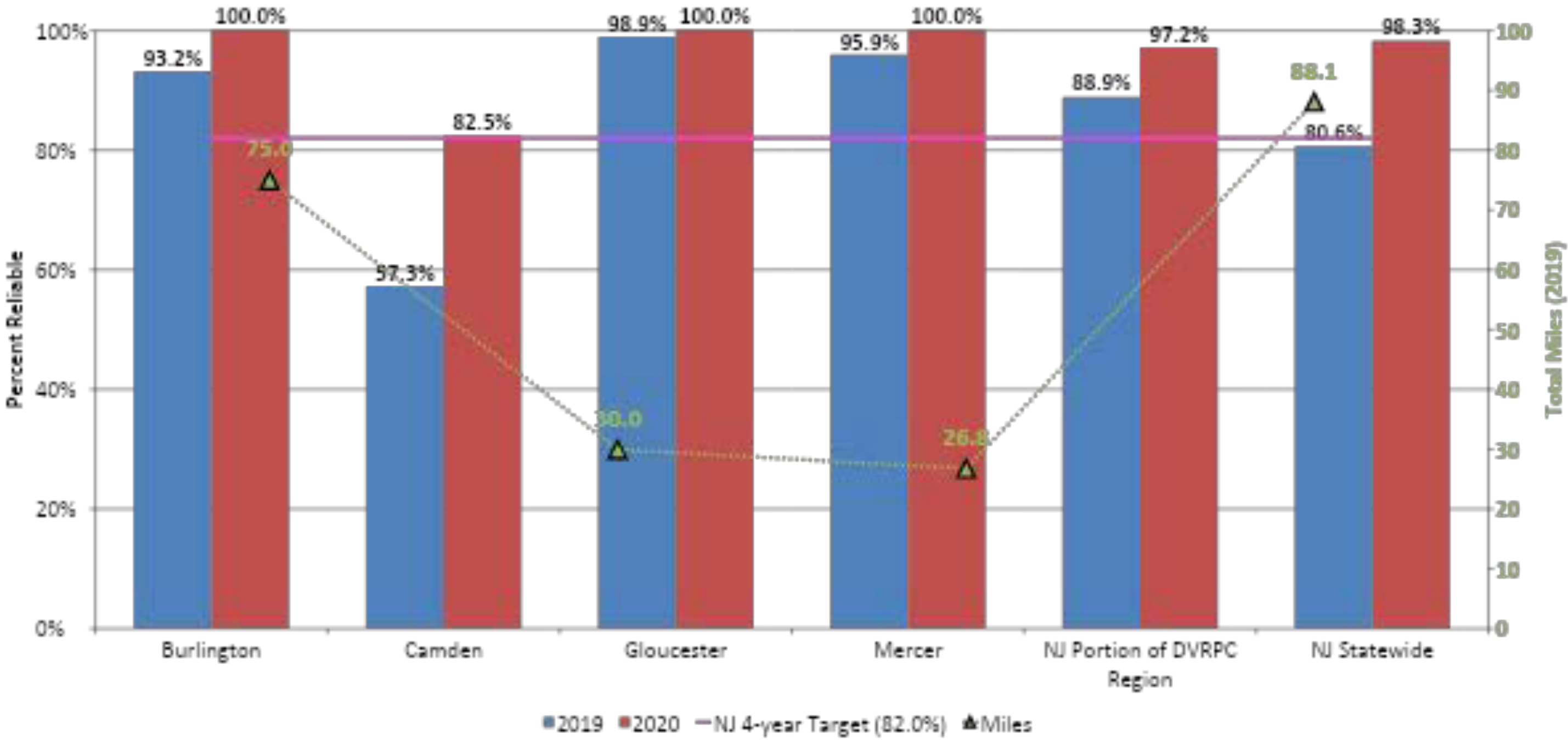


Pennsylvania — Miles of Interstate Not Reliable

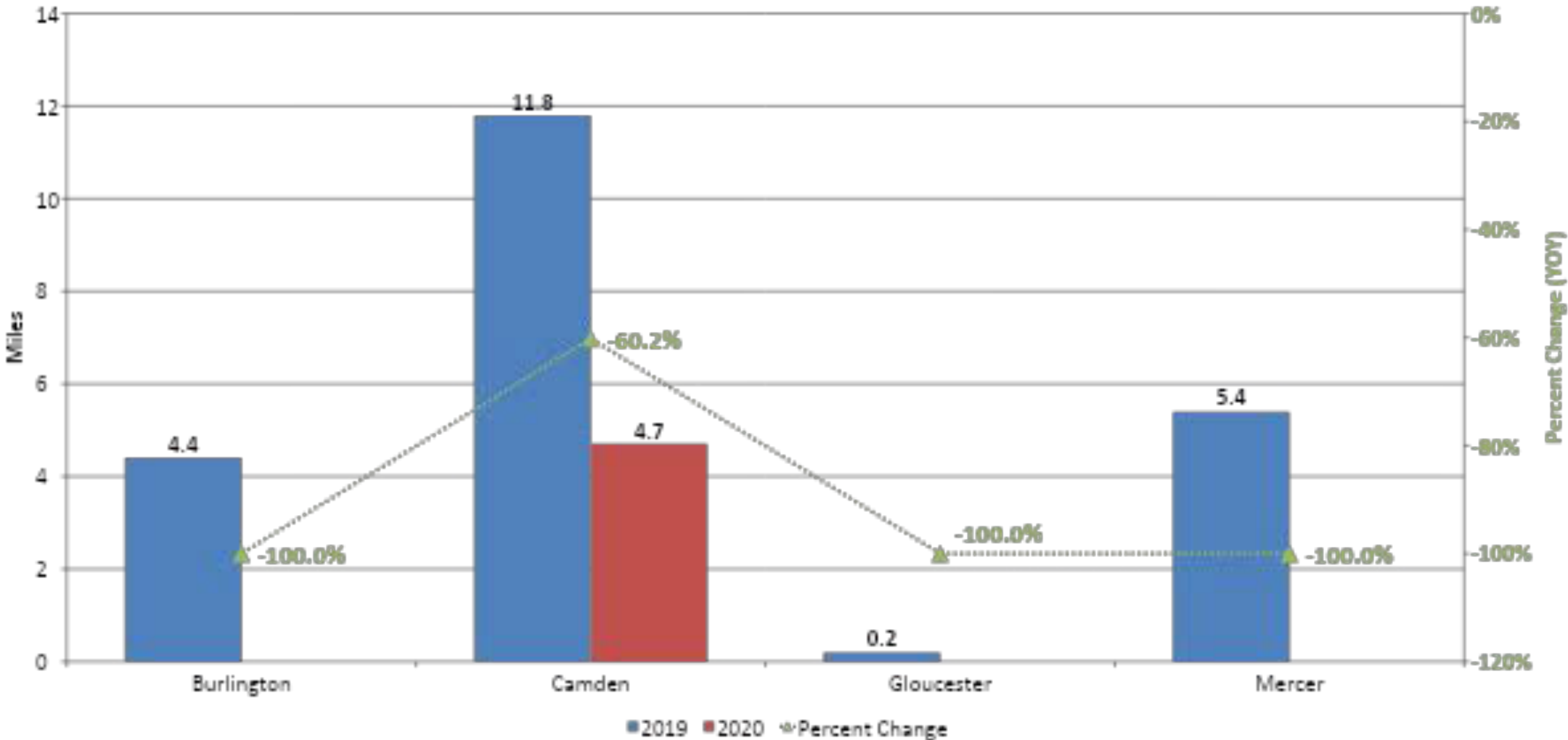


Note: not reliable is defined as an LOTTR value 1.50 or more

New Jersey — Percent Travel Time Reliability for Interstates



New Jersey — Miles of Interstate Not Reliable

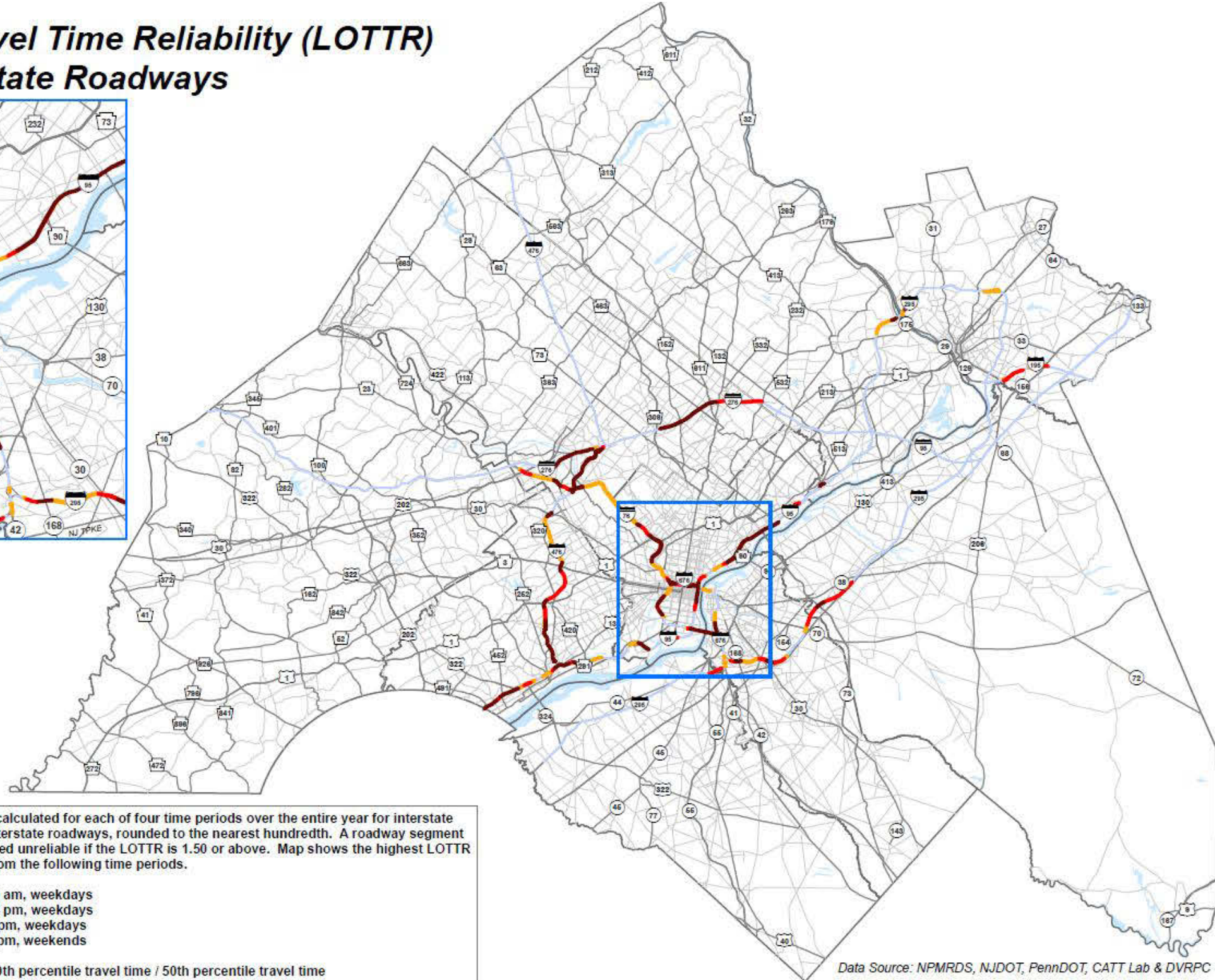


Note: not reliable is defined as an LOTTR value 1.50 or more



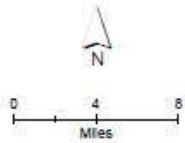
2019 Travel Time Reliability for Interstates by Road Segment

2019 - Level of Travel Time Reliability (LOTTR) Interstate Roadways



LOTTR 2019

- Greater Than 2.00 (99)
- 1.75 - 2.00 (49)
- 1.50 - 1.74 (65)
- Less Than 1.50 (559)



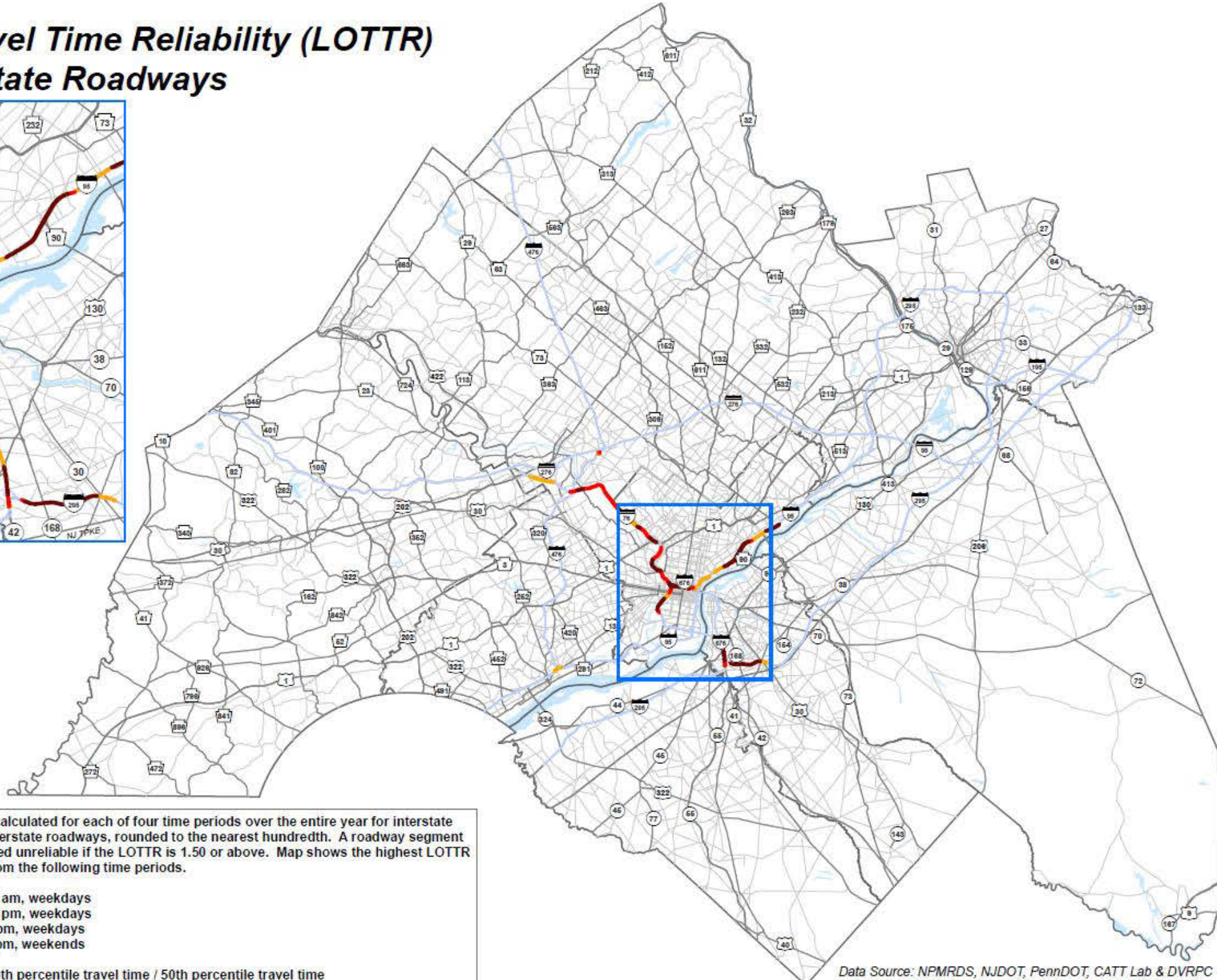
LOTTR is calculated for each of four time periods over the entire year for interstate and non-interstate roadways, rounded to the nearest hundredth. A roadway segment is considered unreliable if the LOTTR is 1.50 or above. Map shows the highest LOTTR measure from the following time periods.

