Web Maps, Open Data, and more!

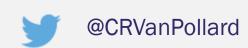
How DVRPC visualizes geospatial data across different planning tools and platforms



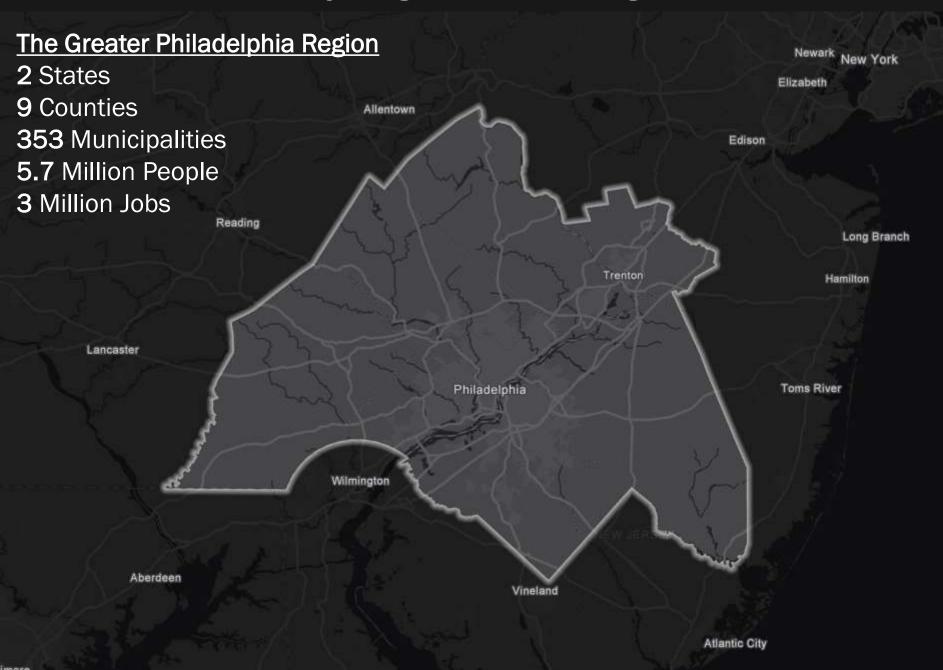


Christopher Pollard | cpollard@dvrpc.org Manager, Geospatial Application Development





Delaware Valley Regional Planning Commission



Office of Geographic Information Systems (GIS)

Provide GIS and mapping support for 13 different DVRPC planning departments

Long-Range Planning and Economic Coordination

Freight and Aviation Planning

Executive Office

Capital Program

Project Implementation

Transportation and Corridor Studies

Public Relations

Transportation Operations Management

. .

Energy and Climate Change Initiatives

Modeling and Analysis

Smart Growth

Environmental Planning

Transit, Bicycle, and Pedestrian Planning

Travel Monitoring

Transportation Safety and Congestion Management

as well as...

