



Incorporating 2045 LRP Goals into Livability Plans

DVRPC Panel | November 3, 2017

5 Core Principles

1. Sustain the Environment
2. Develop Livable Communities
3. Expand the Economy
4. Advance Equity and Foster Diversity
5. Create an Integrated, Multimodal Transportation Network

Sustain the Environment

Chris Linn, DVRPC

Sustain the Environment

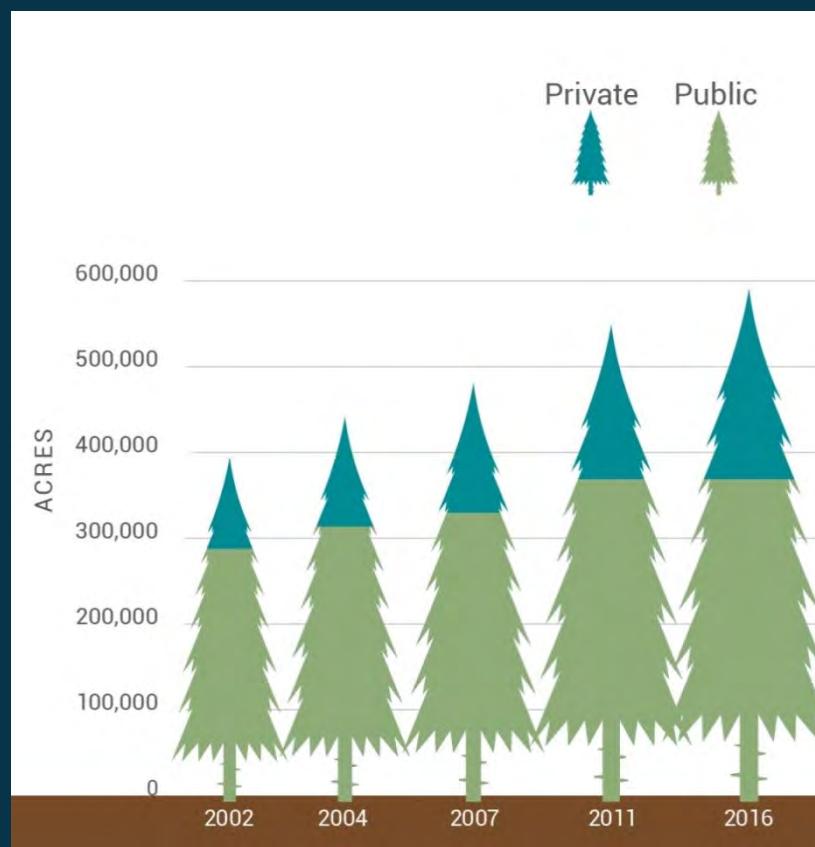
- Preserve open space
- Manage stormwater and improve water quality
- Reduce greenhouse gas emissions
- Prepare communities for the impacts of climate change
- Encourage less-polluting, not motorized forms of transportation
- Increase local food production, distribution, and access
- Preserve historic resources and cultural landscapes



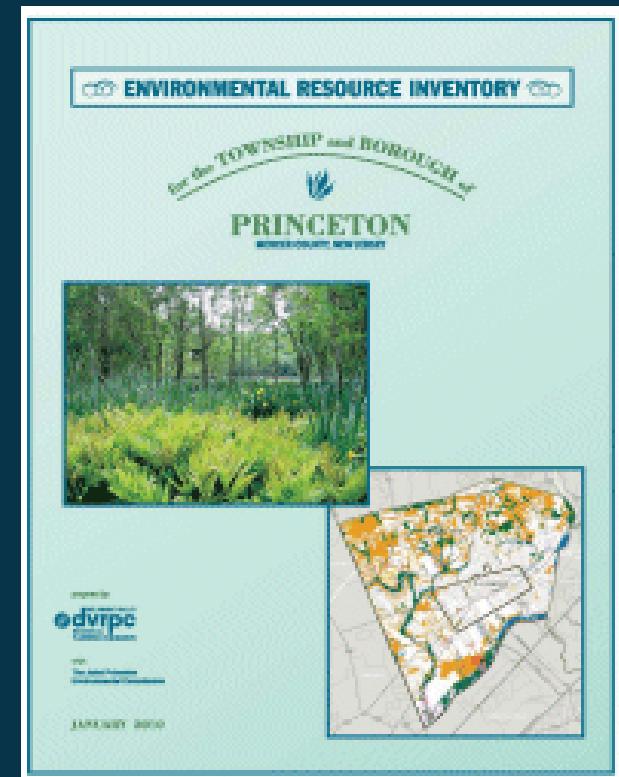
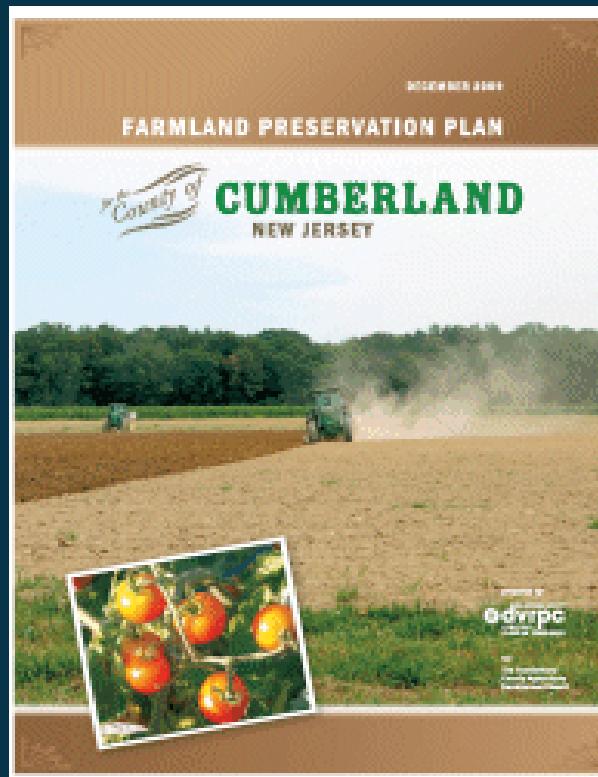
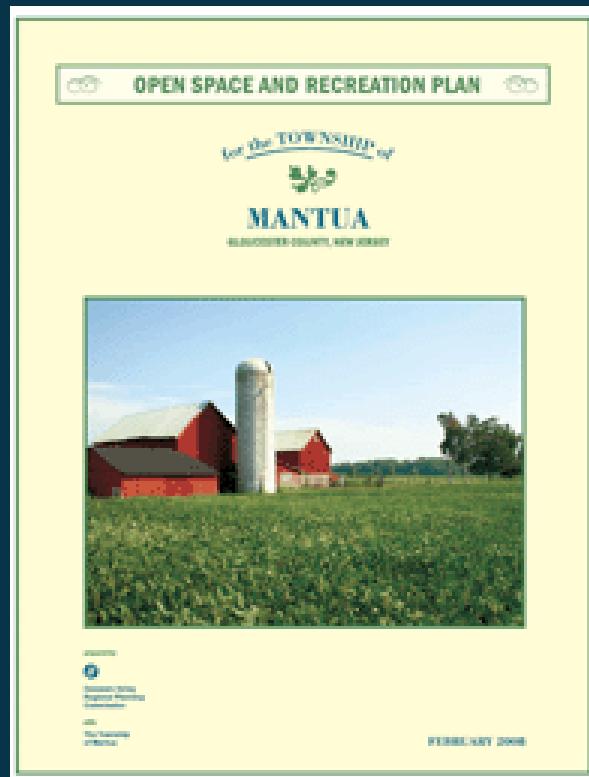


Protect, preserve and restore undeveloped lands

Protected Open Space Inventory



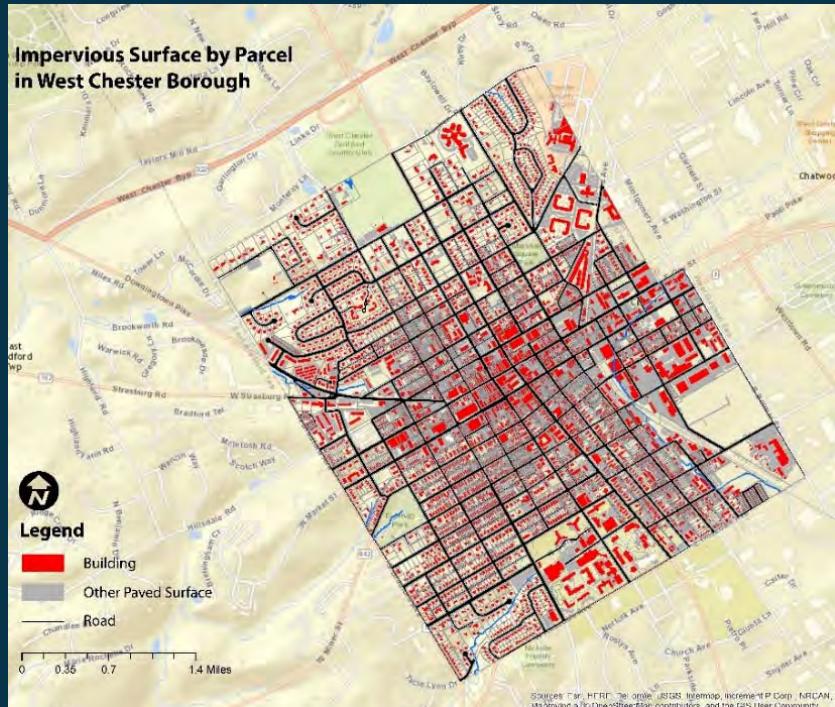
Municipal Planning Studies



Green Stormwater Infrastructure



Municipal Actions to Protect Water Quality



Stream Protection Fee Rate Structure:

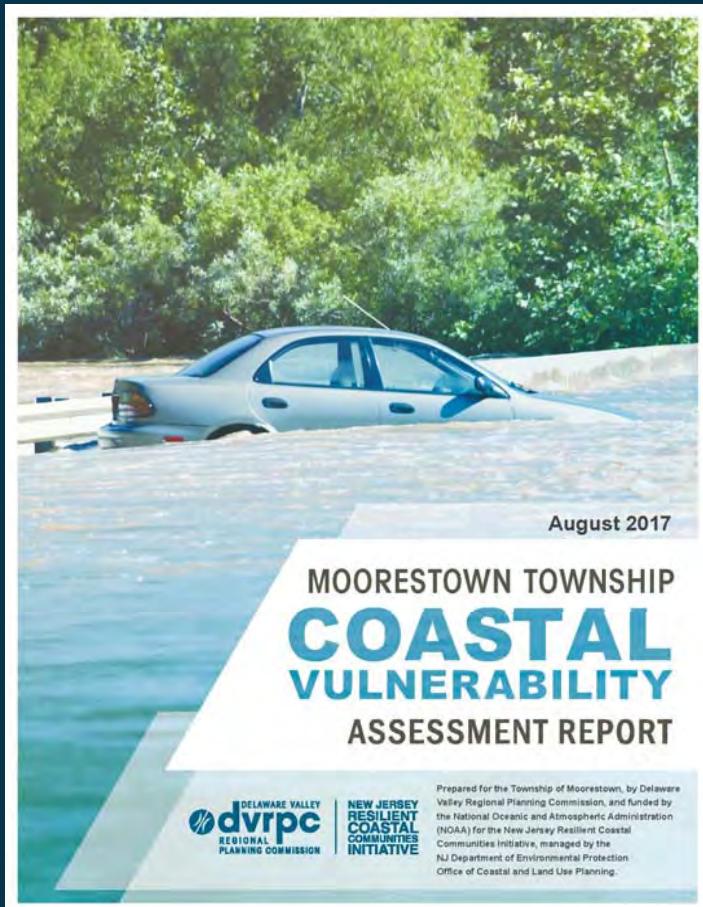
SPF rates are grouped into Tiers based on the amount of impervious area in a parcel.

Tier	Impervious Area/Parcel	Monthly Fee*
1	0-1,000 square feet (ft^2)	\$3.35
2	1,000-1,500 ft^2	\$8.38
3	1,500-2,000 ft^2	\$11.73
4	2,000-2,500 ft^2	\$15.08
5	2,500-3,000 ft^2	\$18.43
6	> 3,000 ft^2	\$20.10 and up

*The base rate has been set at \$6.70 per 1,000 ft^2 of IA per month. Tiers 1-5 are charged a flat fee as shown above. Tier 6 properties are charged based on actual impervious area. The monthly fee is multiplied by 12 to determine annual costs.