- 6 am - 10 am, weekdays
- 10 am - 4 pm, weekdays
- 4 pm - 8 pm, weekdays
- 6 am - 8 pm, weekends

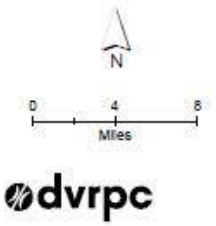
LOTTR = 80th percentile travel time / 50th percentile travel time

2020 Travel Time Reliability for Interstates by Road Segment

2020 - Level of Travel Time Reliability (LOTTR) Interstate Roadways



- LOTTR 2020**
- Greater Than 2.00 (42)
 - 1.75 - 2.00 (16)
 - 1.50 - 1.74 (28)
 - Less Than 1.50 (691)



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4. 6 am - 8 pm, weekends

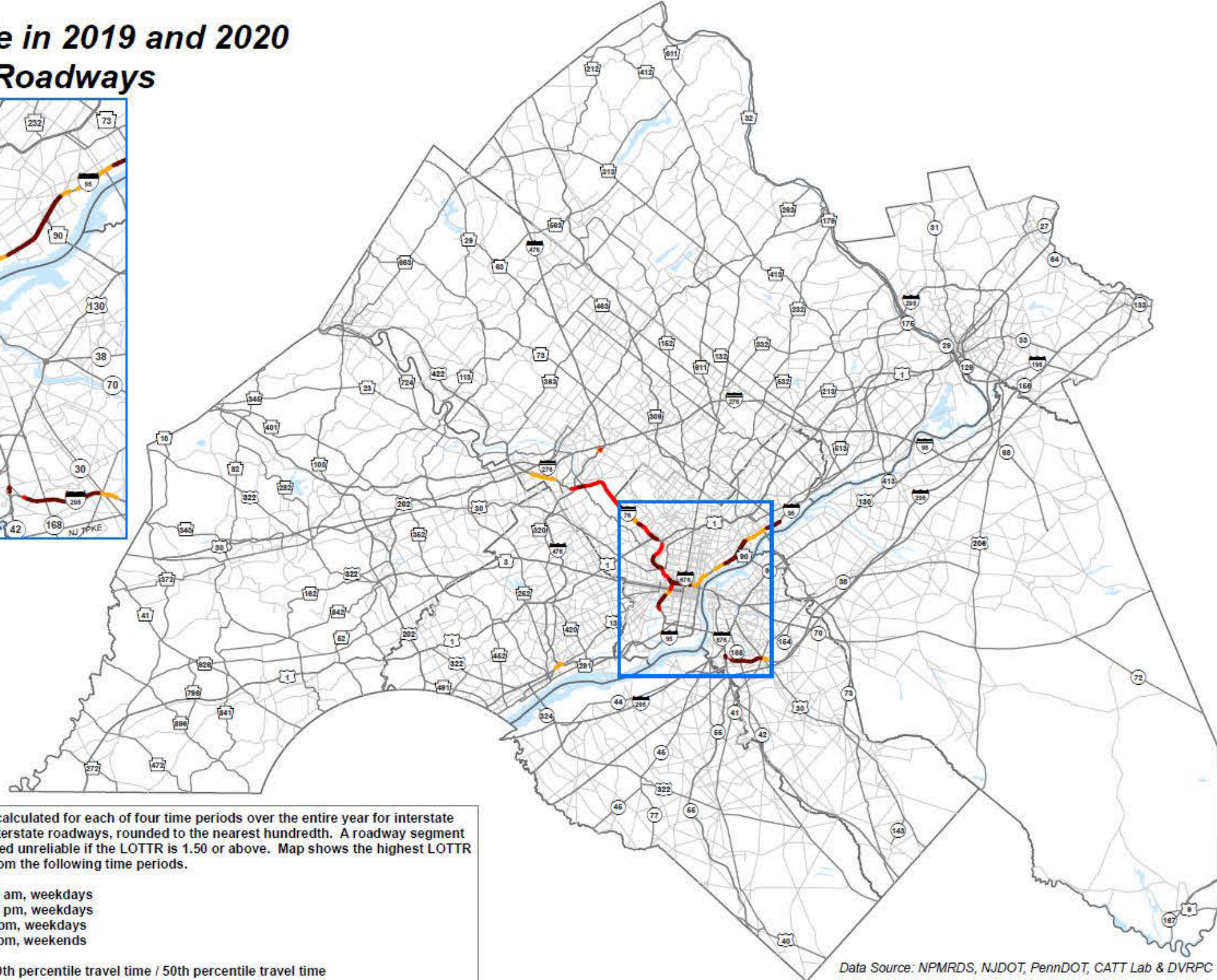
LOTTR = 80th percentile travel time / 50th percentile travel time

Data Source: NPMRDS, NJDOT, PennDOT, CATT Lab & DVRPC



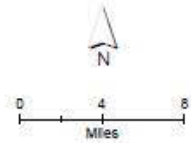
LOTTR Not Reliable in 2019 and 2020 on Interstate Roads by Road Segment

LOTTR Not Reliable in 2019 and 2020 Interstate Roadways



LOTTR 2020

- Greater Than 2.00 (38)
- 1.75 - 2.00 (12)
- 1.50 - 1.74 (20)
- Less Than 1.50 (0)

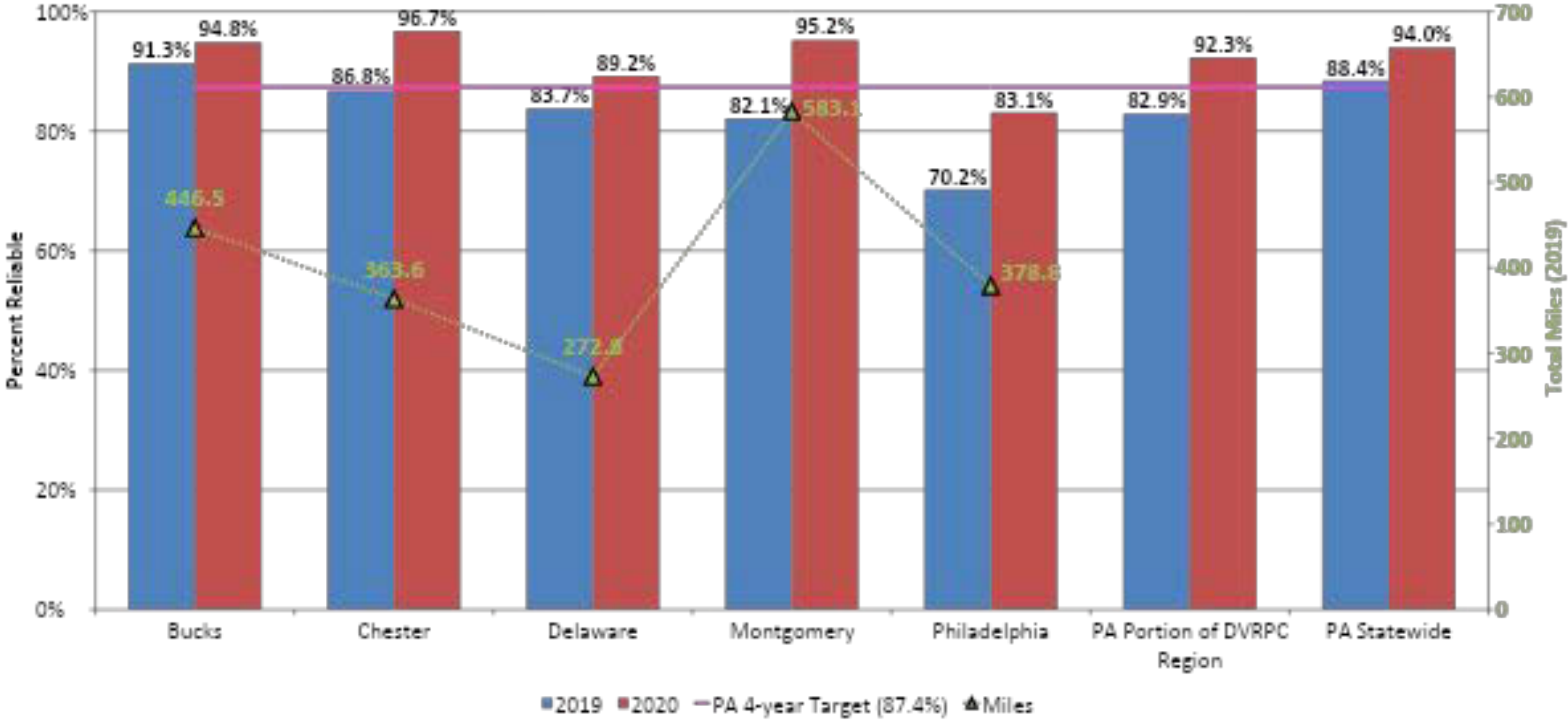


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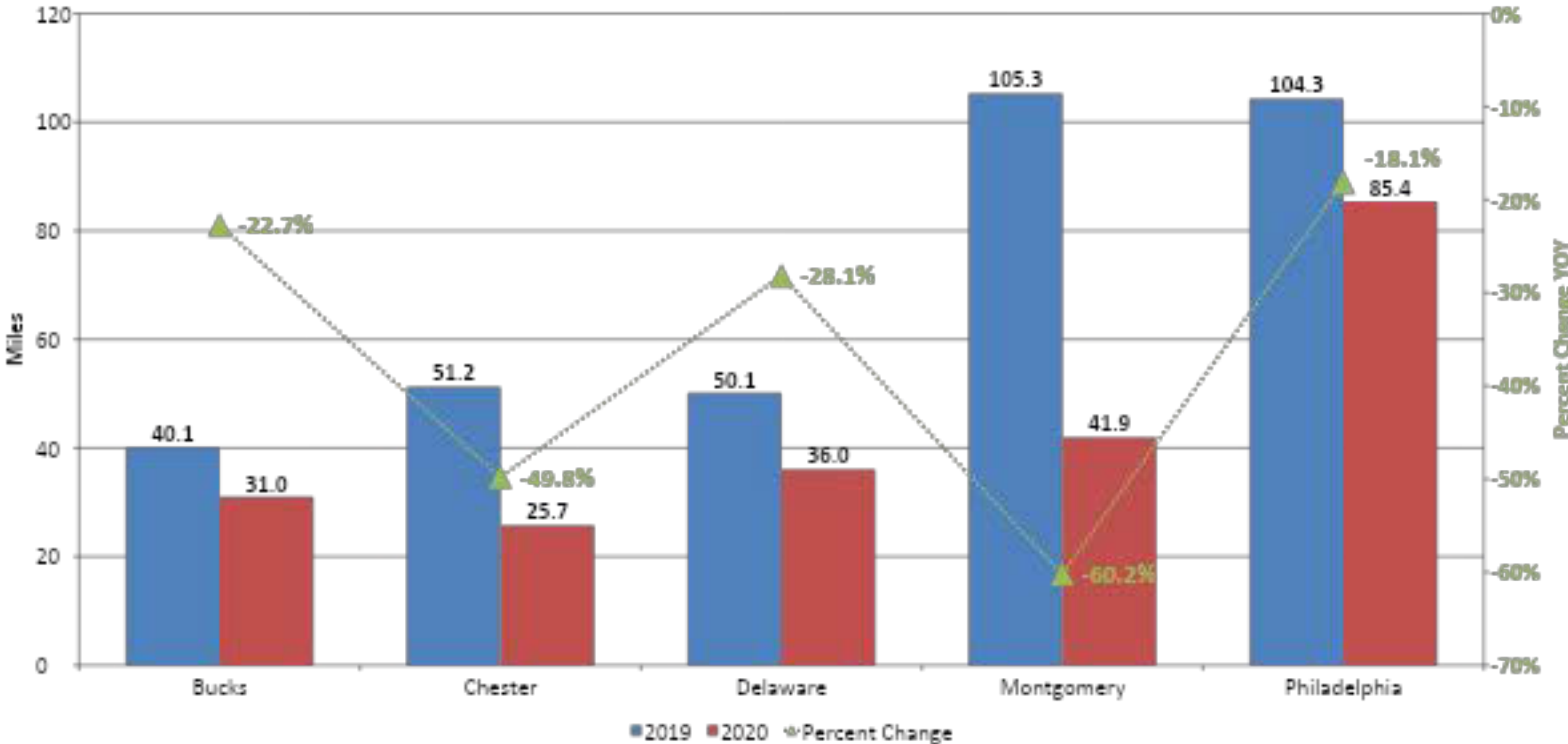
- 6 am - 10 am, weekdays
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- 4 pm - 8 pm, weekdays
- 6 am - 8 pm, weekends

LOTTR = 80th percentile travel time / 50th percentile travel time

Pennsylvania — Percent Travel Time Reliability for Non-Interstates



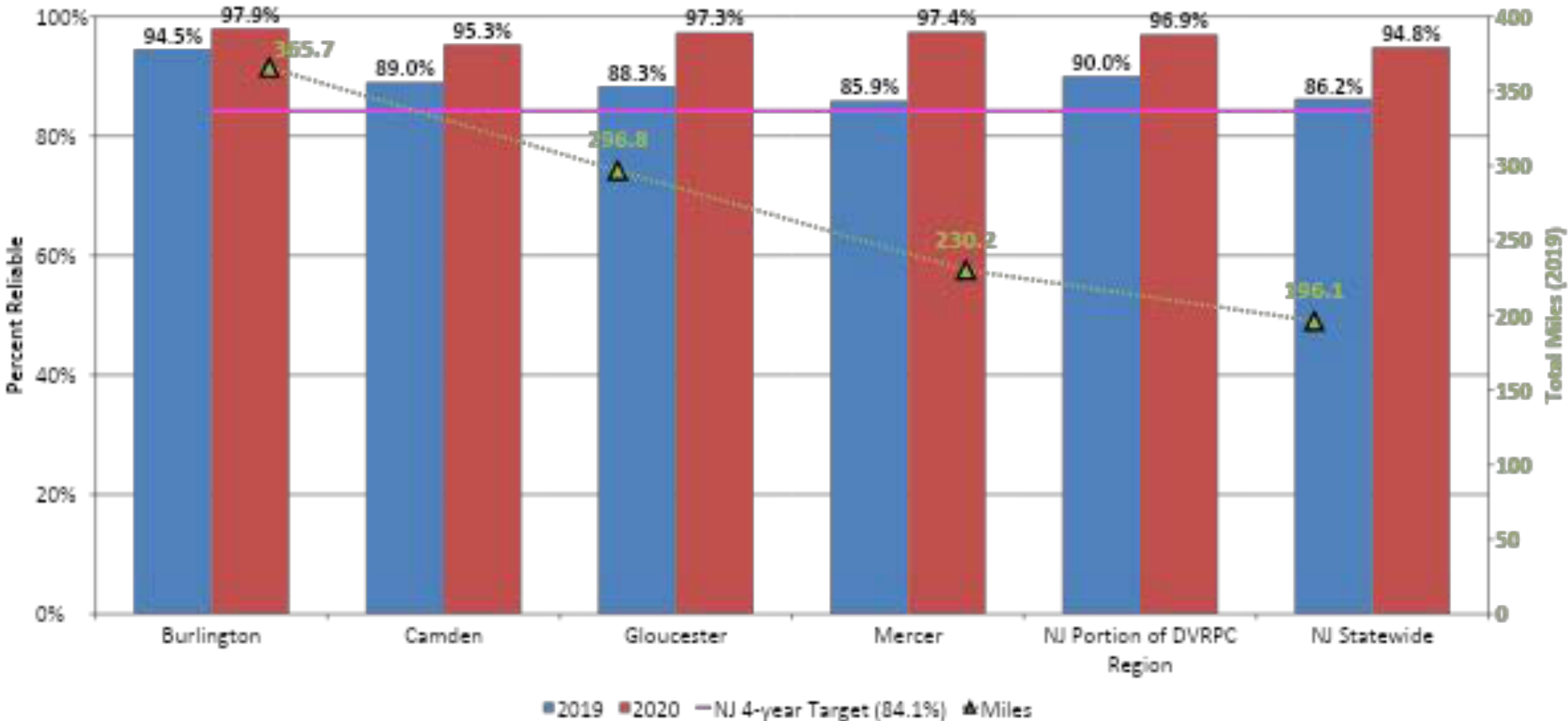
Pennsylvania — Miles of Non-Interstate Not Reliable



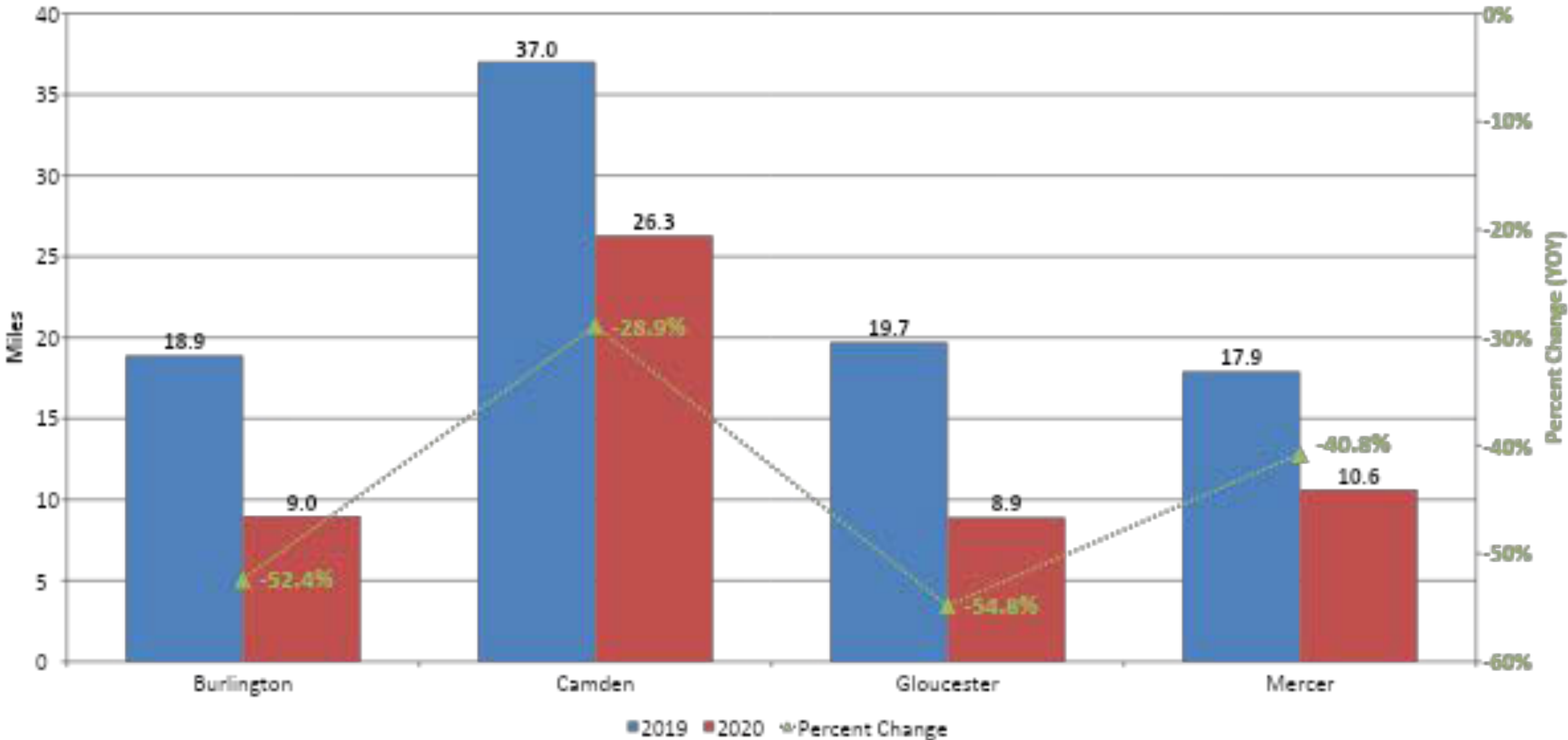
Note: not reliable is defined as an LOTTR value 1.50 or more



New Jersey — Percent Travel Time Reliability for Non-Interstates



New Jersey — Miles of Non-Interstate Not Reliable

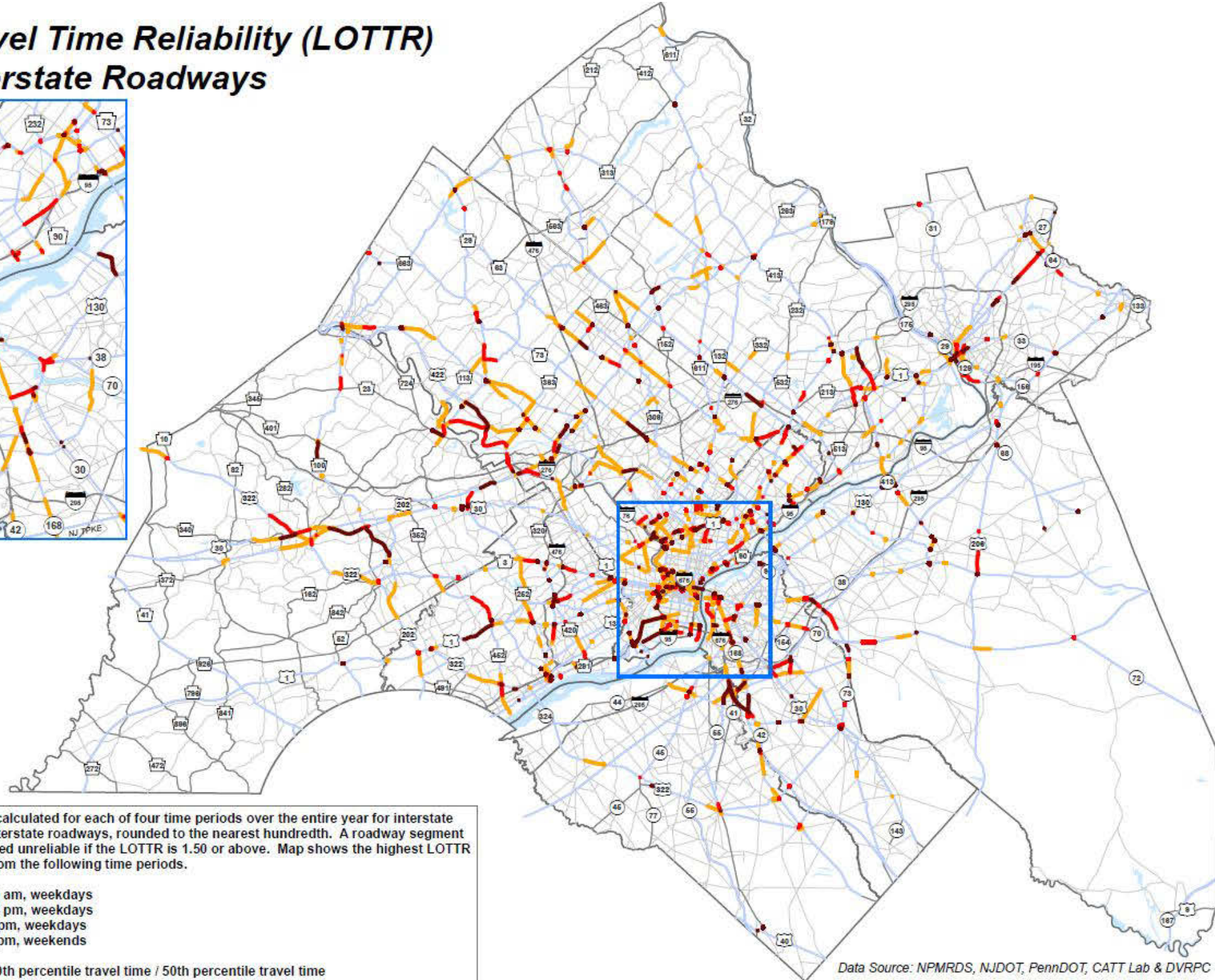


Note: not reliable is defined as an LOTTR value 1.50 or more



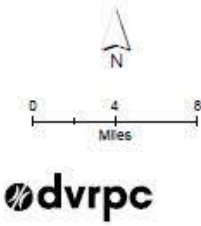
2019 Travel Time Reliability for Non-Interstates by Road Segment

2019 - Level of Travel Time Reliability (LOTTR) Non-Interstate Roadways



LOTTR 2019

- Greater Than 2.00 (372)
- 1.75 - 2.00 (450)
- 1.50 - 1.74 (923)
- Less Than 1.50 (3,948)



LOTTR is calculated for each of four time periods over the entire year for interstate and non-interstate roadways, rounded to the nearest hundredth. A roadway segment is considered unreliable if the LOTTR is 1.50 or above. Map shows the highest LOTTR measure from the following time periods.

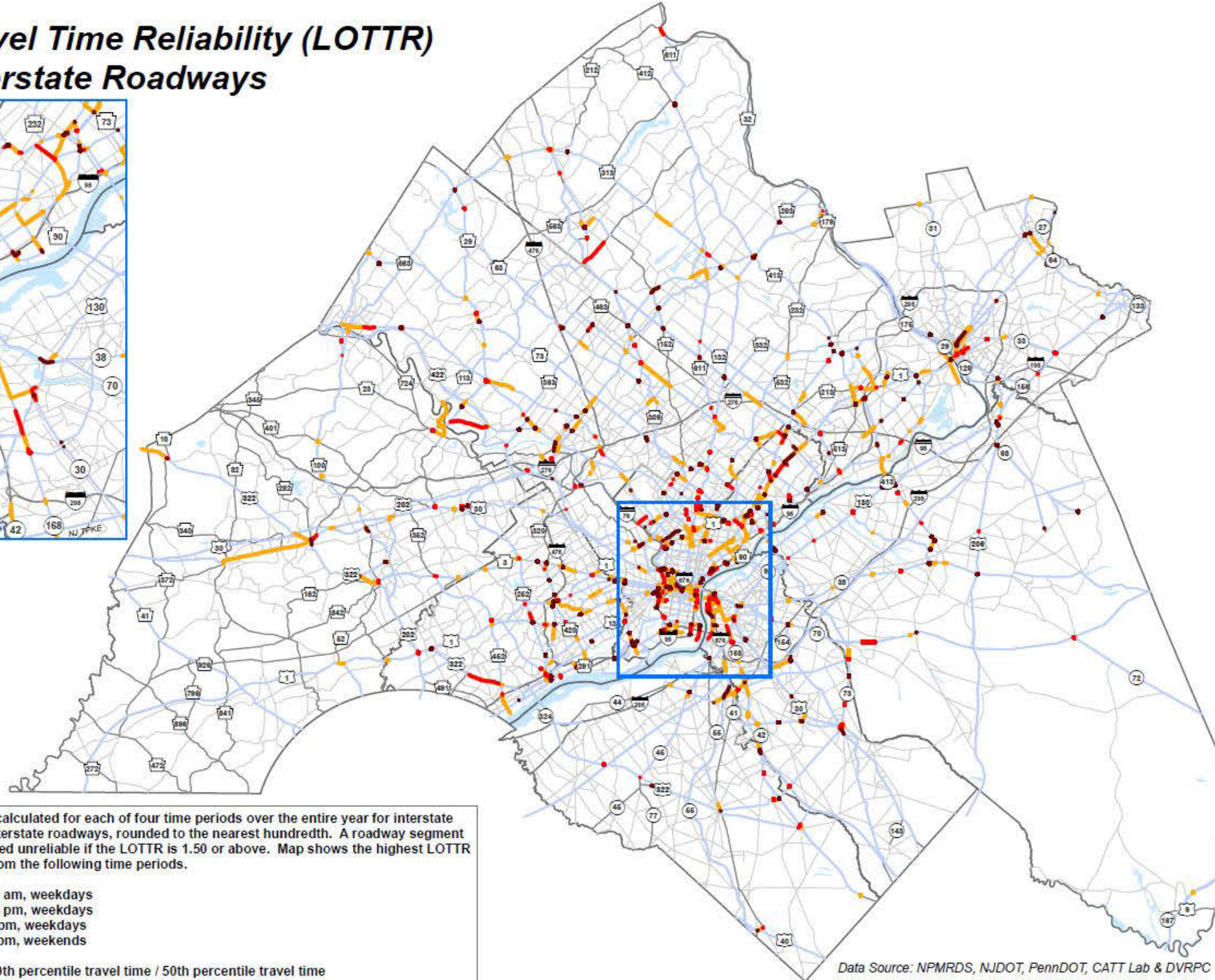
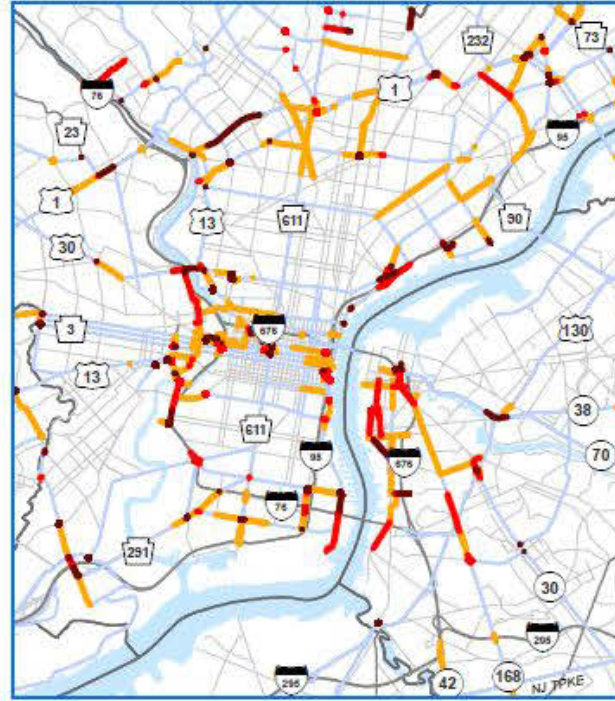
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Data Source: NPMRDS, NJDOT, PennDOT, CATT Lab & DVRPC