Planning for Resilience



Coastal Flood Exposure Assessment Process Overview

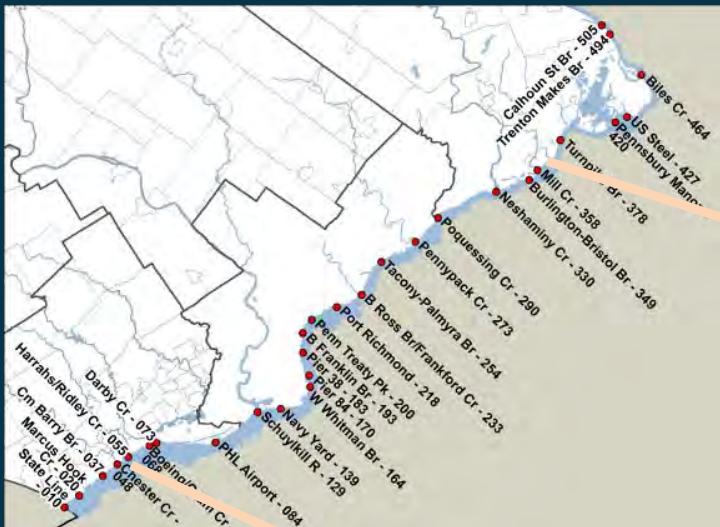
Table 2b. One Foot Increment Projected Water Levels for Exposure Assessment at Sandy Hook, NJ (MHHW)

Water Level	What High Water Level Condition Does This Height Represent?
1 ft.	<ul style="list-style-type: none">Permanent Inundation (MHHW) in 2030 using Central HE/LE ScenariosPermanent Inundation (MHHW) in 2030 using 1-in-20 Chance HE ScenarioPermanent Inundation (MHHW) in 2050 using Central HE/LE Scenarios
2 ft.	<ul style="list-style-type: none">Current Annual (99% AEP) floodPermanent Inundation (MHHW) in 2050 using 1-in-20 Chance HE ScenarioPermanent Inundation (MHHW) in 2100 using Central LE Scenario
3 ft.	<ul style="list-style-type: none">Annual (99% AEP) flood in 2030 using Central HE/LE ScenariosAnnual (99% AEP) flood in 2030 using a 1-in-20 Chance HE ScenarioAnnual (99% AEP) flood in 2050 using Central HE/LE ScenarioPermanent Inundation (MHHW) in 2100 using a Central HE Scenario
4 ft.	<ul style="list-style-type: none">Current 10-year (10% AEP) floodAnnual (99% AEP) flood in 2050 using a 1-in-20 HE ScenarioAnnual (99% AEP) flood in 2100 using Central LE Scenario
5 ft.	<ul style="list-style-type: none">10-year (10% AEP) flood in 2030 using Central HE/LE Scenarios10-year (10% AEP) flood in 2030 using a 1-in-20 HE ScenarioAnnual (99% AEP) flood in 2100 using Central HE ScenarioPermanent Inundation (MHHW) in 2100 using a 1-in-20 HE Scenario
6 ft.	<ul style="list-style-type: none">10-year (10% AEP) flood in 2050 using Central HE/LE Scenarios10-year (10% AEP) flood in 2050 using a 1-in-20 HE Scenario10-year (10% AEP) flood in 2100 using a Central LE Scenario
7 ft.	<ul style="list-style-type: none">Current 100-year (1% AEP) floodAnnual (99% AEP) flood in 2100 using a 1-in-20 HE Scenario
8 ft.	<ul style="list-style-type: none">Current Sandy Storm Tide100-year (1% AEP) flood in 2030 using Central HE/LE Scenarios100-year (1% AEP) flood in 2030 using a 1-in-20 HE Scenario100-year (1% AEP) flood in 2050 using Central HE/LE Scenarios10-year (10% AEP) flood in 2100 using a Central LE Scenario
9 ft.	<ul style="list-style-type: none">Sandy Storm Tide in 2030 using Central HE/LE Scenarios and 1-in-20 HE Scenario100-year (1% AEP) flood in 2050 using a 1-in-20 HE Scenario100-year (1% AEP) flood in 2100 using a Central LE Scenario10-year (10% AEP) flood in 2100 using a 1-in-20 HE Scenario
10 ft.	<ul style="list-style-type: none">Sandy Storm Tide in 2050 using Central HE/LE Scenarios and 1-in-20 HE Scenario100-year (1% AEP) flood in 2100 using a Central HE Scenario
11 ft.	<ul style="list-style-type: none">Sandy Storm Tide in 2100 using Central LE Scenario
12 ft.	<ul style="list-style-type: none">100-year (1% AEP) flood in 2100 using 1-in-20 HE ScenarioSandy Storm Tide in 2100 using Central HE Scenario
13 ft.	
14 ft.	<ul style="list-style-type: none">Sandy Storm Tide in 2100 using 1-in-20 HE Scenario

Notes: HE = High Emissions, LE = Low Emissions



Planning for Resilience



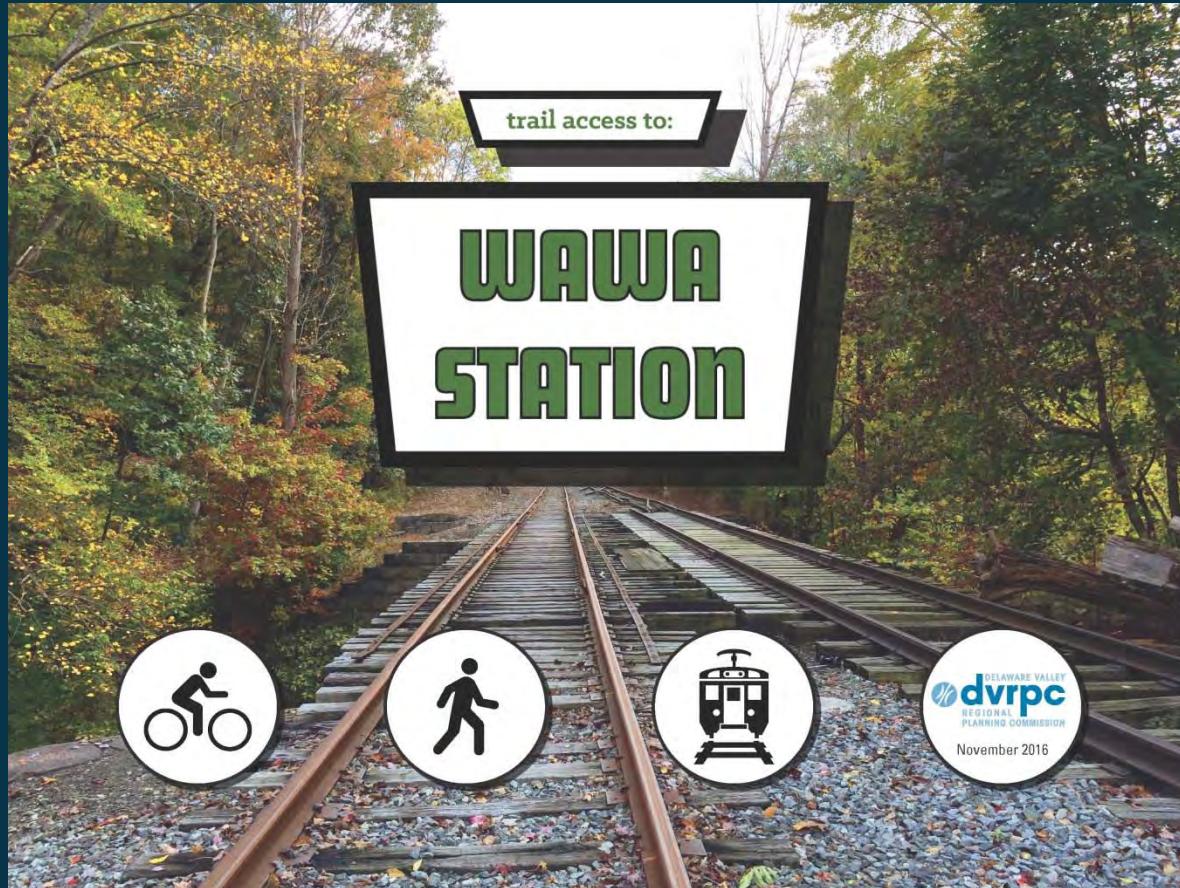
Riverside Industrial Complex, Bristol Township



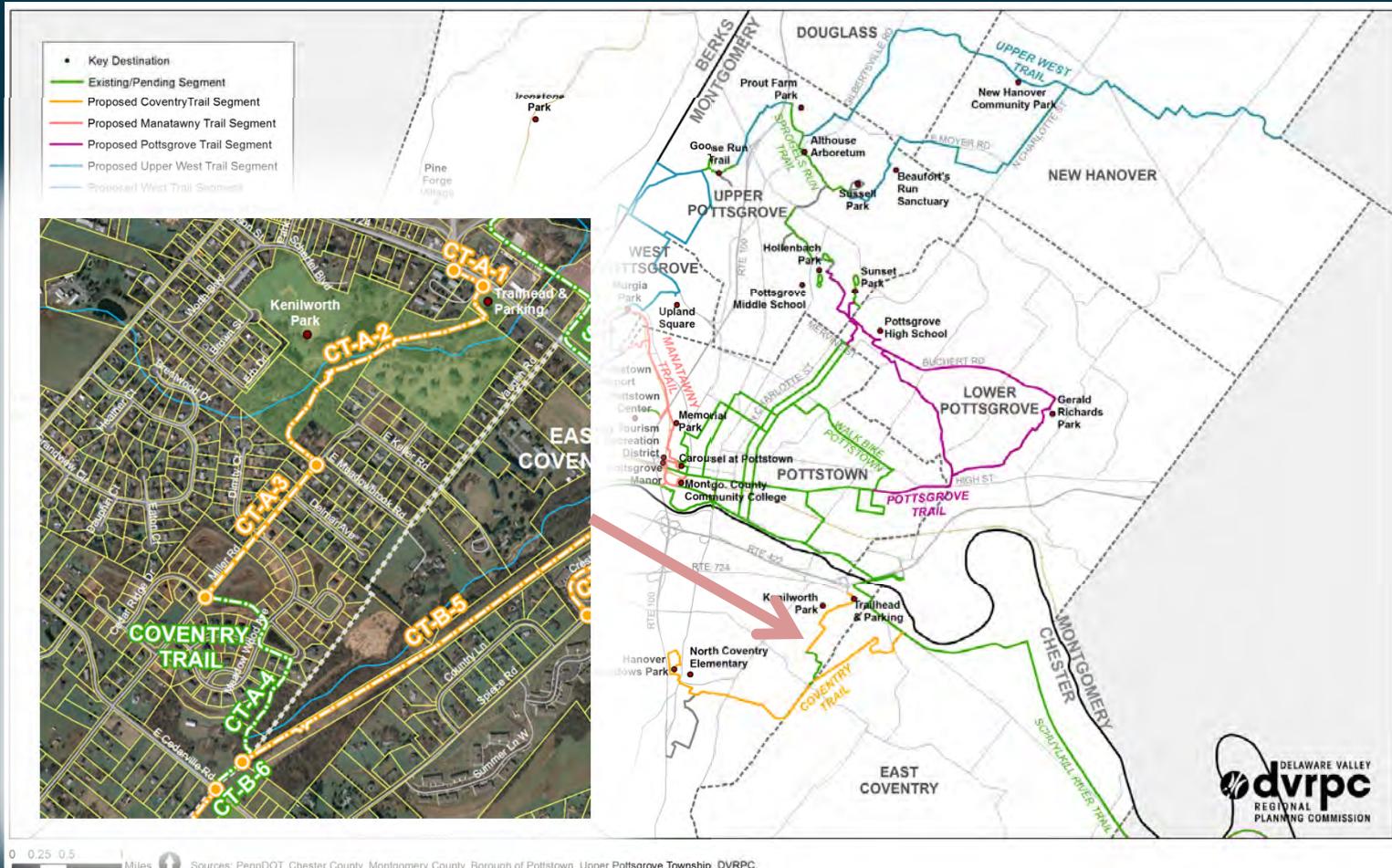
Darby Creek



Trail Planning



Trail Feasibility Studies



Develop Livable Communities

Karin Morris, DVRPC

Develop Livable Communities

- Invest in centers
- Promote affordable and accessible housing
- Enhance community design
- Create age-friendly communities
- Encourage regional cooperation and multimunicipal planning
- Invest in community parks and schools





Age-friendly communities are places where older adults can age “actively”—in the physical, social, economic, and civic life of a community.