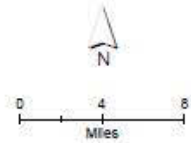
2020 Travel Time Reliability for Non-Interstate by Road Segment

2020 - Level of Travel Time Reliability (LOTTR) Non-Interstate Roadways



LOTTR 2020

- Greater Than 2.00 (337)
- 1.75 - 2.00 (401)
- 1.50 - 1.74 (801)
- Less Than 1.50 (4,159)



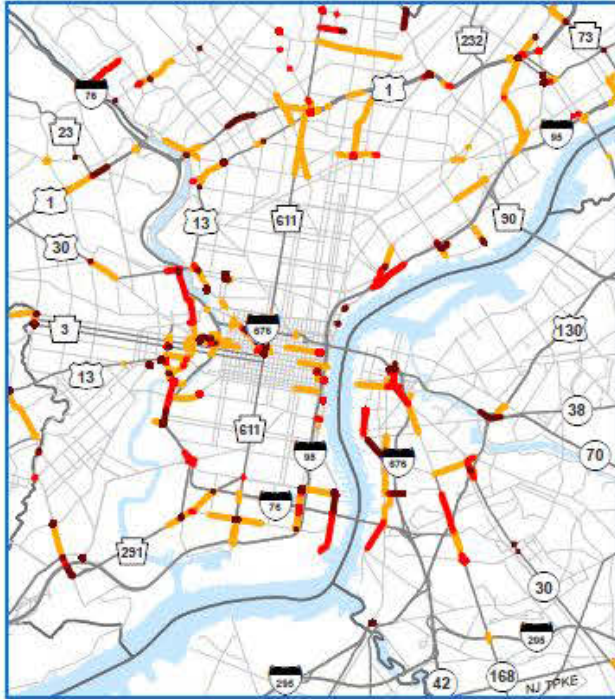
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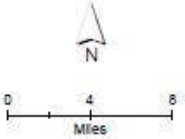
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Not Reliable in 2019 and 2020 on Non-Interstates by Road Segment

LOTTR Not Reliable in 2019 and 2020 Non-Interstate Roadways



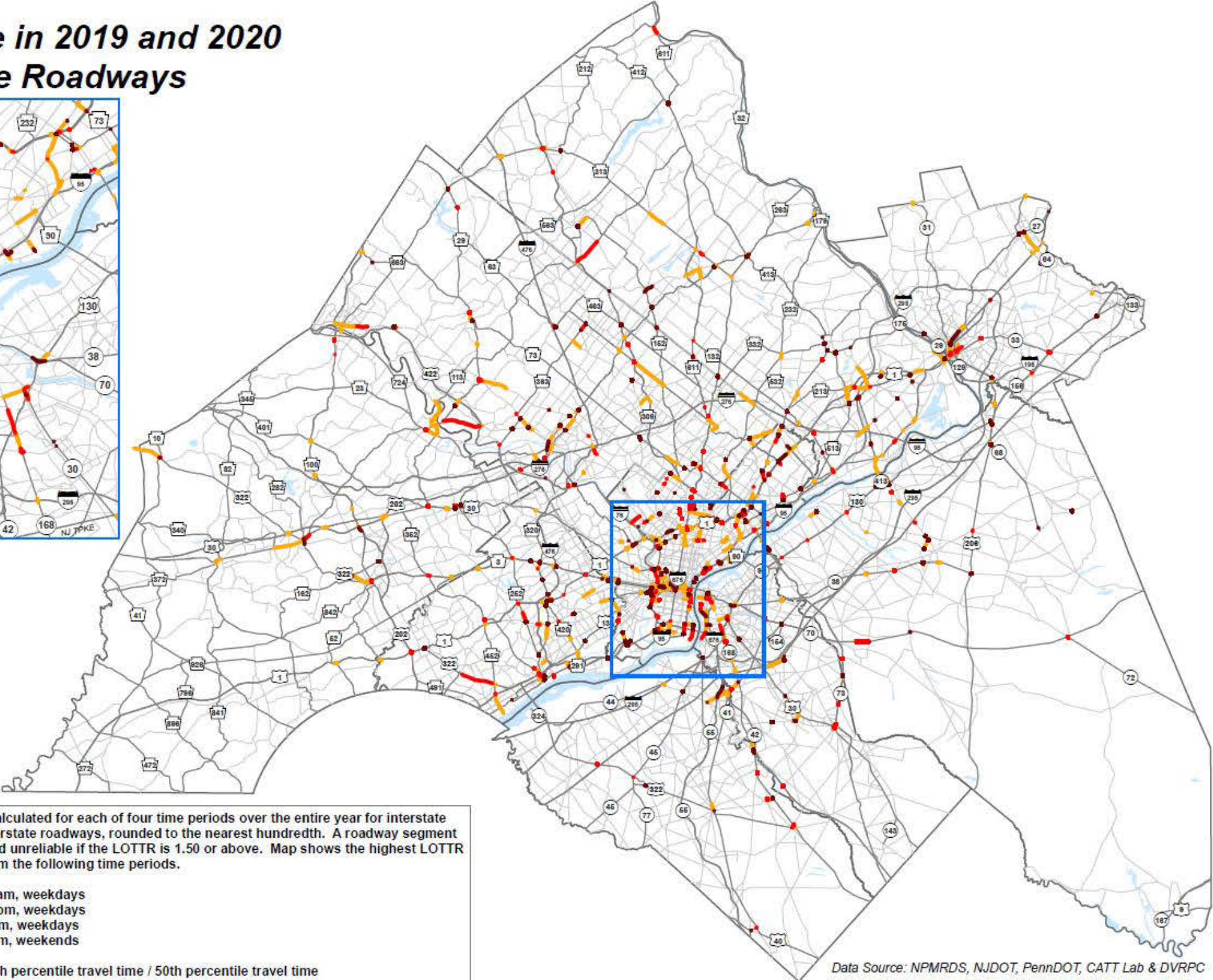
- LOTTR 2020**
- Greater Than 2.00 (309)
 - 1.75 - 2.00 (359)
 - 1.50 - 1.74 (598)
 - Less Than 1.50 (0)



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- 6 am - 8 pm, weekends

LOTTR = 80th percentile travel time / 50th percentile travel time



Data Source: NPMRDS, NJDOT, PennDOT, CATT Lab & DVRPC



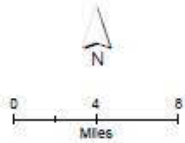
2019 Travel Time Reliability by CMP Corridor

2019 - Level of Travel Time Reliability (LOTTR) by CMP Corridor



LOTTR

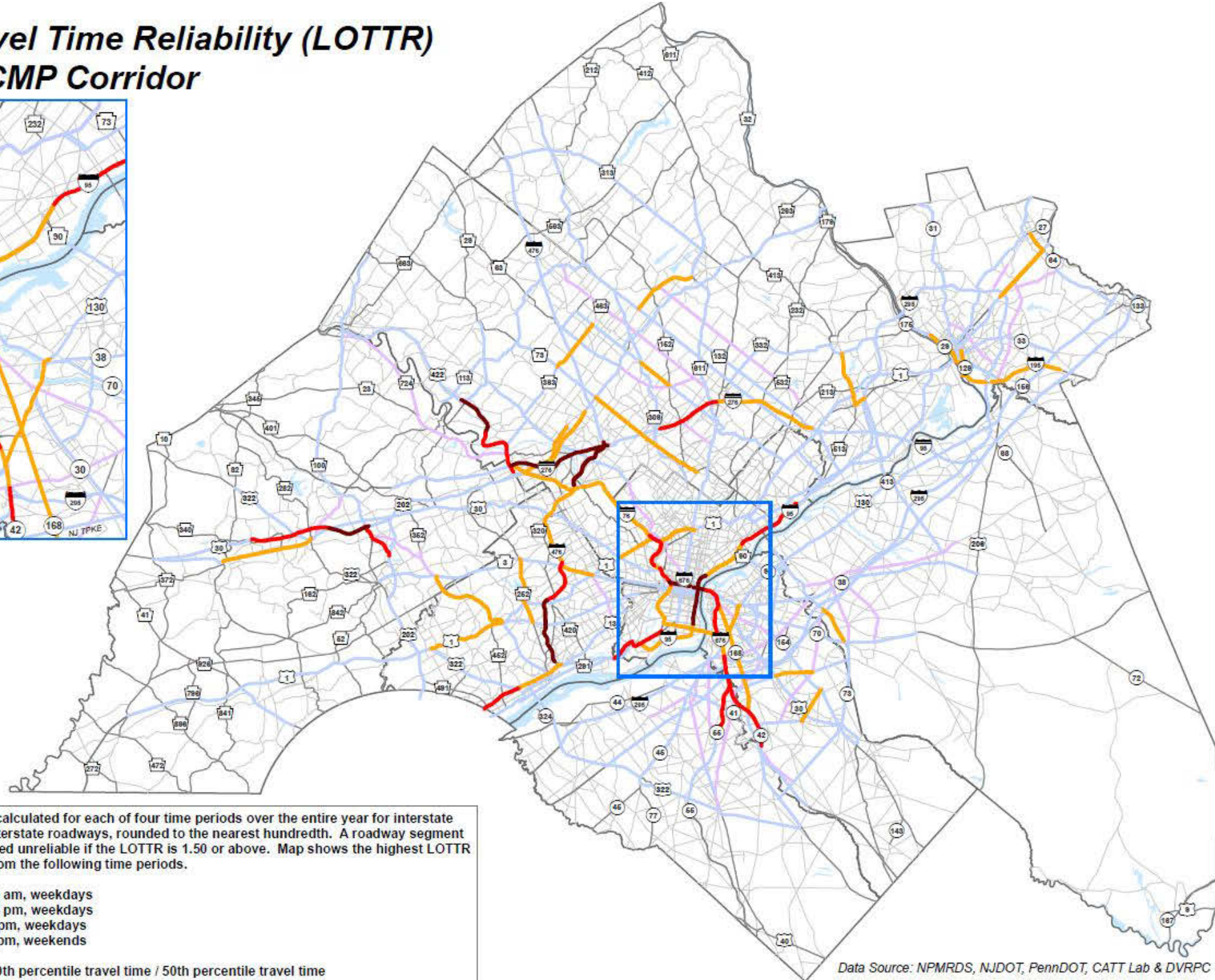
- Greater Than 2.00 (9)
- 1.75 - 2.00 (15)
- 1.50 - 1.74 (46)
- Less Than 1.50 (416)
- No Data (67)



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LOTTR = 80th percentile travel time / 50th percentile travel time



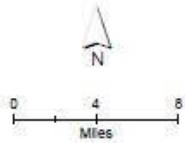
2020 Travel Time Reliability by CMP Corridor

2020 - Level of Travel Time Reliability (LOTTR) by CMP Corridor



LOTTR

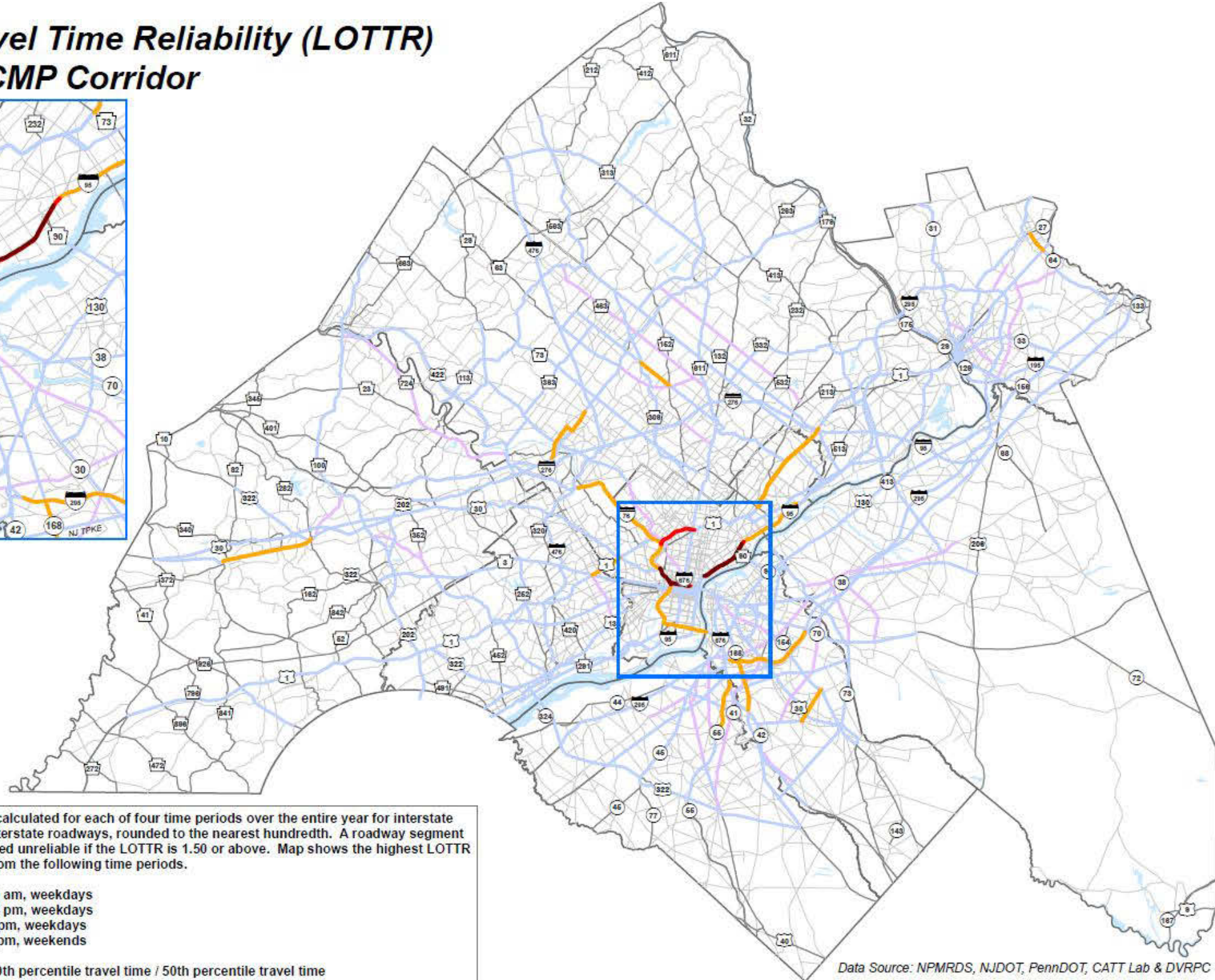
- █ Greater Than 2.00 (3)
- █ 1.75 - 2.00 (3)
- █ 1.50 - 1.74 (17)
- █ Less Than 1.50 (467)
- █ No Data (63)



LOTTR is calculated for each of four time periods over the entire year for interstate and non-interstate roadways, rounded to the nearest hundredth. A roadway segment is considered unreliable if the LOTTR is 1.50 or above. Map shows the highest LOTTR measure from the following time periods.

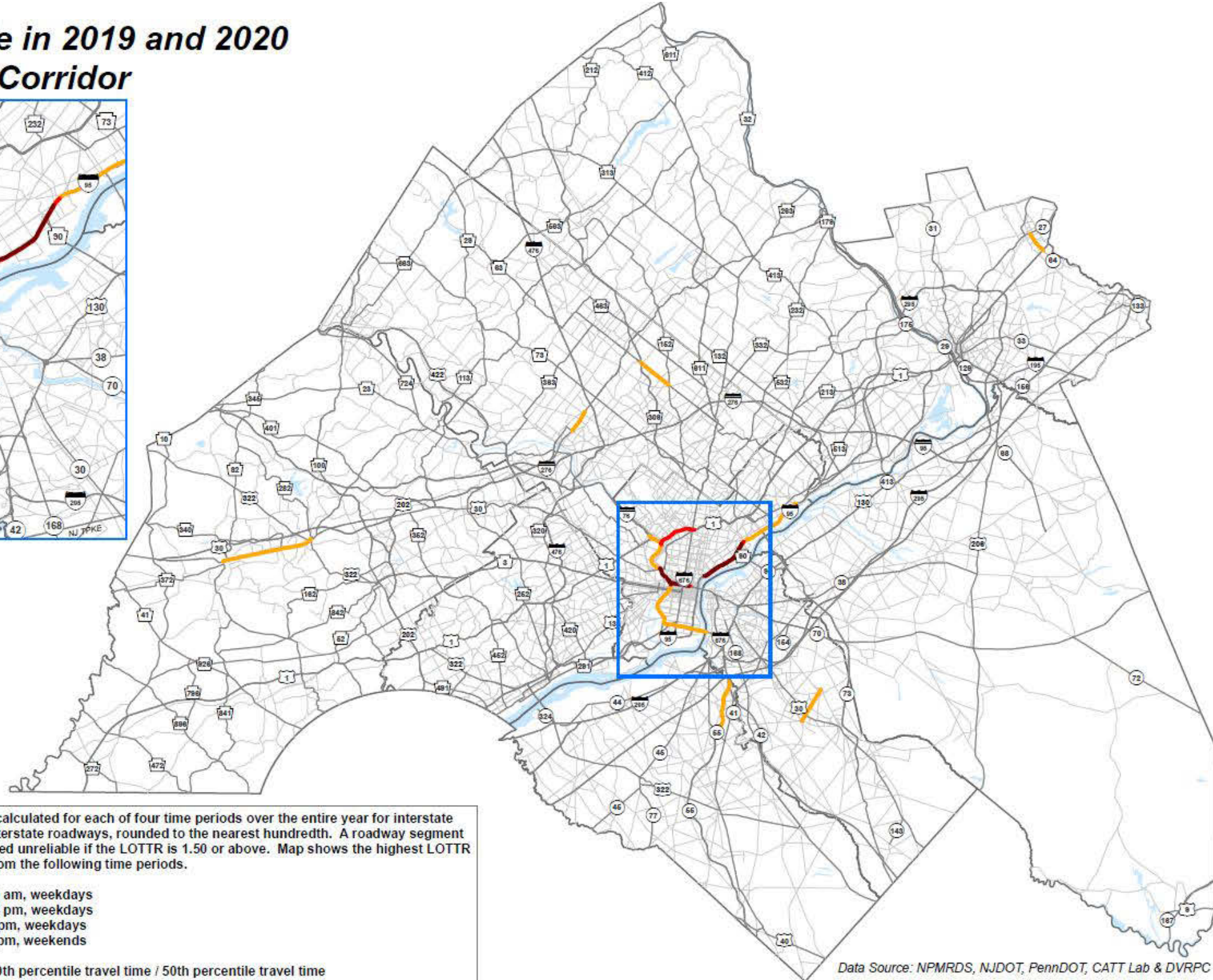
1. 6 am - 10 am, weekdays
2. 10 am - 4 pm, weekdays
3. 4 pm - 8 pm, weekdays
4. 6 am - 8 pm, weekends

LOTTR = 80th percentile travel time / 50th percentile travel time



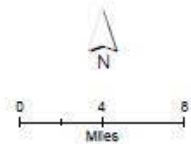
Not Reliable in 2019 and 2020 by CMP Corridor

LOTTR Not Reliable in 2019 and 2020 by CMP Corridor



LOTTR 2020

- Greater Than 2.00 (3)
- 1.75 - 2.00 (3)
- 1.50 - 1.74 (9)
- Less Than 1.50 (0)



LOTTR is calculated for each of four time periods over the entire year for interstate and non-interstate roadways, rounded to the nearest hundredth. A roadway segment is considered unreliable if the LOTTR is 1.50 or above. Map shows the highest LOTTR measure from the following time periods.

- 6 am - 10 am, weekdays
- 10 am - 4 pm, weekdays
- 4 pm - 8 pm, weekdays
- 6 am - 8 pm, weekends

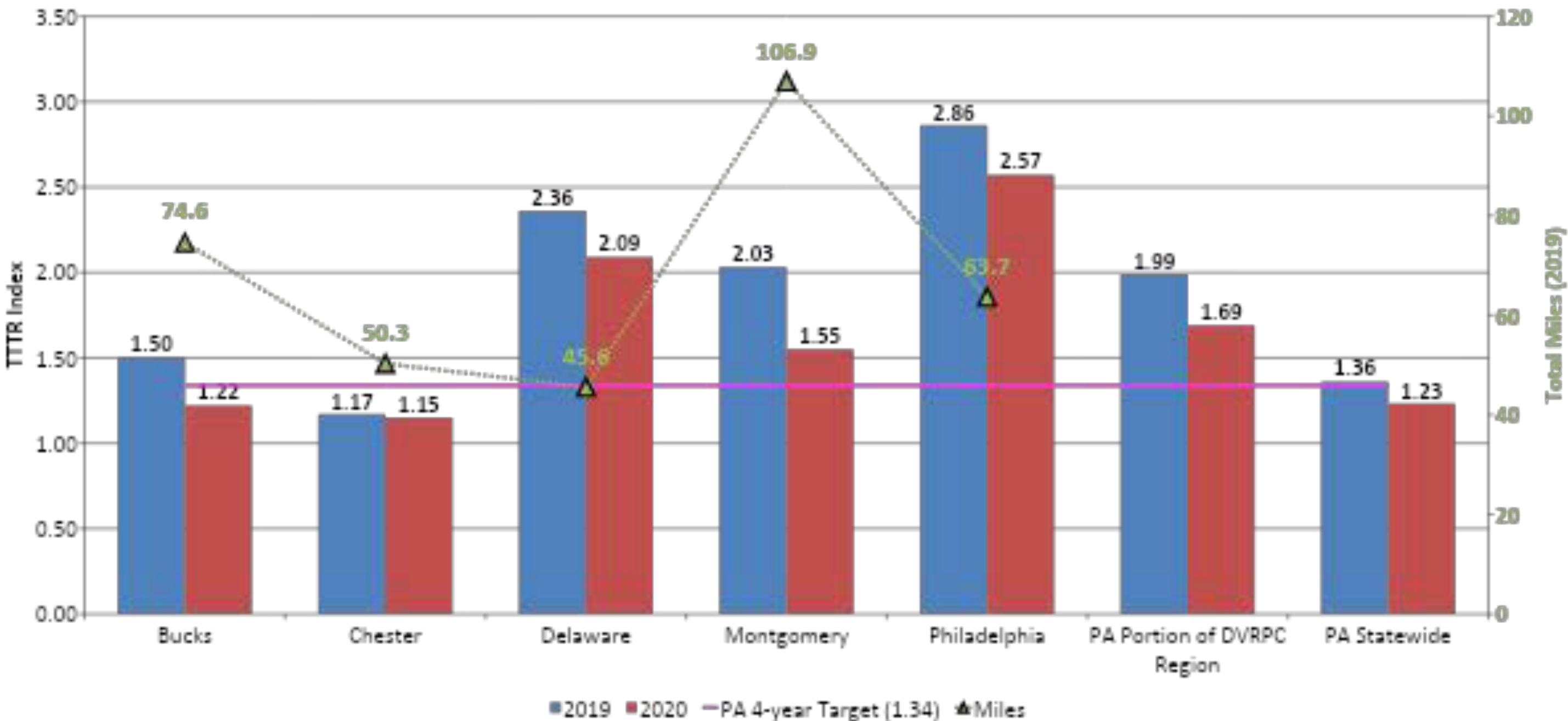
LOTTR = 80th percentile travel time / 50th percentile travel time

Truck Travel Time Reliability

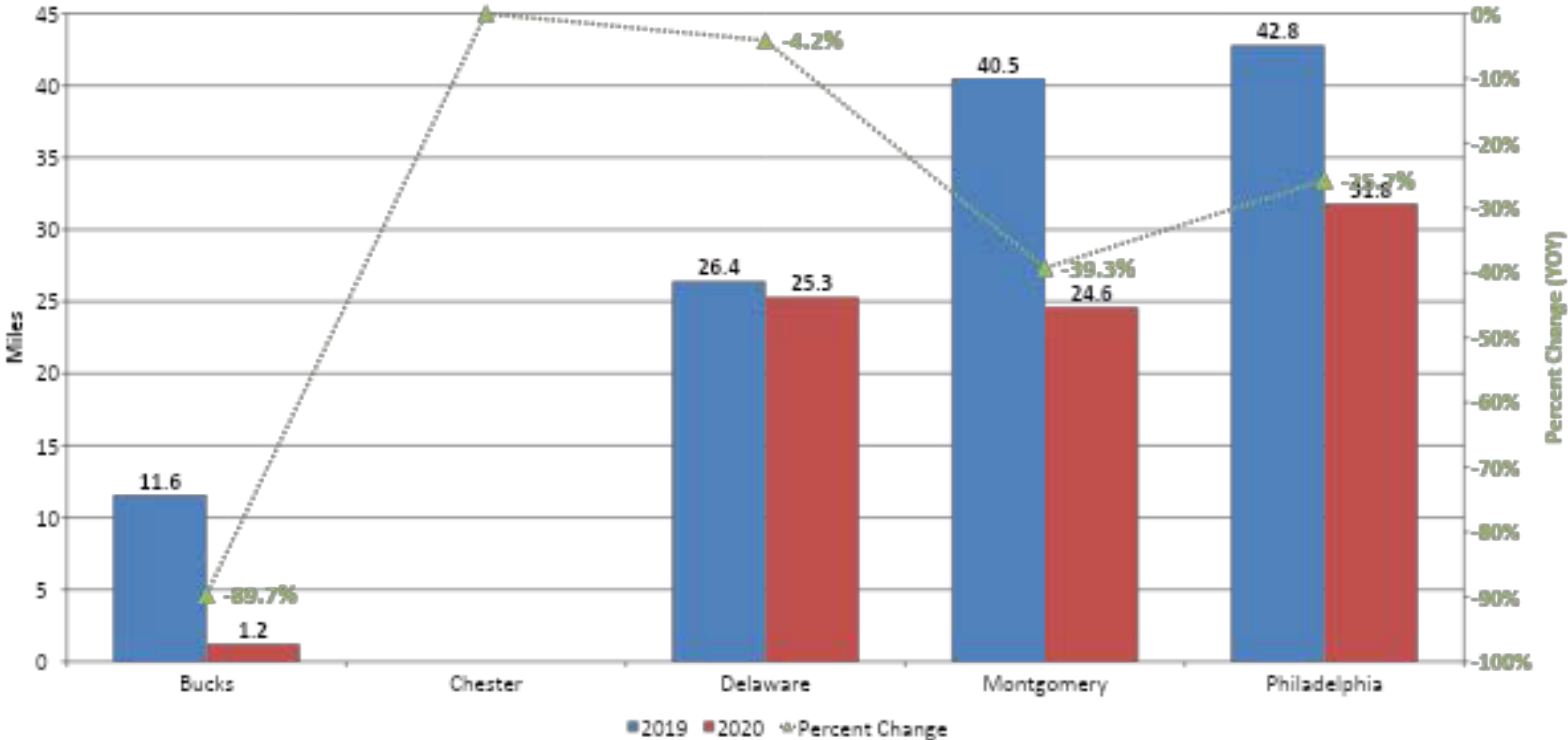


- Assess freight reliability
- Calculated for five time periods over the entire year for interstate roadways only. The lower the index the more reliable the roadway — no threshold.
 - 6:00 AM – 10:00 AM, weekdays
 - 10:00 AM – 4:00 PM, weekdays
 - 4:00 PM – 8:00 PM weekdays
 - 6:00 AM – 8:00 PM, weekends
 - **8:00 PM – 6:00 AM, overnight (all days)**
- $TTTR = 95^{\text{th}}$ percentile travel time / 50^{th} percentile travel time
- The highest TTTR value for the five time periods is the weighted TTTR
- Overall TTTR Index =
$$\frac{\sum \text{All segment length weighted TTTR}}{\sum \text{All segment lengths}}$$