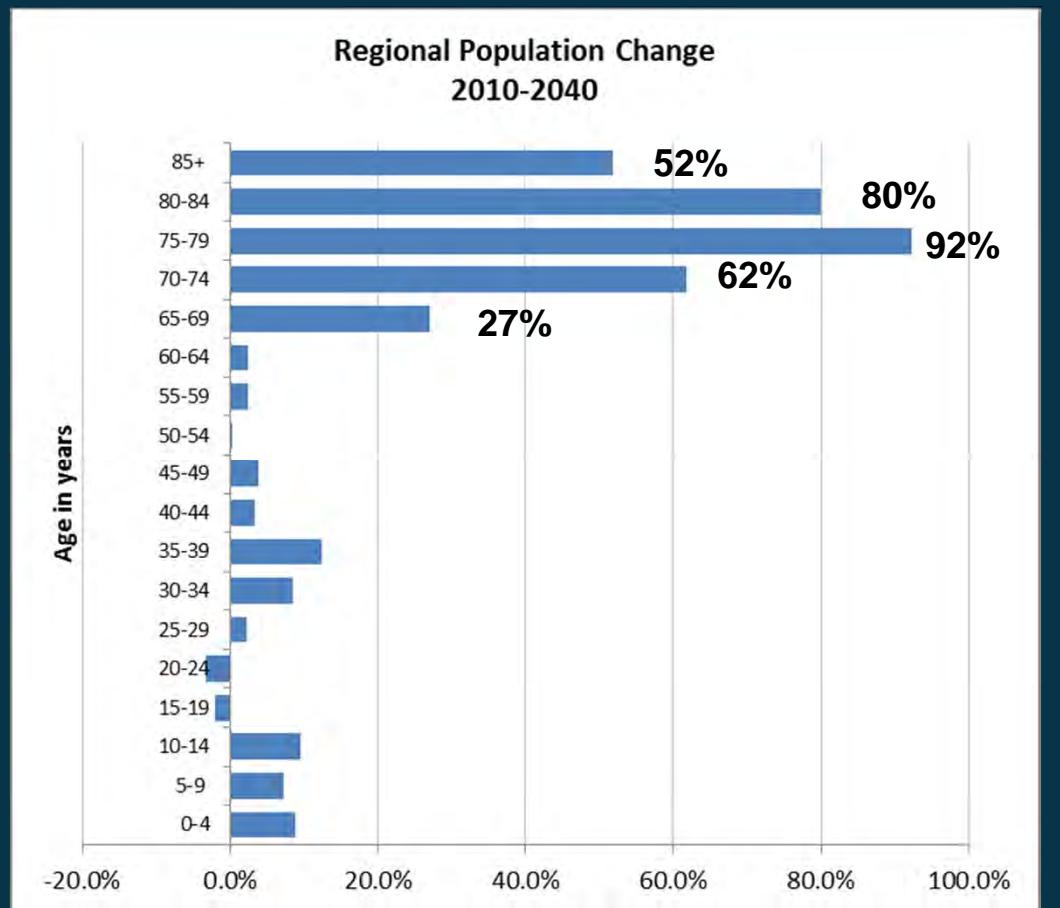
Create Age-Friendly Communities: Overview

- Why?
- What has DVRPC done?
- How do you assess your community?
- What can you do under TCDI?



Create Age-Friendly Communities: Why?

- Demographic imperative
- Forecast: Region will grow by 11% from 2010-2040; those 65+ will grow by 58%
 - *Larger contrast in suburbs*
 - *Suburban SF homeowners*
 - *Limited mobility*
 - *Transit may be lacking*
 - *Dispersion across suburbs*



DVRPC's Work on Aging

Studies:

*Aging of the Baby
Boomers: Housing Seniors
in the Delaware Valley*

MIT #12: Aging in Place

Outreach:

Healthy Communities Task
Force

Presentations to counties
and towns

AARP Livable Communities
Network

DVSGA event Nov. 28 on
“Evolving Nature of Senior
Living”

Tools:

Equity Through Access
Map Toolkit

www.dvRPC.org/aging



WHO/AARP Age-Friendly Designation

- WHO's Global Network of Age-Friendly Cities & Communities (2010)
- Designation process via AARP:
 - 1) *Establish process to involve older people*
 - 2) *Do a baseline assessment of the 8 domains*
 - 3) *Develop a 3-year action plan*
 - 4) *Identify indicators to monitor progress*
- City of Philadelphia, West Chester Borough, Princeton
 - *Swarthmore, East Goshen, West Philly, Montgomery County*



WHO/AARP Domains for Assessment

- Outdoor Spaces and Buildings
- Transportation
- Housing
- Social Participation
- Respect and Social Inclusion
- Civic Participation and Employment
- Communication and Information
- Community Support and Health Services



Outdoor Spaces and Buildings

- Narrowing down of spatial experience—getting outdoors harder, immediate neighborhood more important
- Amplification of impact of many small environmental deficits
- Assess for:
 - *Sidewalks, crosswalks, quality of pavements*
 - *Access to green space*
 - *Security, cleanliness*
 - *Places to sit, public toilets*
 - *Age-friendly buildings and businesses*



Transportation

- Maintaining one's sense of self and well-being
- Greater reliance on walking and transit, just as falls and traffic risks greater concerns
- Walking is barrier against vascular dementia and depression
- Assess for:
 - *Transit availability, affordability, reliability, frequency*
 - *Travel destinations*
 - *Age-friendly vehicles, transit stops & stations*
 - *Safety and comfort of modes*
 - *Community transport options*

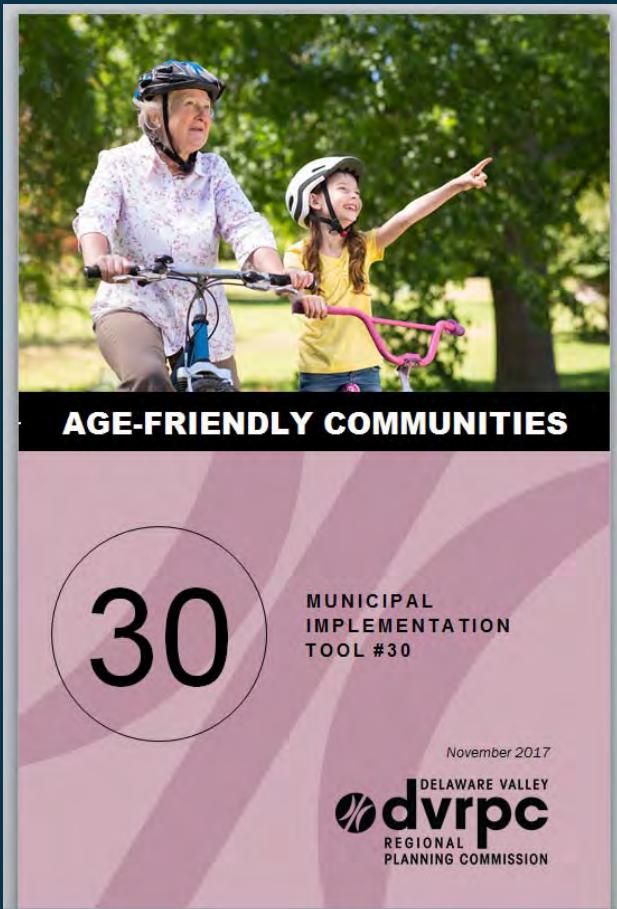


Housing

- Identity, continuity, status
- Poor housing=poor health
- Not necessarily downsizing, rather better design; may need more space
- Assess for:
 - *Housing mix*
 - *Affordability*
 - *Design*
 - *Community integration*
 - *Access to essential services*



DVRPC's Work on Aging: Latest Tool



- Age-Friendly's Eight Domains
 - *Checklist to assess your town*
- Policy and Program Recommendations
 - *Public Realm*
 - *Transportation*
 - *Land Use and Housing*
- Ways to Involve Older Persons
- Dementia-Friendly Communities
- Resources



Municipal or County Strategies for AFC

- Update zoning/SALDO to allow, require, or incentivize: ADUs, shared housing, less parking for senior housing, visitability, inclusionary units, adult day care, long-term care, home-based offices, sidewalks, TOD, colocation
- Adopt Complete Streets, Vision Zero, lower speed limit zones, senior ped zones, wayfinding & legible signage, programs for older cyclists
- Plan for providing bus shelters, benches, public restrooms, senior playgrounds



Create Age-Friendly Communities: TCDI

- Fund the 4-step designation process, OR
- Planning around the strategies for public realm, transportation, and housing for livable communities for all ages

Either way, your project/plan should enhance the transportation network so include the transportation domain



Expand the Economy

Christina Arlt, DVRPC

Expand the Economy

- Support and promote the growth of key economic sectors
- Increase innovation and new business formation
- Enhance business growth through government efficiency
- Foster a high-quality, productive workforce
- Expand the region's connections to the global economy
- Develop a more energy-efficient economy



Tourism: the “Heads in Beds” Economy



Credit: Photo by M. Fischetti for VISIT PHILADELPHIA®

New Jersey Municipalities, April 2016



Why Heritage Tourism Matters

Cultural heritage tourists help build town brands, generating interest—and income

By Dorothy P. Guzzo, Executive Director, New Jersey Historic Trust, an affiliate agency of the Department of Community Affairs

The Howell Living History Farm in Hopewell Township

New Jersey is fortunate to have a vast array of significant historic sites spanning more than four centuries where tourists and residents alike can learn about and appreciate our unique heritage.

What does this mean for New Jersey? It means that attracting cultural heritage travelers to explore what the Garden State has to offer can generate a crucial revenue source for state and local governments as well as an incredible opportunity to enhance the state's image. The heritage tourism industry plays an important economic role by generating spending by millions of visitors to these attractions. Of the \$42 billion dollars in revenue generated by overall tourism in New Jersey, a recent study found that 8 percent of this income is generated by heritage tourism.

The National Trust for Historic Preservation defines heritage tourism as "...traveling to experience the places and activities that authentically represent the stories and people of the past. It includes historic, cultural, and natural resources."

According to the report *Linking our Legacy to a New Vision, A Heritage Tourism Plan for New Jersey* from New Jersey Heritage Tourism Task Force:

"The goal of heritage tourism is to preserve cultural legacies, to interpret stories by offering places to see where events happened, to imagine the voices and read the words, and to

encourage travelers to seek out the places that connect us to a time and place that still shapes us—individually, as a community and as a nation—today."

VIABLE VISITORS Cultural heritage tourists tend to travel more often, prefer educational experiences, spend more and are willing to travel farther distances to get the experiences they want.

Today, many more individuals self-identify themselves as cultural and heritage travelers.

In addition to visiting historic sites, these travelers often combine their visit to an historic site with a trip to an art gallery, museum, winery, or festival and enjoy other recreational activities as well. The heritage tourism visitor expects authenticity and quality—both in the historic resource and in the visitor experience that is provided. The impressions that one is left with after a visit should be memorable and worth sharing.

A 2013 research study conducted by Mandala Research, LLC, "The Cultural and Heritage Traveler 2013 Edition," indicated that 71 percent of the U.S. population (170.4 million people), travel for leisure. Of this, almost eight in 10 (or 76%) participated in cultural and

heritage activities, (approximately 129.6 million individuals).

This national research study also concluded that cultural heritage travelers spent \$1,319 per trip in 2013—an increase from \$994 in 2009. (This spending increase, though, may reflect increases in gas prices, hotel rates and air fare.) The \$1,319 per trip compares to just \$820 for other leisure travelers.

In 2013, cultural and heritage travelers contributed \$171 billion to the national economy—a decrease of \$20 billion from 2009.

While leisure trips declined from five per year in 2009 to 3.6 per year in 2013 due to the recession, there was a 33 percent increase in per person spending during this same time period.

MEASURABLE INTEREST That same year, the New Jersey Historic Trust commissioned a study to measure the economic and fiscal impacts of heritage tourism in New Jersey. The study was undertaken by Tourism Economics, an Oxford Economics Company, and the results surprised many.

The 11 million visits to our historic sites generated \$2.8 billion in visitor spending and generated \$335 million in

Cultural Heritage Tourism

Site Seeing for Opportunities

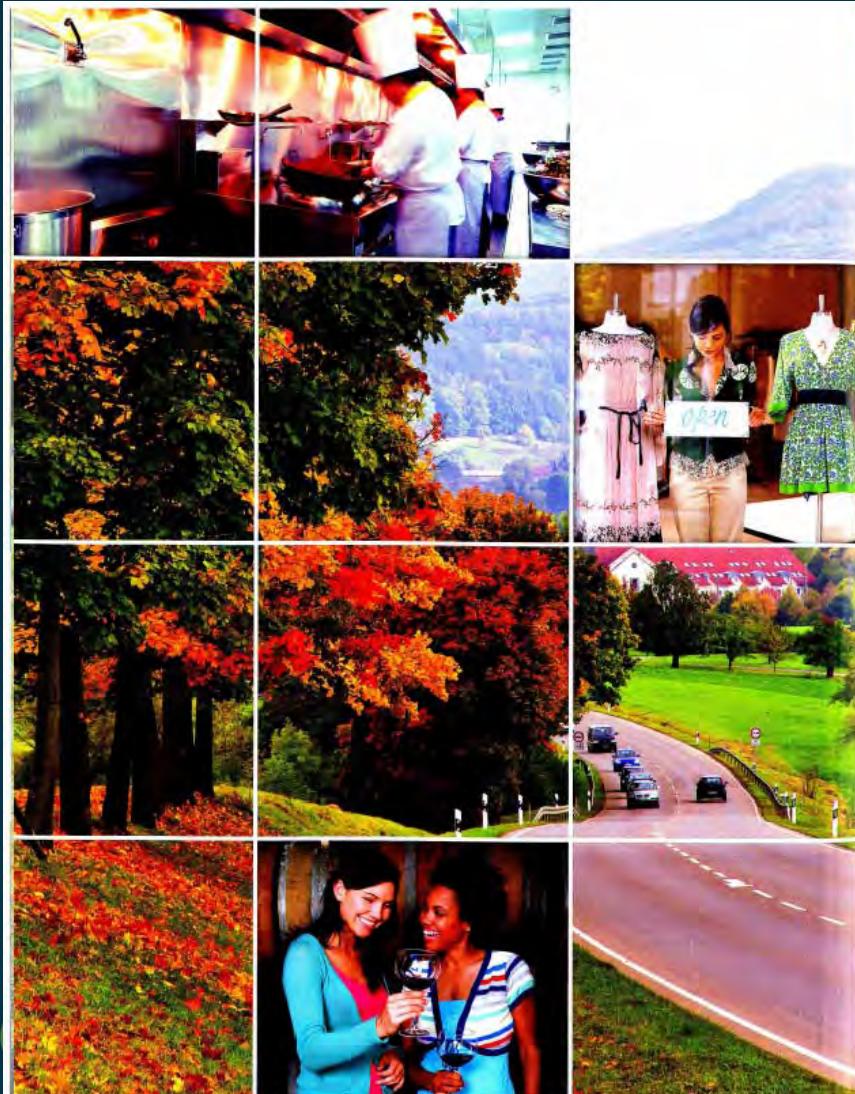
For more information on becoming a destination for exploring history, the following resources are available online:

- For information on how to create heritage tourism opportunities, visit the New Jersey Historic Trust website: njht.org
- For more information on the economic impact of heritage tourism in New Jersey, visit: njht.org/dca/njhttourism
- For a list of tourism organizations operating in your region, visit: visitnj.org/DMOs
- For more information on getting started in heritage tourism visit the National Trust for Historic Preservation preservationnation.org/informationcenter/



Lamberville's Shadfest explores the area's cultural heritage in the form of natural resource preservation. *Inset: Photography by Stephen Harris*

Borough News, October 2016



FEATURE ARTICLE

Roads Well Traveled

Billions of dollars are spent each year as millions of people converge on Pennsylvania and spend money on hotels, restaurants, entertainment, outdoor recreation, and other services. As borough officials, you must provide infrastructure, public safety, and other services to support this key industry.

According to a 2014 study from Tourism Economics, 190 million people traveled to Pennsylvania from throughout the United States in 2013. Almost 30 million hotel rooms were booked generating \$3.2 billion in hotel room revenues. The industry also employs about 220,000 people.

Traveler spending generated an estimated \$69.6 billion in total economic activity – indirect and direct impacts – throughout all industries in Pennsylvania in 2014 – a 1.8 percent increase from 2013.

economic activity – indirect and direct impacts – throughout all industries in Pennsylvania in 2014 – a 1.8 percent increase from 2013.

The restaurant, recreation, and lodging sectors employed the most individuals in the travel and tourism sector. Secondary benefits are realized across the entire economy through the supply chain and business owner and employee incomes as they are spent.

There are more than 25,400 eating and drinking locations in the state employing more than 561,000, according to the Pennsylvania Restaurant and Lodging Association.

Homeowners benefit from tourism, too. The report estimates that in Pennsylvania, the average homeowner would pay an additional \$835 in taxes annually, if not for the benefits of tourism.

The report was sponsored by a coalition of over 25 Pennsylvania tourism industry stakeholders,

including major associations, businesses, and destination marketing associations.

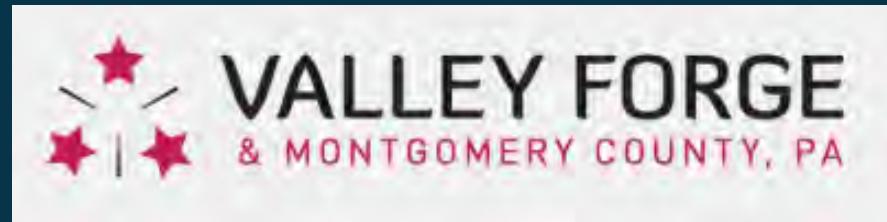
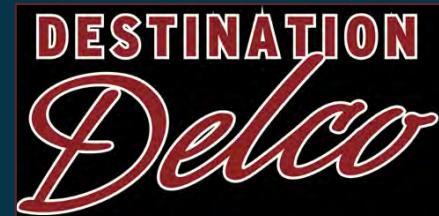
The Tourism Economic report broke down spending by regions. The Pennsylvania's Great Lakes region is comprised of Crawford, Erie, Mercer and Venango counties. Travelers spent nearly \$1.64 billion in the region in 2013 – an 0.8 percent increase from 2012's spending level.

As in 2012, the region had the third highest proportion of its travel and tourism dollars spent on shopping among the state's 11 tourism regions in 2013.

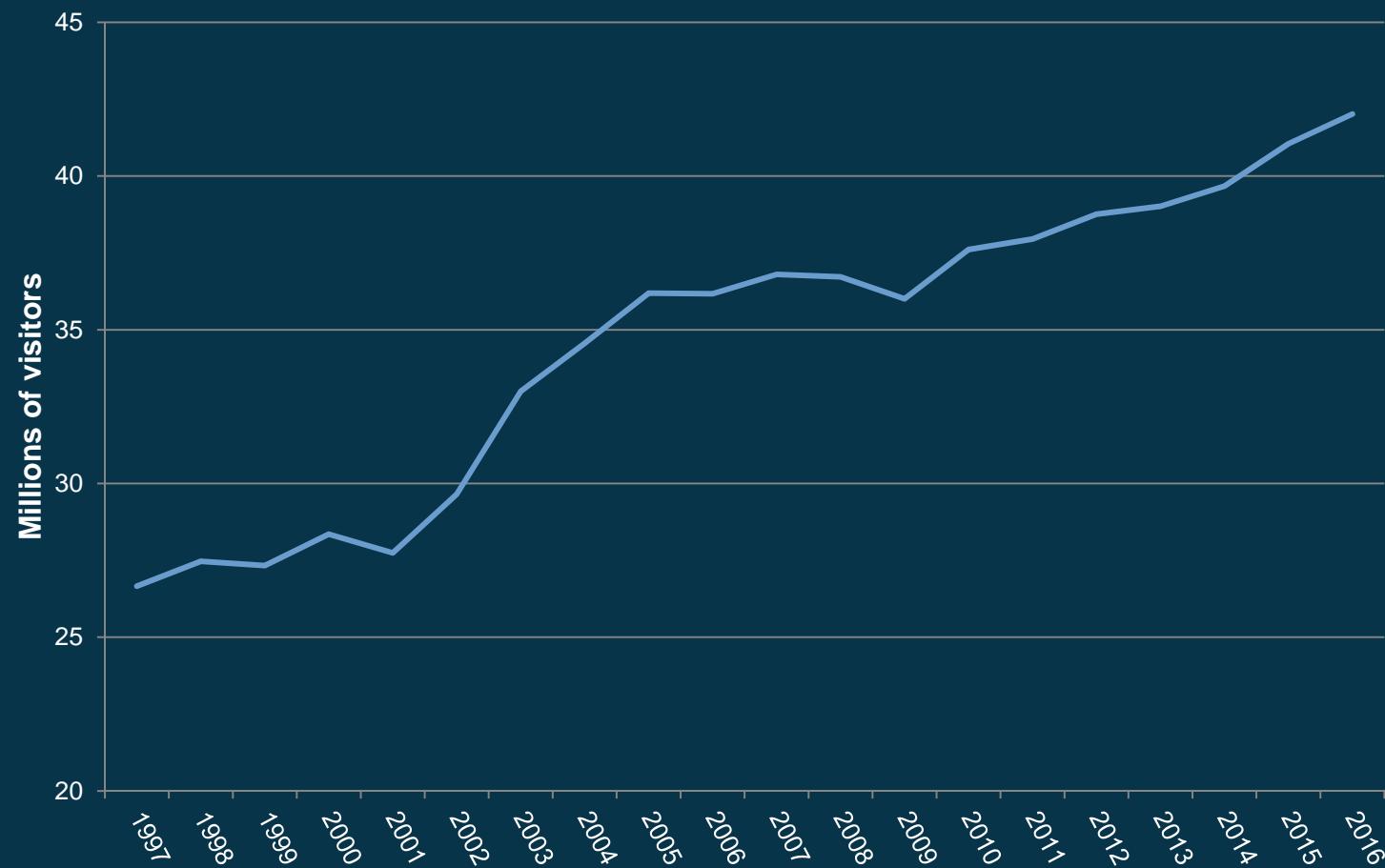
The Dutch Country Roads region is comprised of: Adams, Berks, Cumberland, Dauphin, Franklin, Lancaster, Lebanon, Perry, and York counties. Travelers there spent well over \$7.8 billion in the

continues on page 34..

Direct Marketing Organizations



Annual Visitors to Southeastern PA



Sources: Longwoods International/Tourism Economics/Econsult Solutions Inc.



2016 Visitation Record: Southeastern PA

42,000,000

domestic visitors

and 490,000 Canadian visitors



Source: Visit Philadelphia, 2017 Annual Report

2016 Visitation: New Jersey

98,000,000 visitors



Source: Visit New Jersey, 2016 Tourism Economic Impact Study

Visitors Spend Money



Credit: Photo by J. Fusco for VISIT PHILADELPHIA®

Visitors Spend Money

- Southeast PA
 - \$6.8 billion in visitor spending
 - \$11 billion in indirect impact
- New Jersey
 - \$10 billion in revenue



Source: Visit Philadelphia, 2017 Annual Report; Visit New Jersey, 2016 Tourism Economic Impact Study

Visitors Generate State & Local Tax Revenues



Credit: Photo by R. Kennedy for VISIT PHILADELPHIA®

Visitors Generate State & Local Tax Revenues

- Southeast PA
 - \$634 million
- New Jersey
 - \$4.9 billion



Source: Visit Philadelphia, 2017 Annual Report; Visit New Jersey, 2016 Tourism Economic Impact Study

Visitors generate jobs



Credit: Photo by M. Kennedy for VISIT PHILADELPHIA®



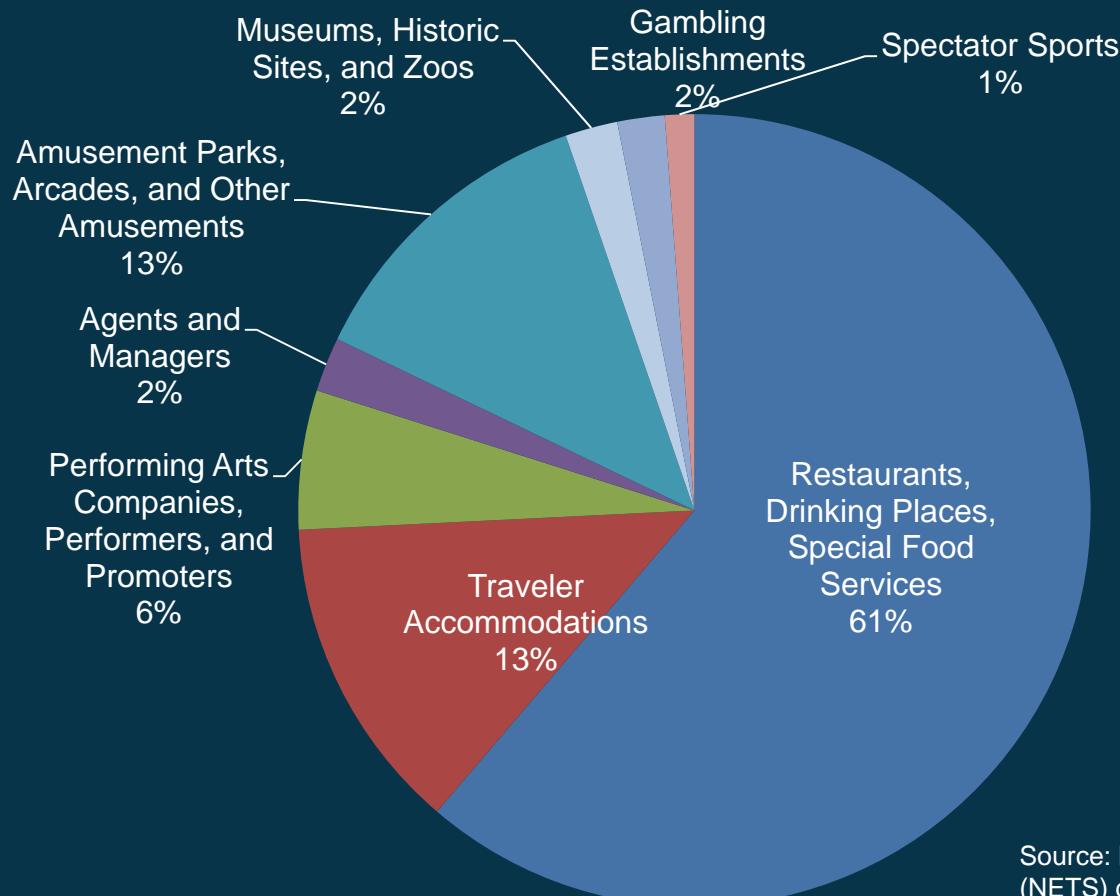
Visitors generate jobs

- Southeast Pennsylvania:
 - 96,600 jobs
- New Jersey
 - 321,000+ jobs statewide (2016)
 - 517,000+ indirect/induced jobs



Source: Visit Philadelphia, 2017 Annual Report; Visit New Jersey, 2016 Tourism Economic Impact Study

Tourism-Related Employment by Type, 2013

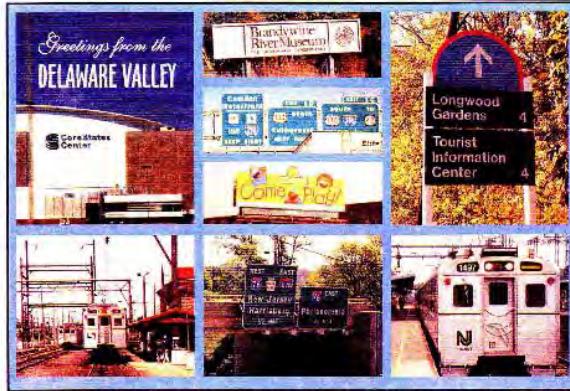


Source: National Establishments Time Series (NETS) database, May 2017.