Pennsylvania — Truck Travel Time Reliability for Interstates

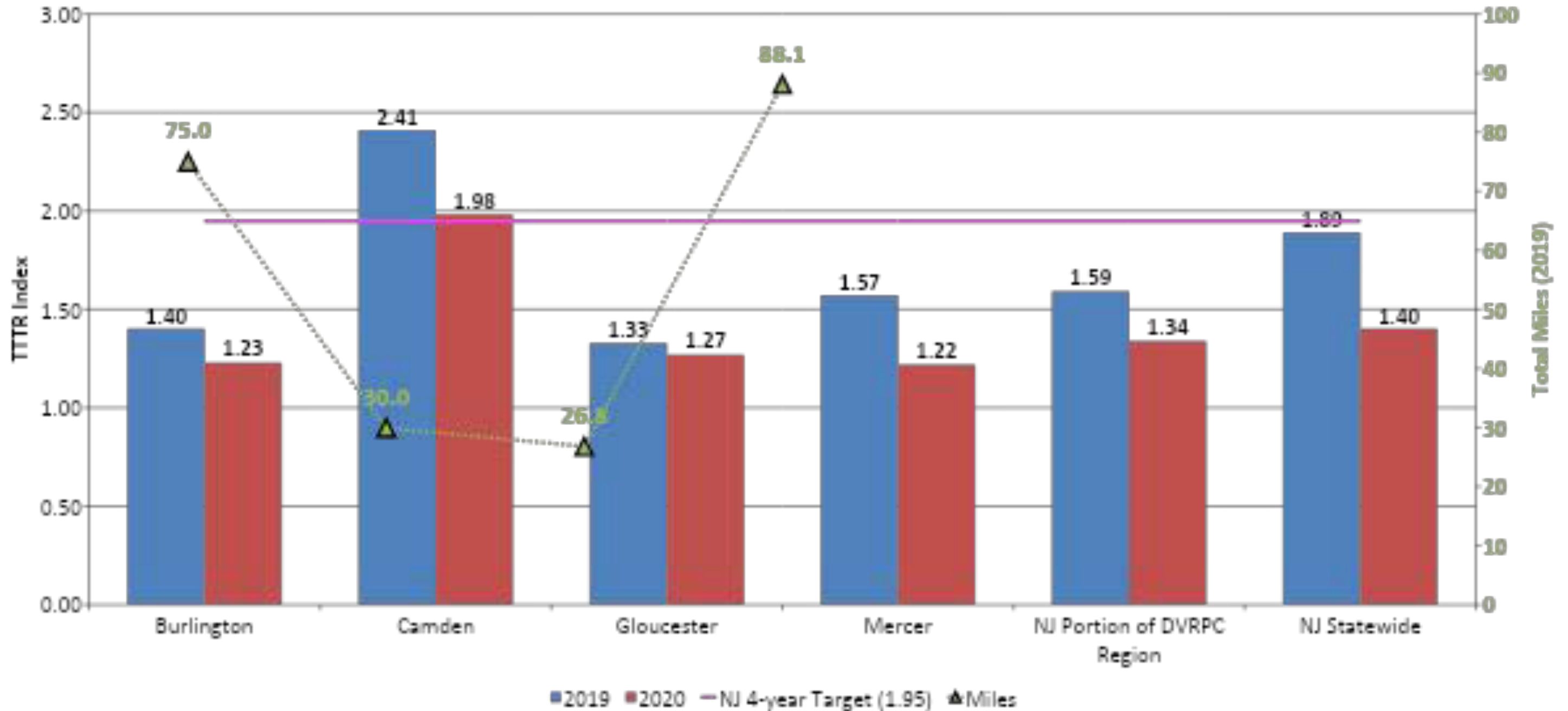


Pennsylvania — Miles of Interstate Not Reliable for Trucks

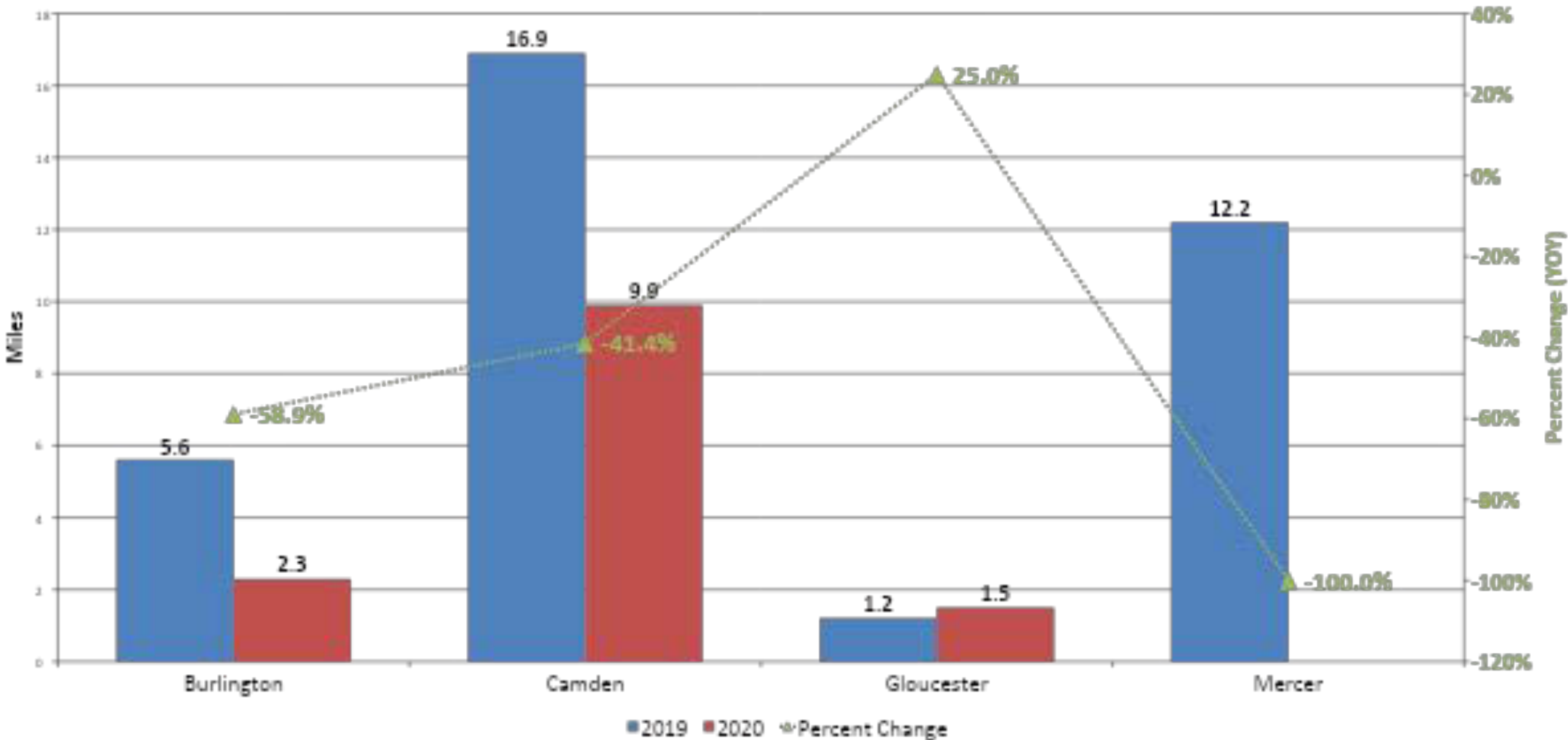


Note: not reliable is defined as a TTTR Index 2.00 or more

New Jersey — Truck Travel Time Reliability for Interstates



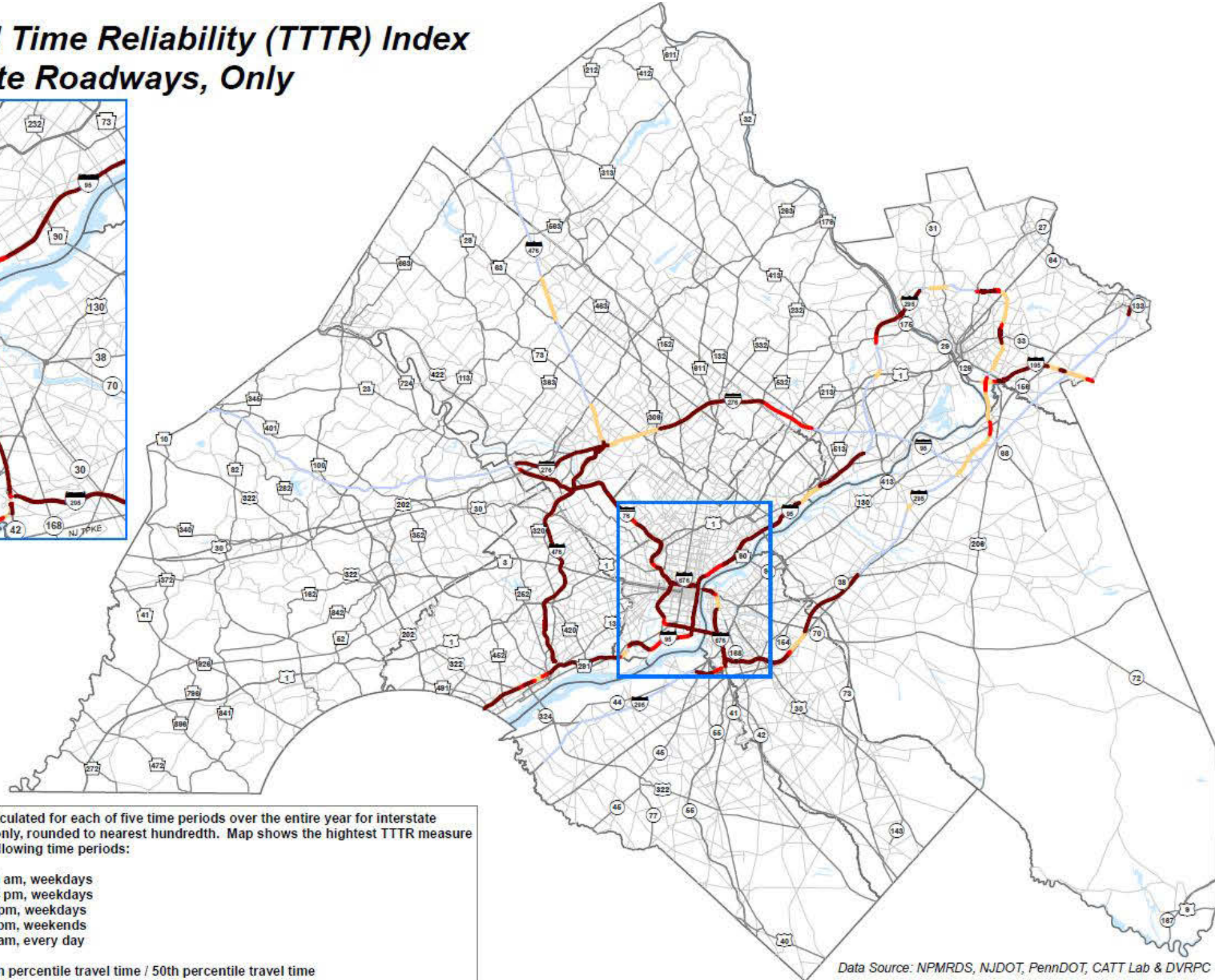
New Jersey — Miles of Interstate Not Reliable for Trucks



Note: not reliable is defined as a TTTR Index 2.00 or more

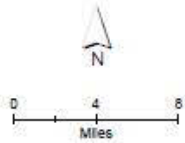
2019 Truck Travel Time Reliability on Interstates

2019 - Truck Travel Time Reliability (TTTR) Index Interstate Roadways, Only



TTTR Index 2019

- 2.50 or More (244)
- 2.00 - 2.49 (65)
- 1.50 - 1.99 (92)
- Less Than 1.50 (371)



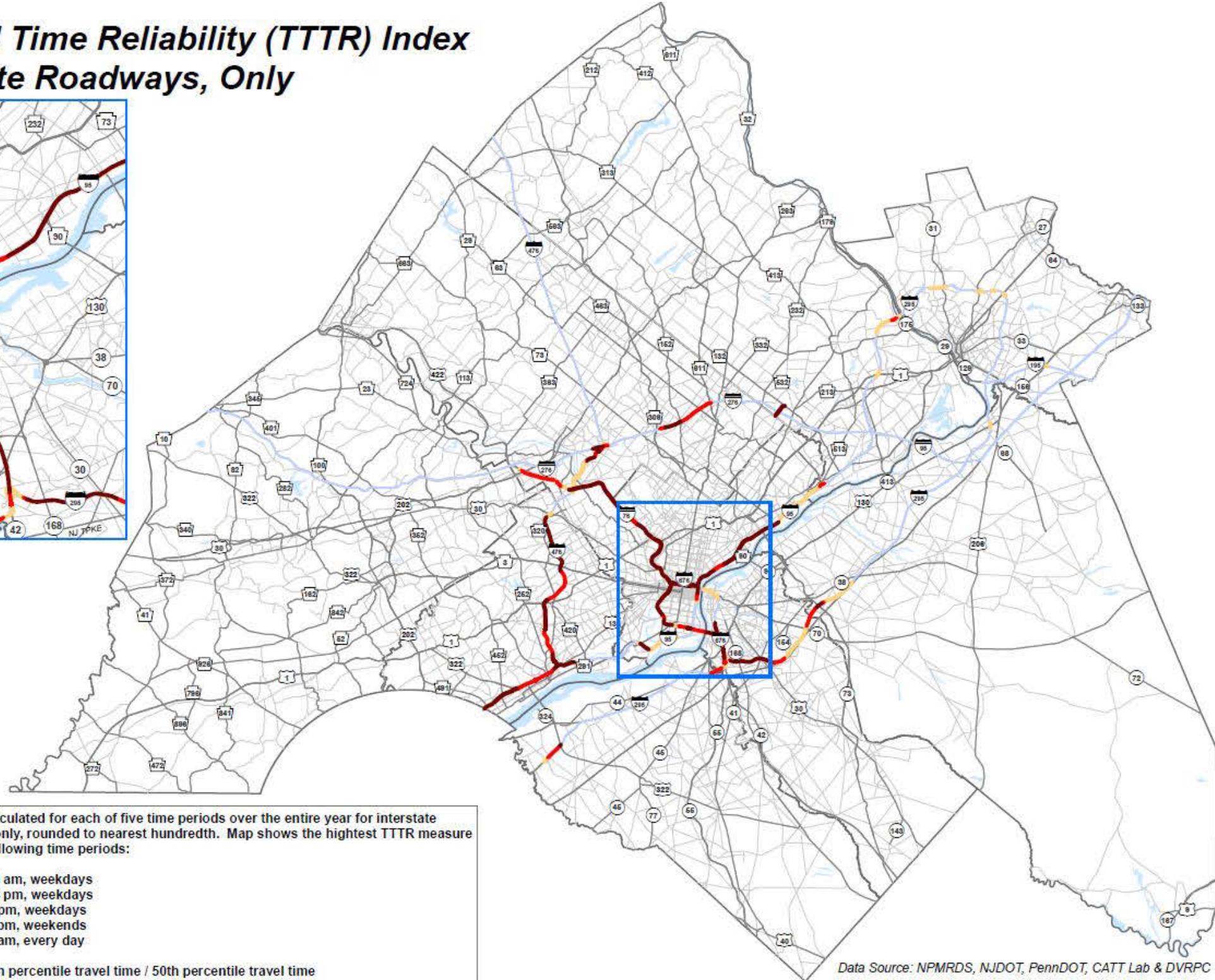
TTTR is calculated for each of five time periods over the entire year for interstate roadways only, rounded to nearest hundredth. Map shows the highest TTTR measure from the following time periods:

- 6 am - 10 am, weekdays
- 10 am - 4 pm, weekdays
- 4 pm - 8 pm, weekdays
- 6 am - 8 pm, weekends
- 8 pm - 6 am, every day

TTTR = 95th percentile travel time / 50th percentile travel time

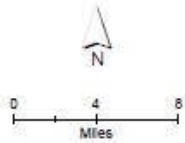
2020 Truck Reliability on Interstates

2020 - Truck Travel Time Reliability (TTTR) Index Interstate Roadways, Only



TTTR Index 2020

- 2.50 or More (139)
- 2.00 - 2.49 (59)
- 1.50 - 1.99 (90)
- Less Than 1.50 (489)



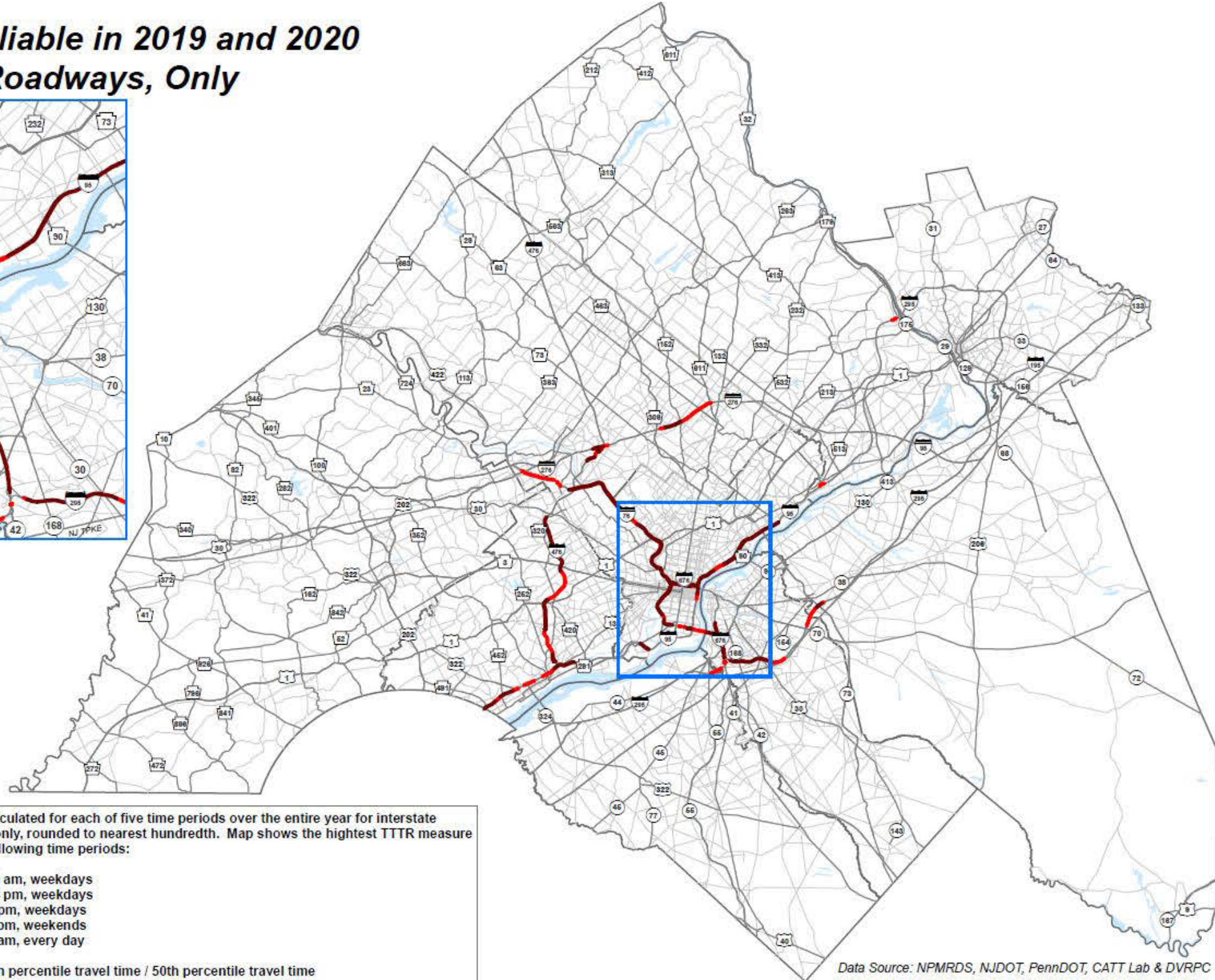
TTTR is calculated for each of five time periods over the entire year for interstate roadways only, rounded to nearest hundredth. Map shows the highest TTTR measure from the following time periods:

- 6 am - 10 am, weekdays
- 10 am - 4 pm, weekdays
- 4 pm - 8 pm, weekdays
- 6 am - 8 pm, weekends
- 8 pm - 6 am, every day

TTTR = 95th percentile travel time / 50th percentile travel time

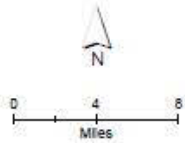
Not Reliable in 2019 and 2020 on Interstates

TTR Index Not Reliable in 2019 and 2020 Interstate Roadways, Only



TTR Index 2020

- 2.50 or More (126)
- 2.00 - 2.49 (49)
- 1.50 - 1.99 (0)
- Less Than 1.50 (0)



TTR is calculated for each of five time periods over the entire year for interstate roadways only, rounded to nearest hundredth. Map shows the highest TTR measure from the following time periods:

- 6 am - 10 am, weekdays
- 10 am - 4 pm, weekdays
- 4 pm - 8 pm, weekdays
- 6 am - 8 pm, weekends
- 8 pm - 6 am, every day

TTR = 95th percentile travel time / 50th percentile travel time

Data Source: NPMRDS, NJDOT, PennDOT, CATT Lab & DVRPC

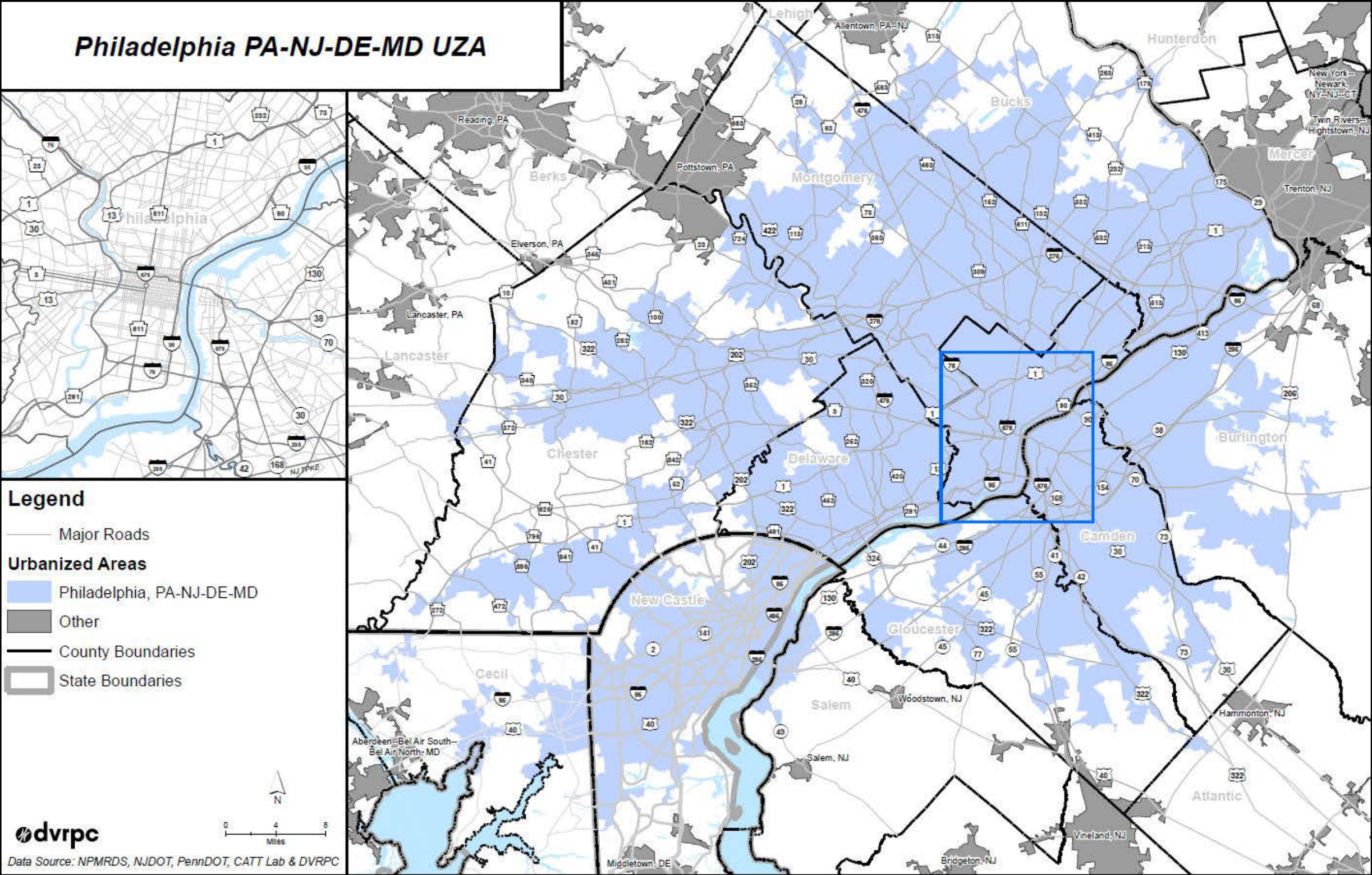


Annual Hours of Peak Hour Excessive Delay Per Capita

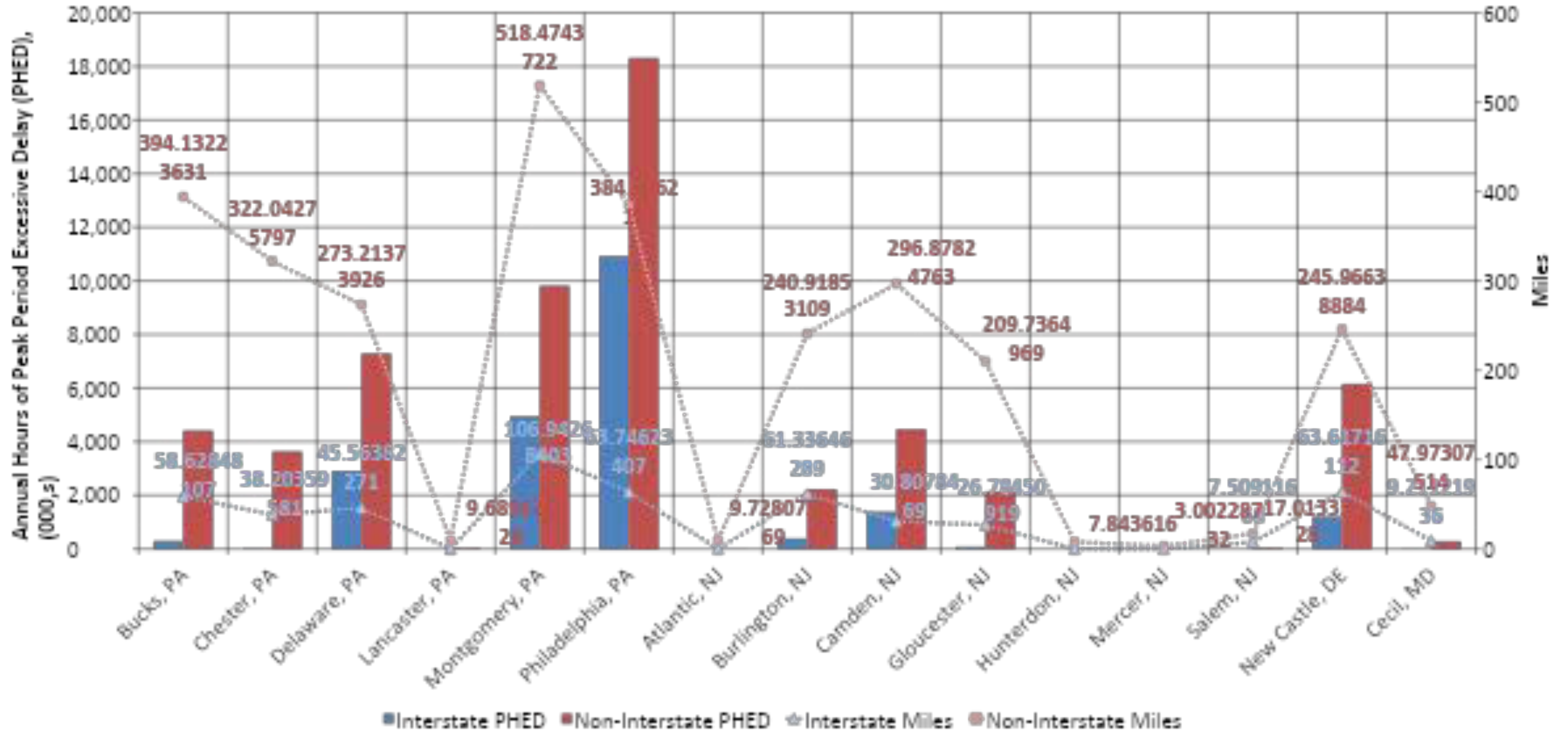


- Established on NHS Roadways for Philadelphia PA-NJ-DE-MD Urbanized Area
- Calculated for the entire year for weekdays during peak periods (6:00 AM to 10:00 AM) and (3:00 PM to 7:00 PM)
- Traffic volumes and vehicle mix are included, along with time of day travel distributions defined from national survey data and established formulas
- The population is used to normalize the annual hours of PHED to derive PHED “Per Capita”