DVRPC's Tourism Reports

HOW DO WE GET THERE?
Improving Mobility for Tourists and Visitors



Greetings from the
DELAWARE VALLEY

Delaware Valley Regional Planning Commission
October 1997

Data Snapshots 2:4



Series 2 No. 4
September 2017

REGIONAL ECONOMICS:
Hospitality & Tourism

DELAWARE VALLEY **data** | DVRPC
REGIONAL PLANNING COMMISSION

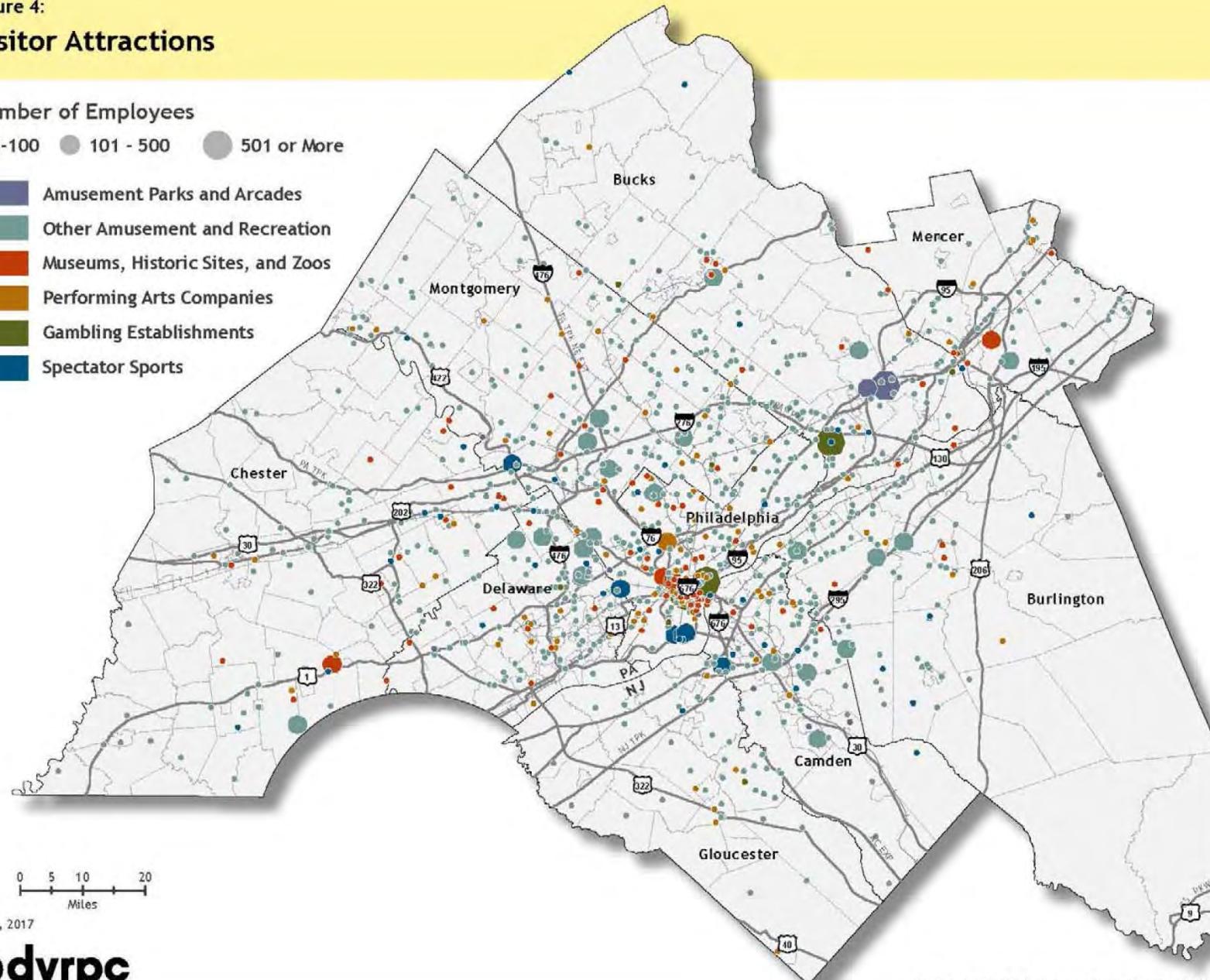


Figure 4:
Visitor Attractions

Number of Employees

▪ 5-100 ● 101 - 500 ● 501 or More

- Amusement Parks and Arcades
- Other Amusement and Recreation
- Museums, Historic Sites, and Zoos
- Performing Arts Companies
- Gambling Establishments
- Spectator Sports



N
0 5 10 20
Miles

June, 2017

dvrpc

Source: National Establishment Time-Series (NETS) Database, 2013

Major Attractions



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Credit: Photo by J. Fusco for VISIT PHILADELPHIA®

Eating and Drinking Establishments



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Credit: Photo by J. Fusco for VISIT PHILADELPHIA®

Accommodations



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Credit: Photo by M. Fischetti for VISIT PHILADELPHIA®

Arts and Cultural Tourism



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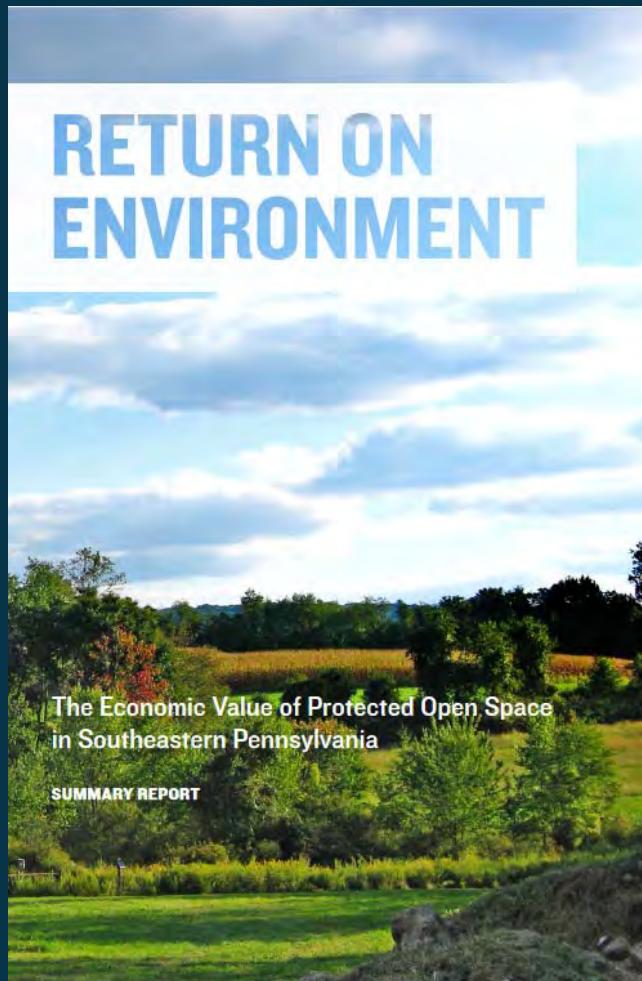
Credit: Photo by J. Fusco for VISIT PHILADELPHIA®

Open Space and Nature-based Tourism



Credit: Photo by R. Kennedy for VISIT PHILADELPHIA®

Open Space Attracts People Who Spend Money in Our Communities



“The economic activity associated with protected open space in southeastern Pennsylvania resulted in more than **6,900 jobs** and **\$299 million in annual earnings.**”

Source: DVRPC, Return on Environment, 2011.



Linking “Expand the Economy” to TCDI

- Wayfinding Plans
- Streetscape Plans
- Gateway Plans
- Parking Management Study
- Scenic Byway Plan



Linking “Expand the Economy” to TCDI

- Other Eligible TCDI Project Types:
 - Marketing Plan for your downtown or community
 - Capital Improvement Programs (CIP)
 - Tax Increment Financing (TIF) studies
 - Impact Fee Ordinances
 - Business Improvement District (BID) plan
 - Neighborhood Improvement District (NID) plan
 - Revitalization/Redevelopment plan
 - Brownfield or Greyfield inventory or plan
 - Real Estate Market Analysis/Assessment
 - Feasibility Analysis
 - Transit Station Improvement Project



DVRPC's Tourism Events

- Past
 - **June 27, 2017:** The Economic Impact of Tourism
 - **October 5, 2017:** Philadelphia's World Heritage City status: What does it mean for tourism in your neighborhood or community?
- Future
 - Spring 2018: Transportation and Tourism



Advance Equity and Foster Diversity

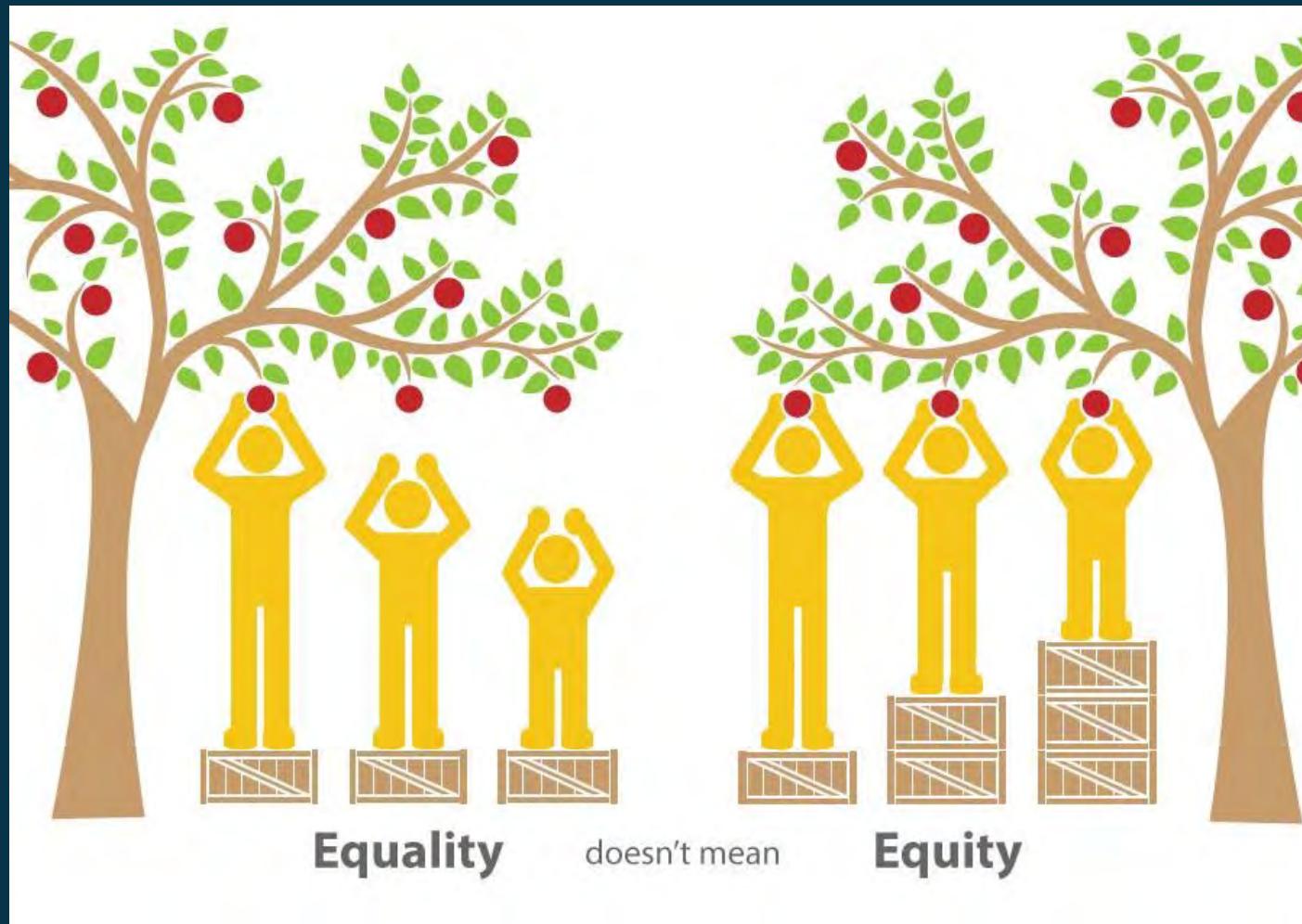
Shoshana Akins, DVRPC

Advance Equity and Foster Diversity

- Promote equitable access to transportation for vulnerable persons
- Create age-friendly communities
- Give all children in the region access to good schools
- Build inclusive communities and develop without displacement



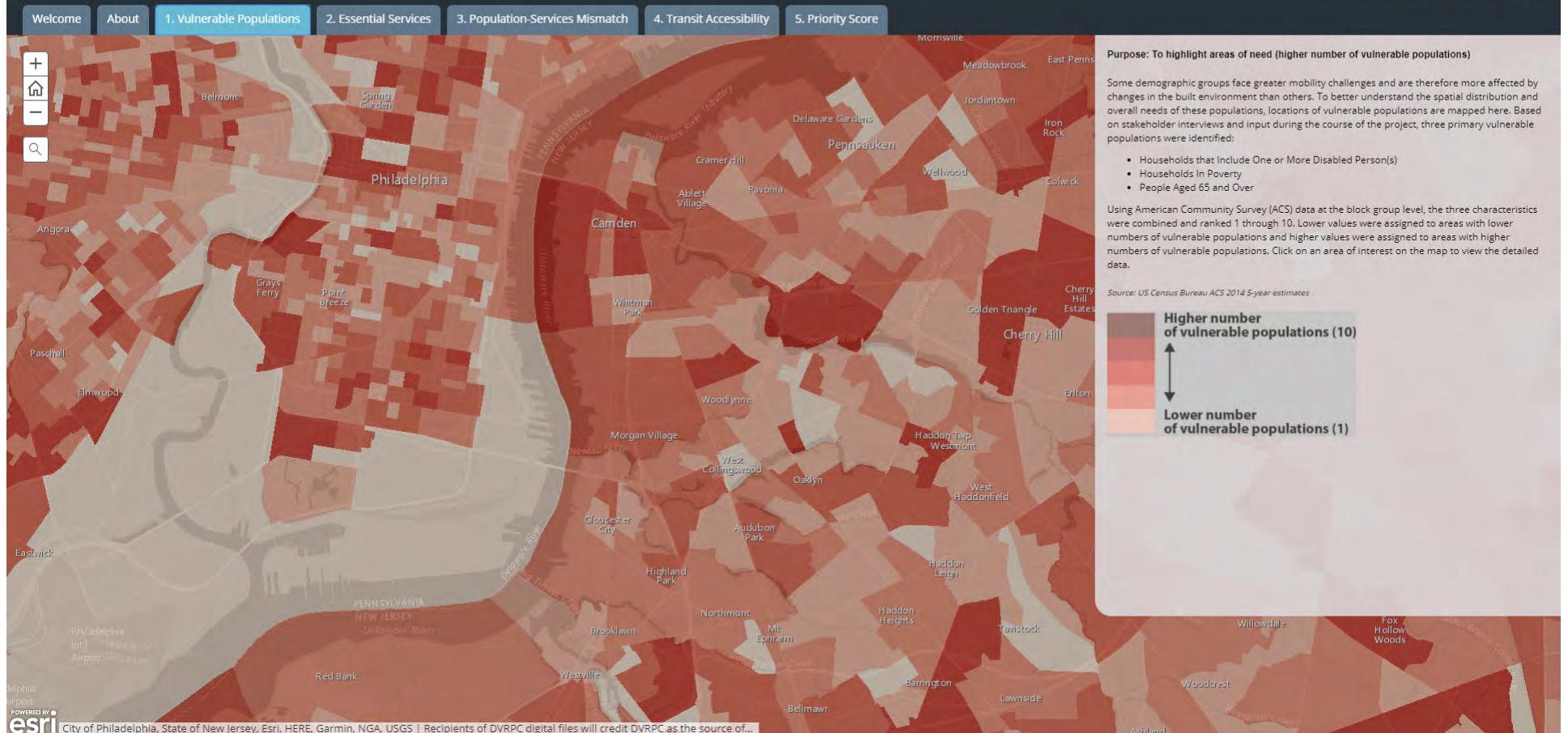
Advance Equity and Foster Diversity



DVRPC's Equity Through Access

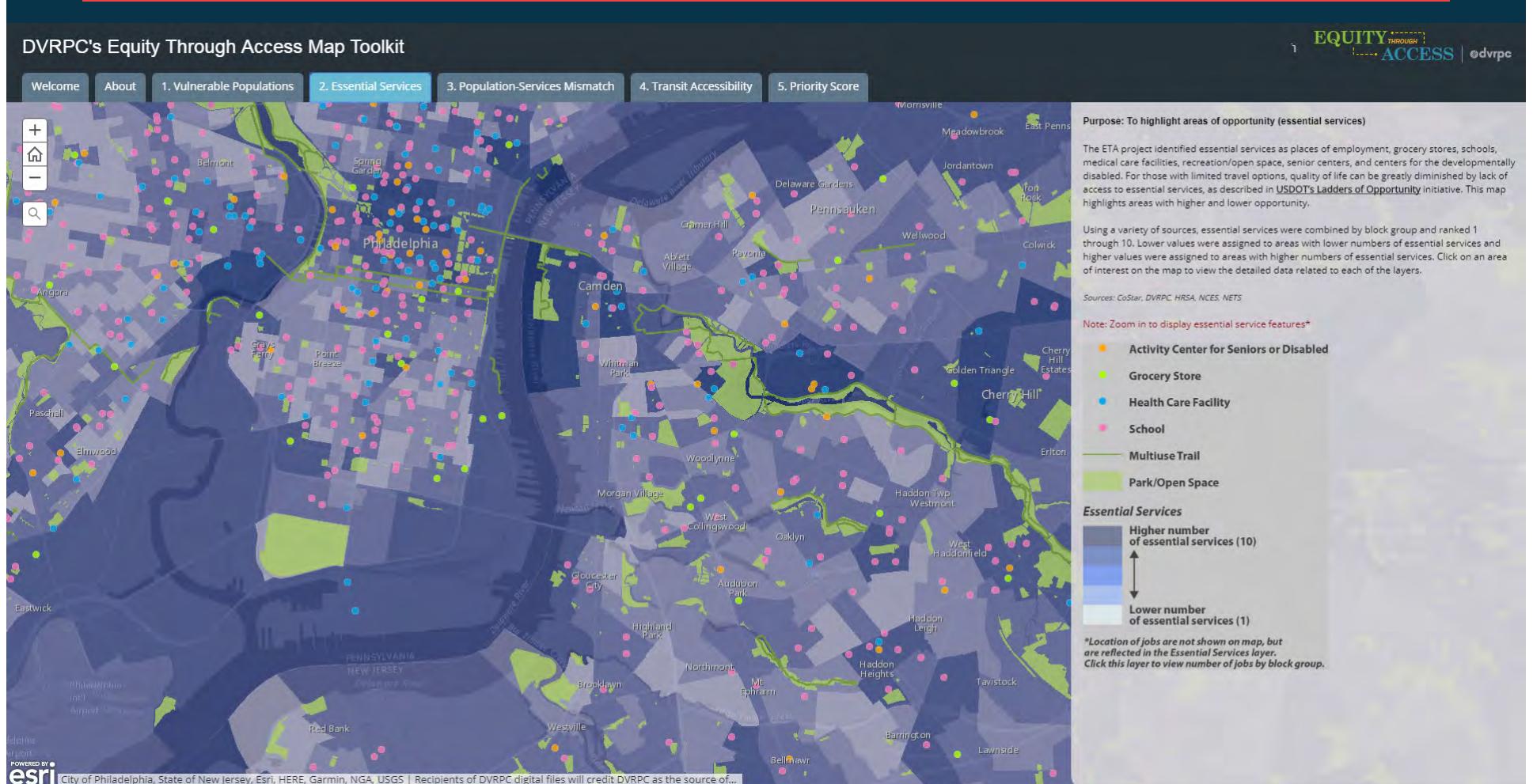
DVRPC's Equity Through Access Map Toolkit

EQUITY THROUGH ACCESS | [dvrpc](#)



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DVRPC's Equity Through Access

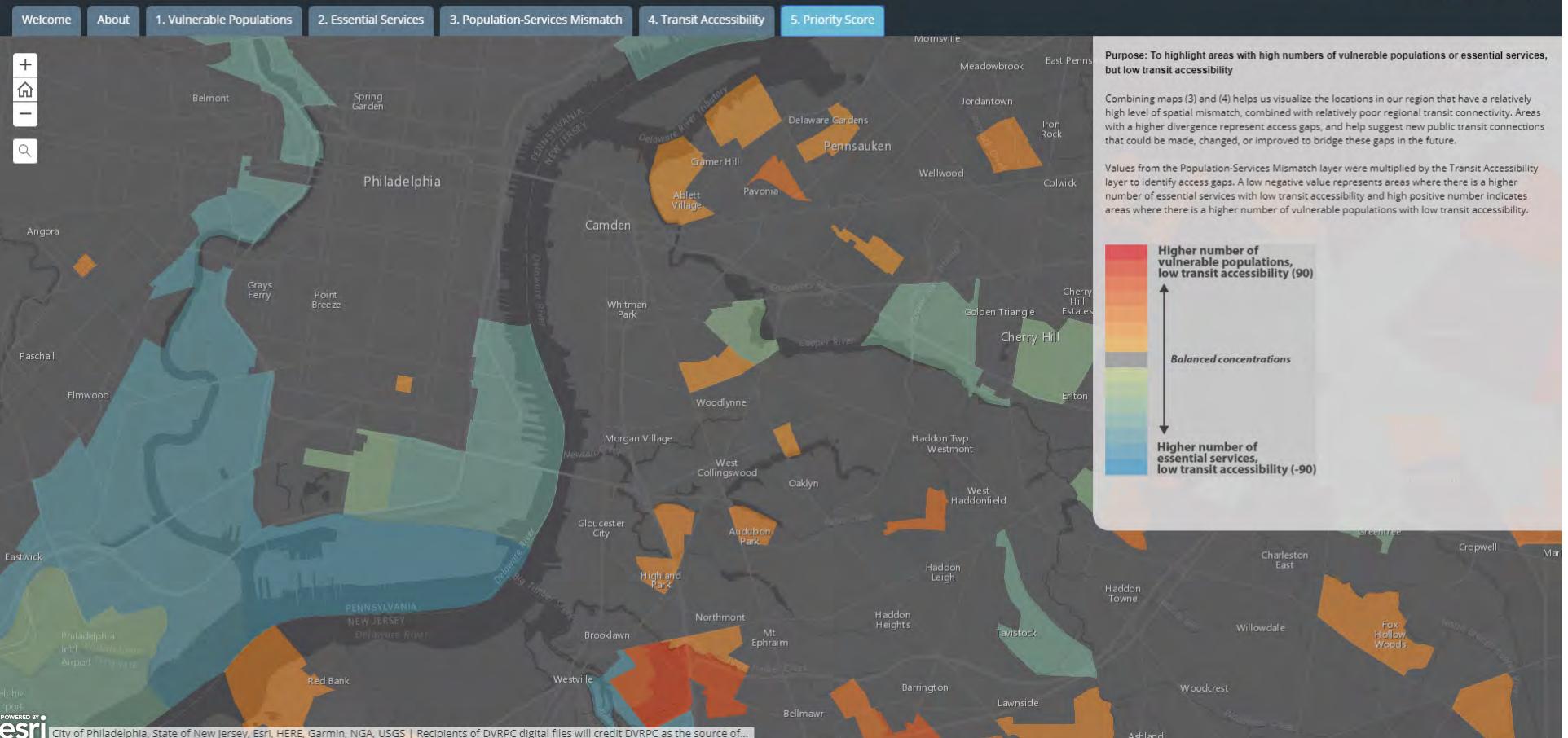


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DVRPC's Equity Through Access