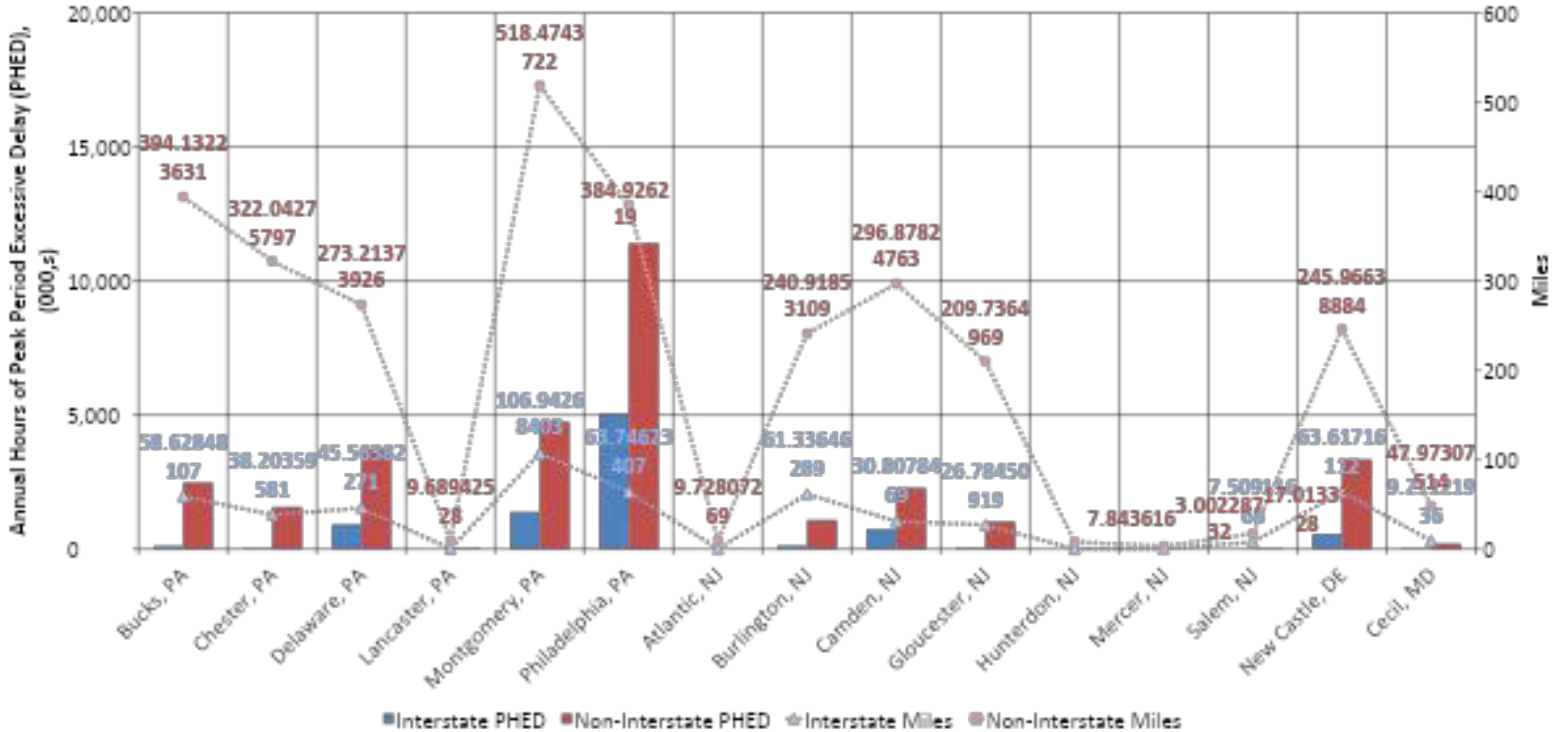
Philadelphia PA-NJ-DE-MD Urbanized Area (UZA)



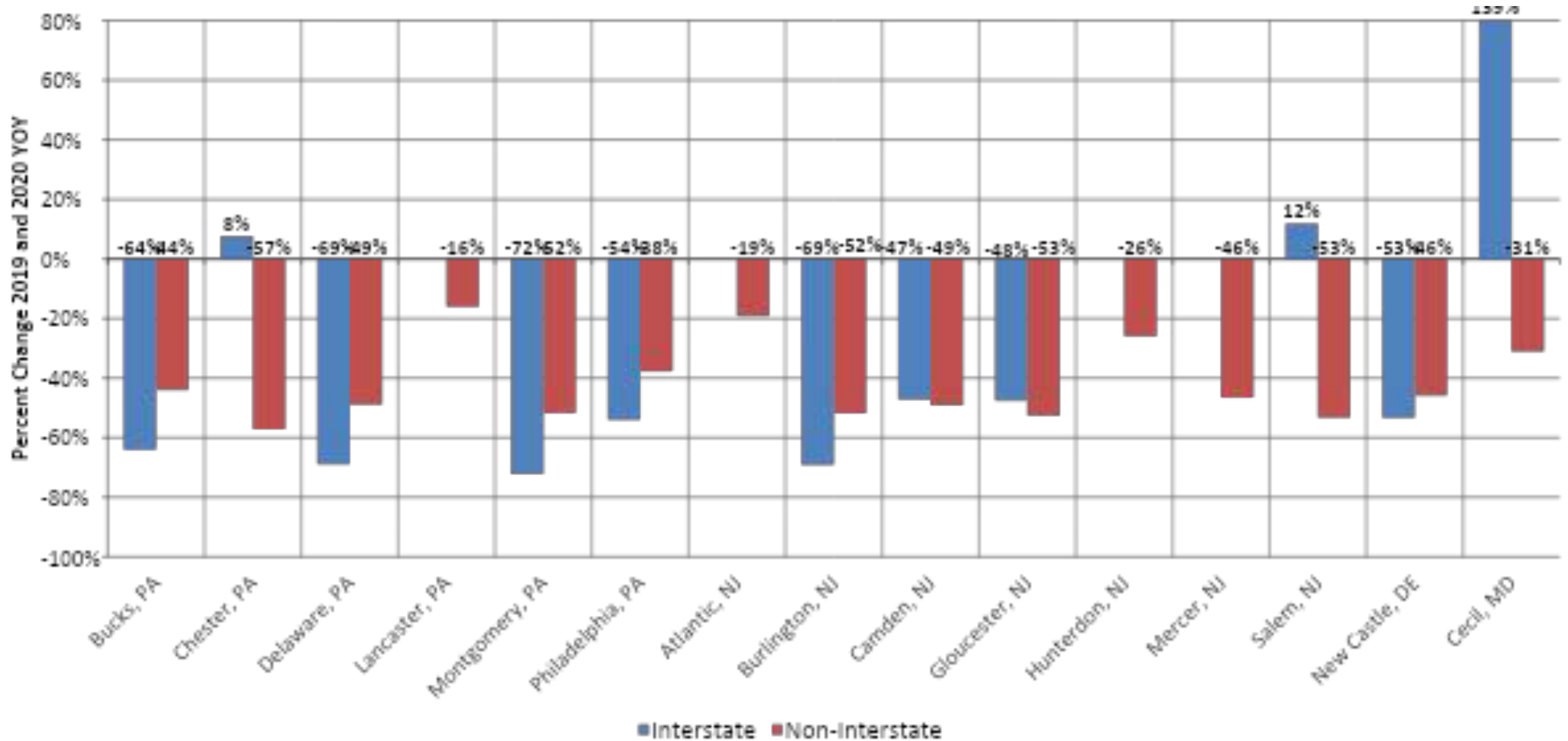
2019 Annual Hours of Peak Hour Excessive Delay (PHED)



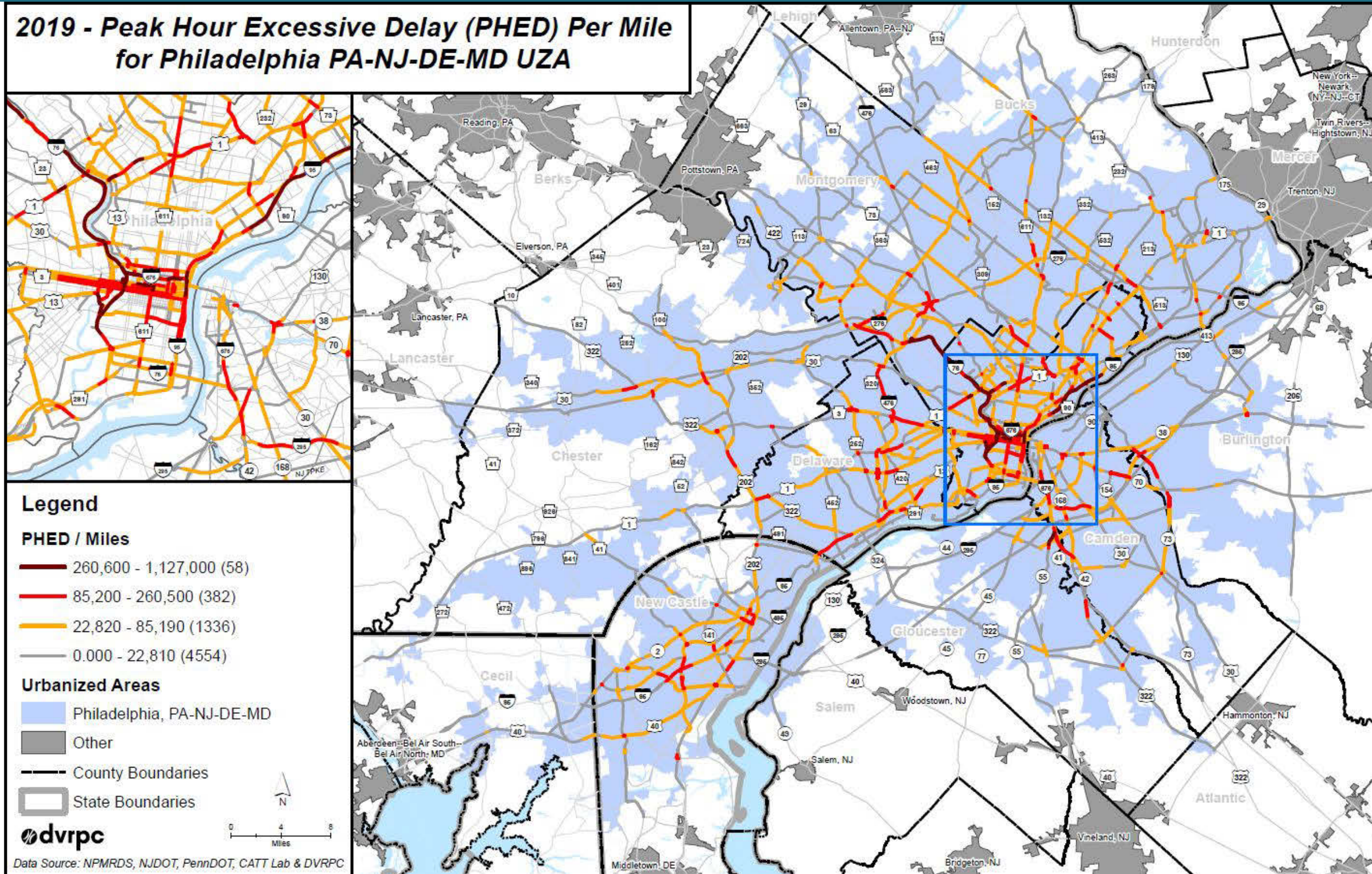
2020 Annual Hours of Peak Hour Excessive Delay (PHED)



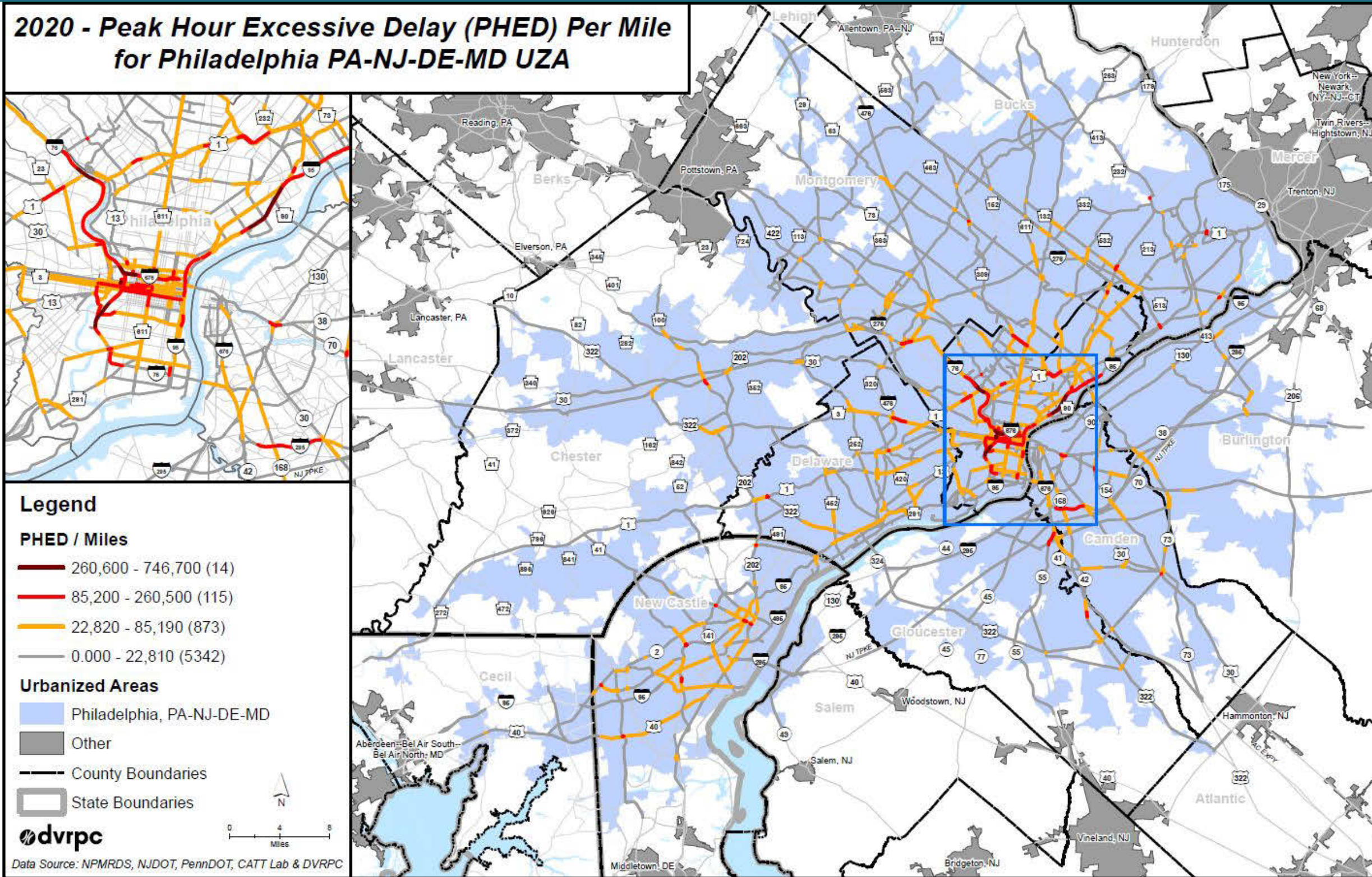
Percent Change Year-Over-Year in Annual Hours of Peak Hour Excessive Delay



2019 Peak Hour Excessive Delay Per Mile – Philadelphia PA-NJ-DE-MD UZA



2020 Peak Hour Excessive Delay Per Mile – Philadelphia PA-NJ-DE-MD UZA



Takeaways



- **Travel time reliability and excessive delay are much improved in 2020 compared to 2019 largely due to COVID-19 impacts on travel trends**
- **Still are locations in 2020 that have the same travel time reliability and excessive delay issues as 2019**
- **Many active, programmed or planned projects that address these locations**
- **PM3 process helps to facilitate the consistent use of data and measures across organizations such as DVRPC, DOT's and other planning partners**

Moving Forward



- Further work to be done to analyze the different peak periods
- Update new 2020 measures into the DVRPC Subject Matter Expert (SME) planning reviews and the upcoming LRP update
- Update measures into DVRPC CMP and other web mapping
- Perhaps expand on measures:
 - Establish threshold criteria for truck travel time reliability and excessive delay above and beyond the existing criteria
 - Expand the truck travel time reliability measure to include non-interstates and excessive delay measure to include all NHS roadways
 - Provide monthly as well as yearly tabulations
 - Analyze by CMP corridor as applicable

Questions/Comments

Thank You!

Thomas K. Edinger, AICP | tedinger@dvrpc.org | 215.238.2865