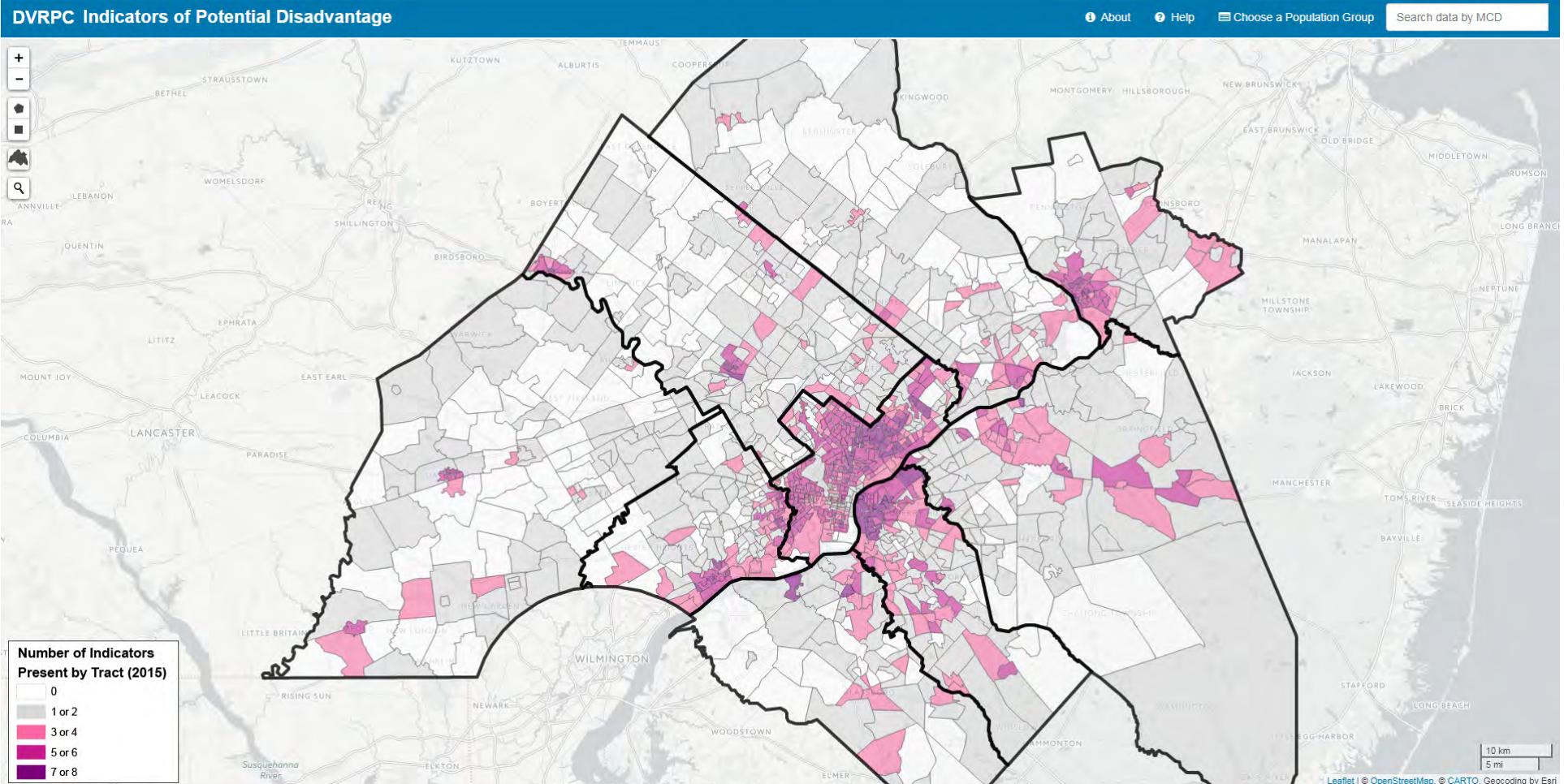
DVRPC's Equity Through Access Map Toolkit

EQUITY THROUGH ACCESS | [@dvrpc](#)



POWERED BY City of Philadelphia, State of New Jersey, Esri, HERE, Garmin, NGA, USGS | Recipients of DVRPC digital files will credit DVRPC as the source of...

Equity Tools: IPD Map



Equity Tools: MIT Tool #27



- Tool to understand how immigration trends can spur economic development
- Addresses Title VI principle of prohibiting “discrimination based on race, color, or national origin”
- Available on DVRPC website at <https://www.dvRPC.org/Products/MIT027/>

Equity Tools: MIT Tool #22



- Tool provides recommendations for municipalities to implement public participation strategies
- Meaningful engagement by community members is an integral principle of equity
- Available on DVRPC website at <https://www.dvRPC.org/Products/MIT022/>



Create an Integrated, Multimodal Transportation Network

Kevin Murphy, DVRPC

Create an Integrated, Multimodal Transportation Network

- Use technology and design to integrate existing and new modes into an accessible multimodal network
- Facilitate goods movement and aviation
- Move toward zero transportation deaths
- Limit transportation impacts on the natural environment
- Rebuild and maintain the region's transportation infrastructure
- Increase mobility and reliability, and reduce congestion
- Build partnerships and adapt to a changing transportation marketplace
- Create a more secure transportation network
- Improve transportation systems management and operations



Create an Integrated, Multimodal Transportation Network

Complete Streets

- Use technology and design to integrate existing and new modes into an accessible multimodal network
- Move toward zero transportation deaths

"Complete Streets are SAFE, COMFORTABLE, and CONVENIENT."

~Philadelphia Streets Department

Complete Streets are streets for everyone, designed to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities.



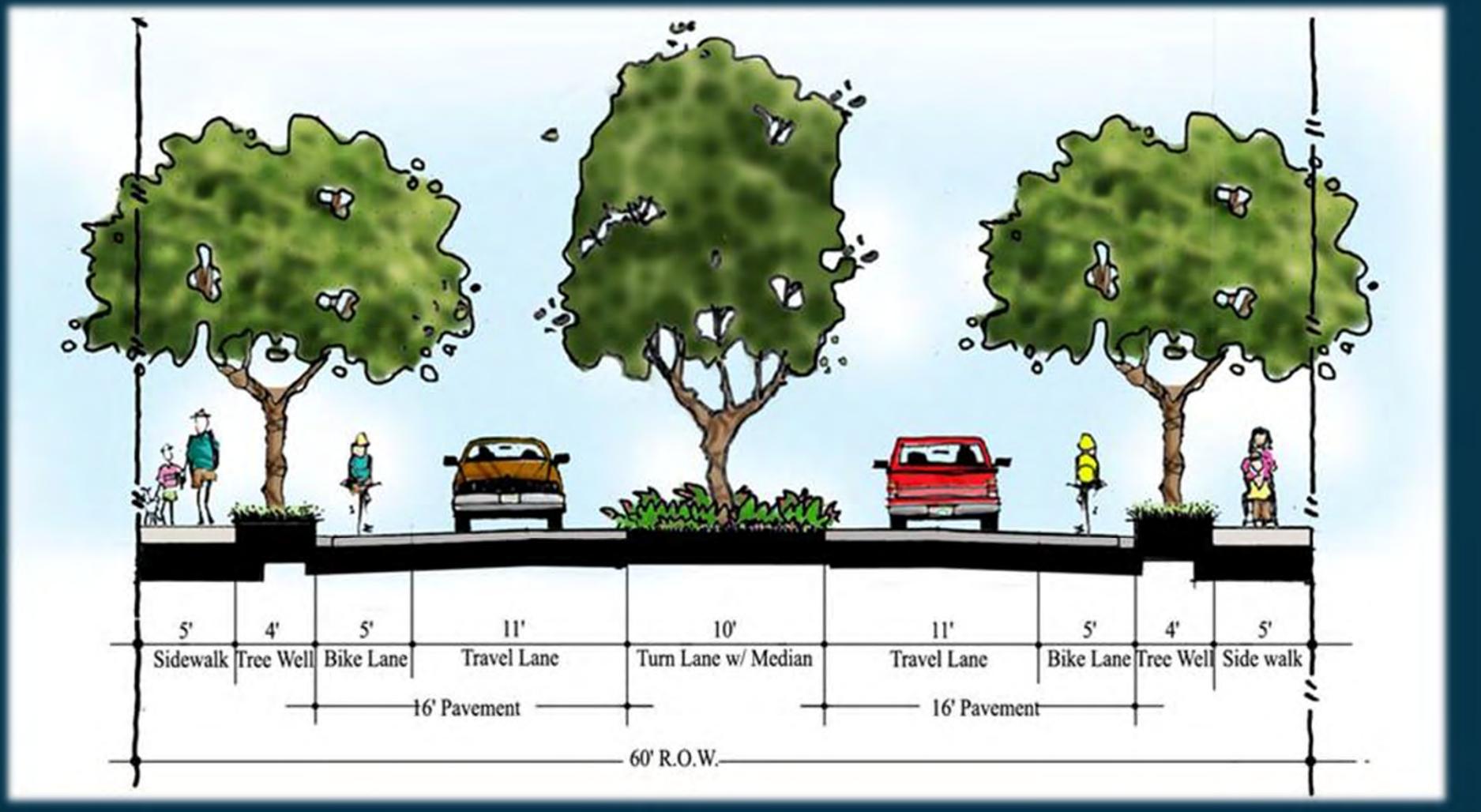
Brooklyn, NY



Create an Integrated, Multimodal Transportation Network

Complete Streets

- Use technology and design to integrate existing and new modes into an accessible multimodal network
- Move toward zero transportation deaths



Create an Integrated, Multimodal Transportation Network

Complete Streets Policy

“As of the end of 2016, **more than 1,000 jurisdictions** in the U.S. have made formal commitments to streets that are safe and convenient for everyone—no matter their age, income, race, ethnicity, physical ability, or how they choose to travel—by passing a Complete Streets policy”

~National Complete Streets Coalition

Five elements of an effective complete streets policy:

1. Purpose and intent
2. Definition of users and modes
3. Types of improvements
4. Design standards
5. Exemptions
6. Implementation plan

- Use technology and design to integrate existing and new modes into an accessible multimodal network
- Move toward zero transportation deaths



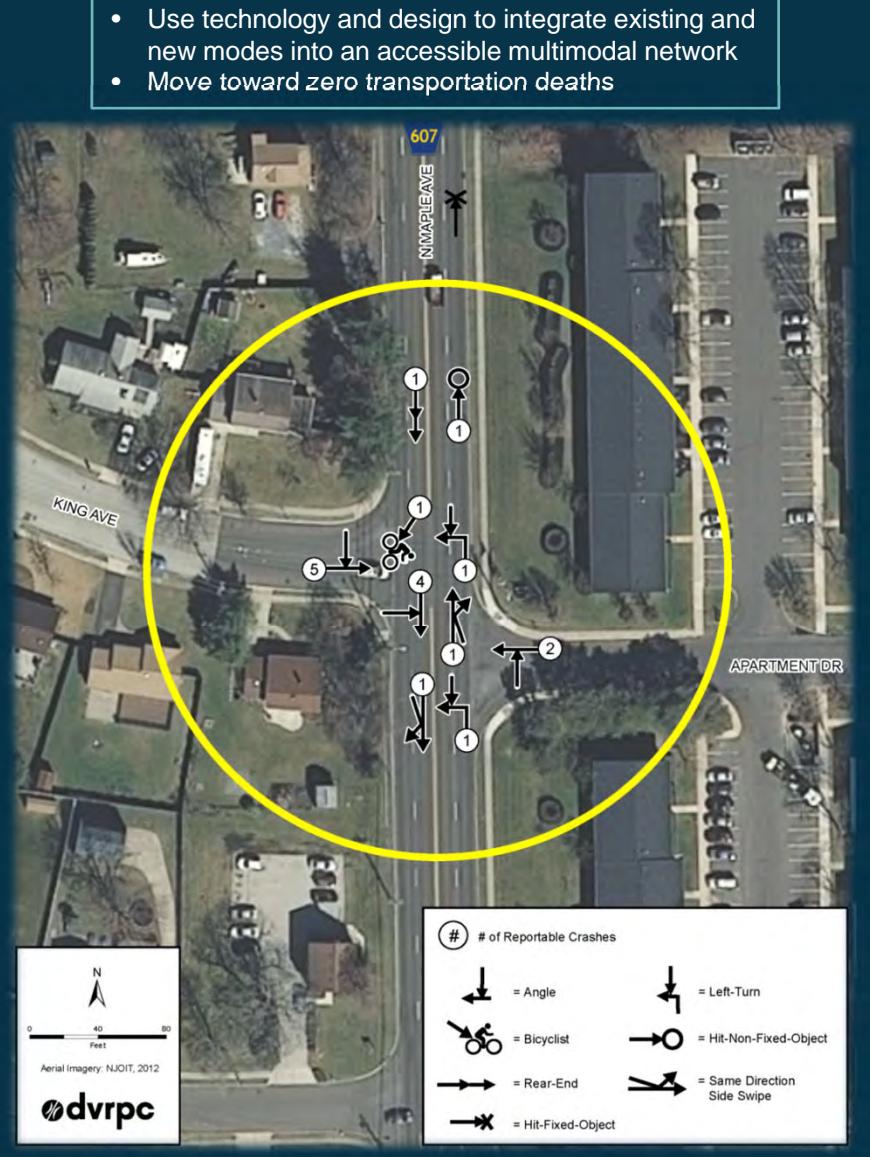
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Road Safety Audit

A Road Safety Audit (RSA) is the formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team

RSA's answer these questions:

- What elements of the road present a safety concern, and to which road users?
- What opportunities exist to eliminate or mitigate identified safety concerns?



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Road Safety Audit

RSA Process:

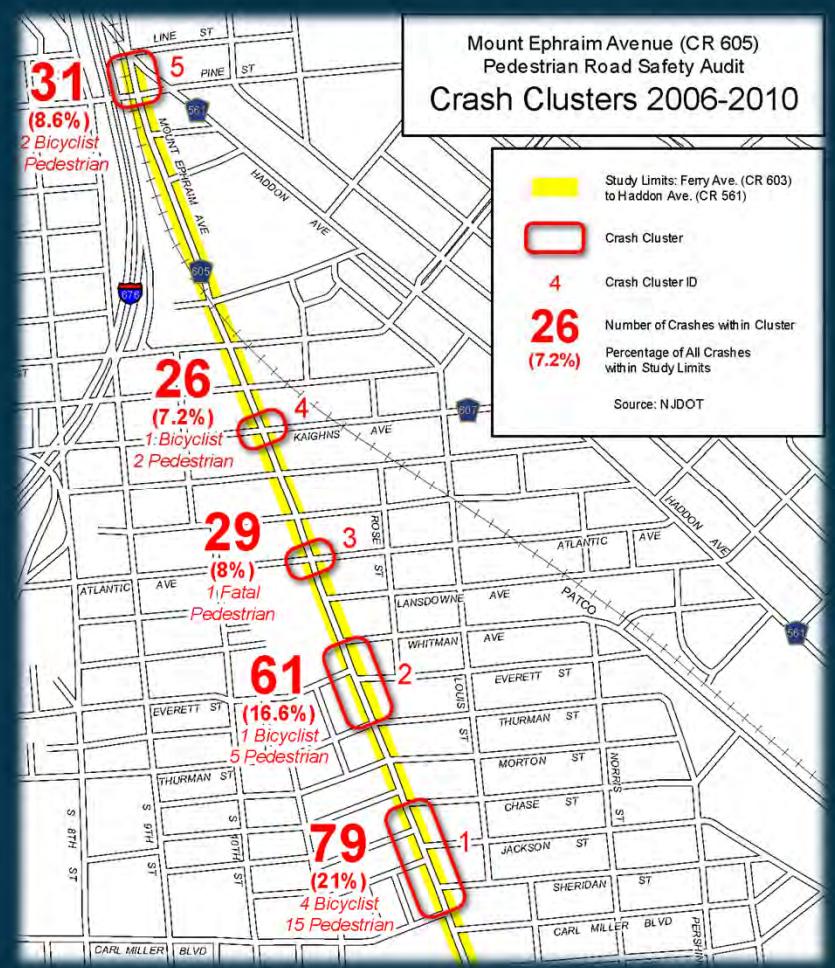
- 1. Pre audit** –review location characteristics and crash analysis
- 2. Field visit** – field survey (walk/drive)of the corridor to examine conditions



Mt. Ephraim Ave. RSA, Camden, NJ



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Road Safety Audit

RSA Process:

3. Post audit – the audit team shares findings and develops a list of problems and potential strategies

Final Report/Findings and Recommended Strategies:

- Issues
- Exposure
- Severity
- Recommendation
- Difficulty to Implement
- Responsible Agency



Cluster #3: North Maple Avenue at North Locust Avenue

Issue #1: Left-turn crash trend, signal head misalignment

Aerial view of intersection illustrating skewed alignment

Issues:

- Left turns at this intersection are accommodated by an exclusive left-turn lane and protected/permitted signal phasing. Eight of the 11 crashes involved a turning movement, and left-turn crashes were specifically overrepresented at 45 percent of the cluster total. The predominant pre-crash movement was drivers turning from North Maple Avenue onto North Locust Avenue east- or westbound (six cases). This may be related to the skewed intersection geometry;
- The left-turn arrow signal head is misaligned with the left-turn lanes in both directions on North Maple Avenue. This compromises drivers' view of the signal;

Exposure:

In the context of this crash cluster, turning movement-related crashes represent the largest majority of crashes (eight of 11). Balanced with the relatively low crash total, the exposure would be low to moderate.

Severity:

Five of the 11 crashes resulted in moderate injury, plus one major and one minor injury crash. Regarding overall severity and the property damage only to injury crash ratio, this location has the most severe crash experience on the corridor, despite the lowest number of total crashes.

Recommendation:

Short Term – Center signal heads over left-turn lanes. During the audit event, team members suggested that this may be accomplished by adjusting the swing mast arms; examine the signal timing in search of issues that may affect turning-movement-related crashes. Long Term – Consider adding post-mounted signals on North Maple Avenue to improve signal visibility.

Difficulty to Implement:
Medium to High

Responsible Agency:
Burlington County

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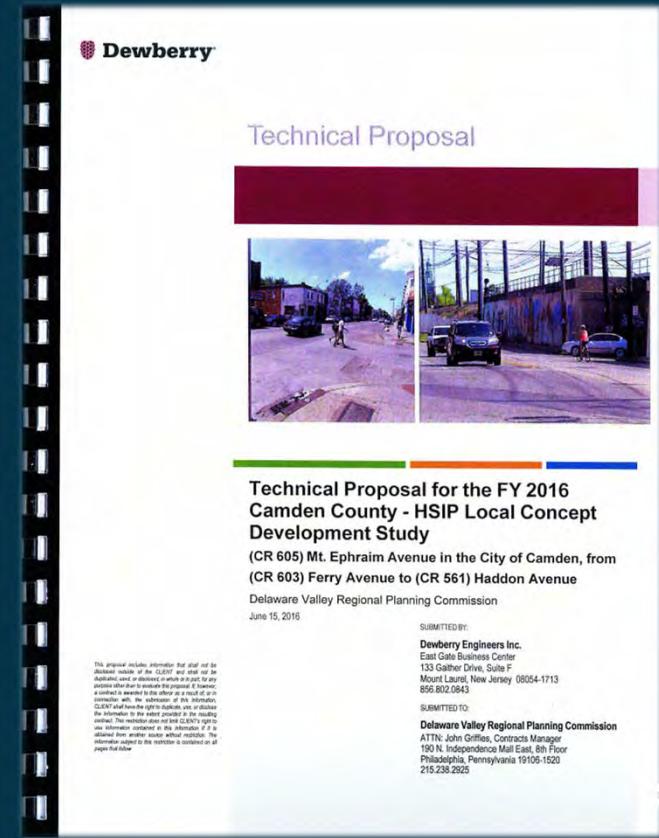
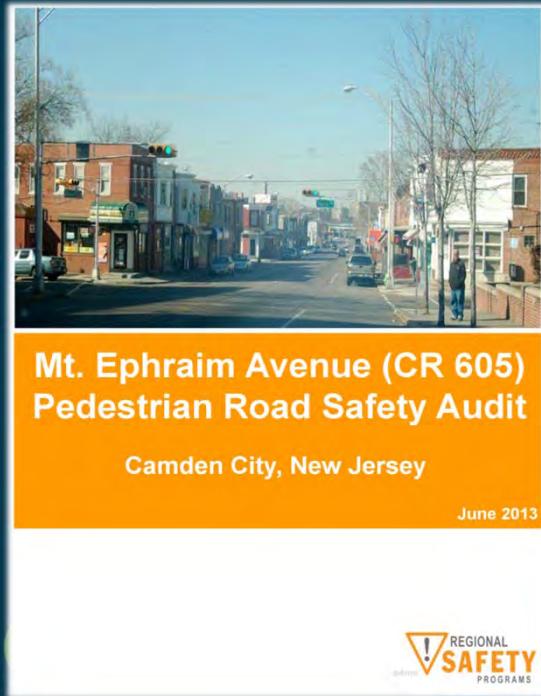
Road Safety Audit + HSIP = Implementation

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Highway Safety Improvement Program (HSIP):

A core Federal-aid program designed to achieve a significant reduction in traffic fatalities and serious injuries on all public roads.

HSIP is data-driven and focused on performance!



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Context Sensitive Solutions

CSS is a set of planning techniques designed to reverse the negative effects of traffic. CSS “looks beyond the pavement”, to the way that a road fits into its environment.

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Toolbox:

- Traffic Calming
- Pedestrian Priority Design
- Place-making Elements
- Bicycle Accommodation
- Transit Amenities
- Smart Growth Design

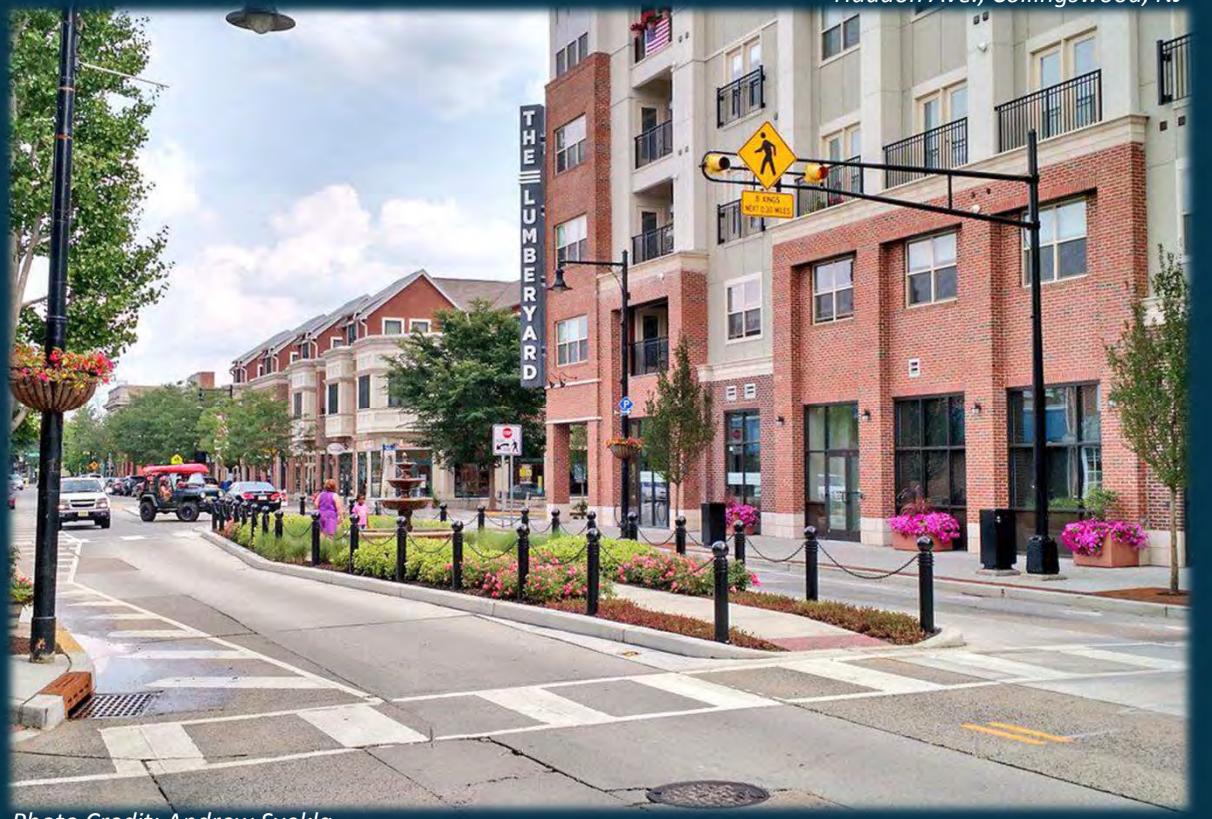


Photo Credit: Andrew Svekla

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Context Sensitive Solutions

Traffic Calming:

"to support the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort... typically achieved by reducing vehicle speeds or volumes"

Euclid Ave, Haddonfield, NJ

Toolbox:

- Road Diet
- Speed table
- Roundabout
- Corner Extension/Bulbout
- Medians
- Pedestrian Crossing Islands



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Context Sensitive Solutions

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HSIP-eligible proven safety countermeasures!



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Click on any icon below to learn more about the specific countermeasure



Roadside Design Improvement at Curves



Reduced Left-Turn Conflict Intersections



Systemic Application of Multiple Low Cost Countermeasures at Stop-Controlled Intersections



Leading Pedestrian Interval



Local Road Safety Plan



USLIMITS2



Enhanced Delineation and Friction for Horizontal Curves



Longitudinal Rumble Strips and Stripes on Two-Lane Roads



Median Barrier



Safety Edges



Backplates with Retroreflective Borders



Corridor Access Management



Dedicated Left- and Right-Turn Lanes at Intersections



Roundabouts



Yellow Change Intervals



Medians and Pedestrian Crossing Islands in Urban and Suburban Areas



Pedestrian Hybrid Beacon



Road Diet



Walkways



Road Safety Audit

THANK YOU!

Questions?