MEMBER GOVERNMENTS TRANSIT AGENCIES

PRIVATE CONSULTANTS

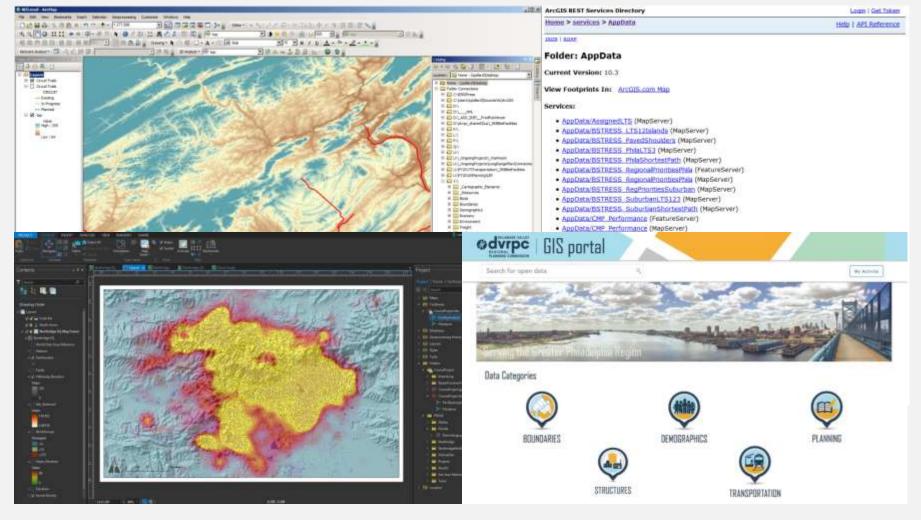
PUBLIC

GIS and Mapping Tools



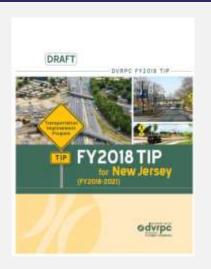
Industry standard Esri products (ArcGIS, ArcGIS Pro, ArcSDE, ArcGIS for Server, AGO, and ArcGIS Open Data)

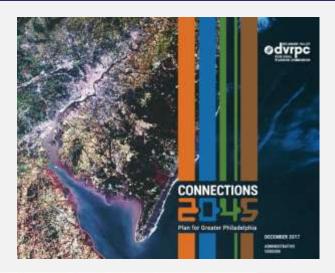




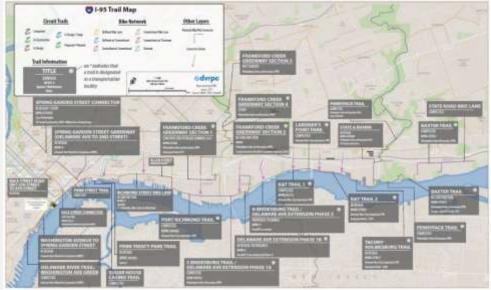
Maps, maps, and more maps

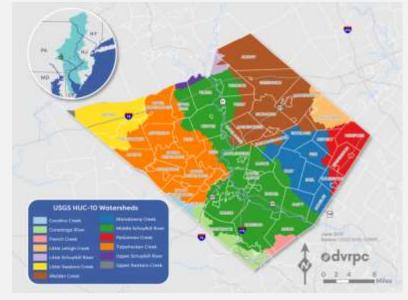










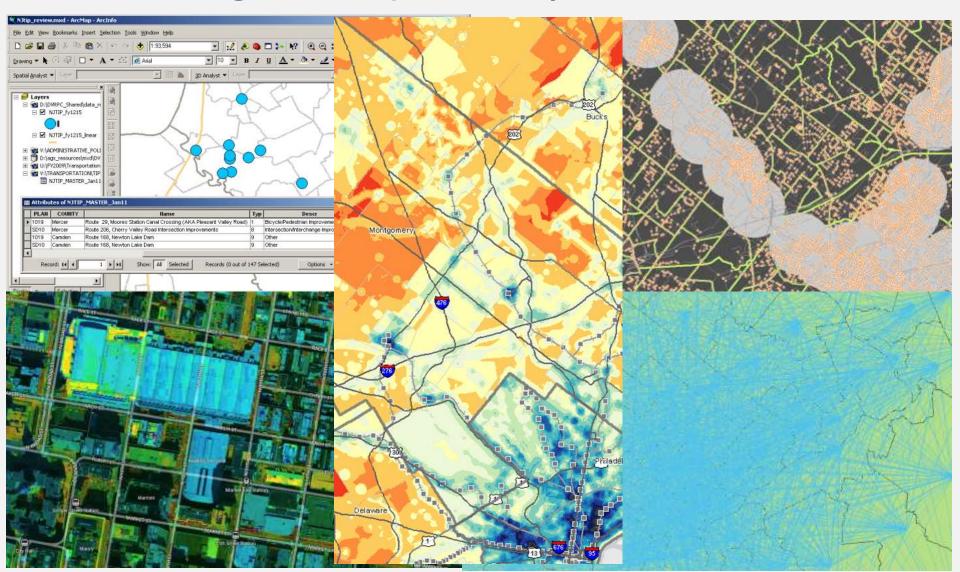


A lot of our GIS work comes from our work program projects

We do more than just make static maps...



Data Management - Spatial Analysis - Data Visualization



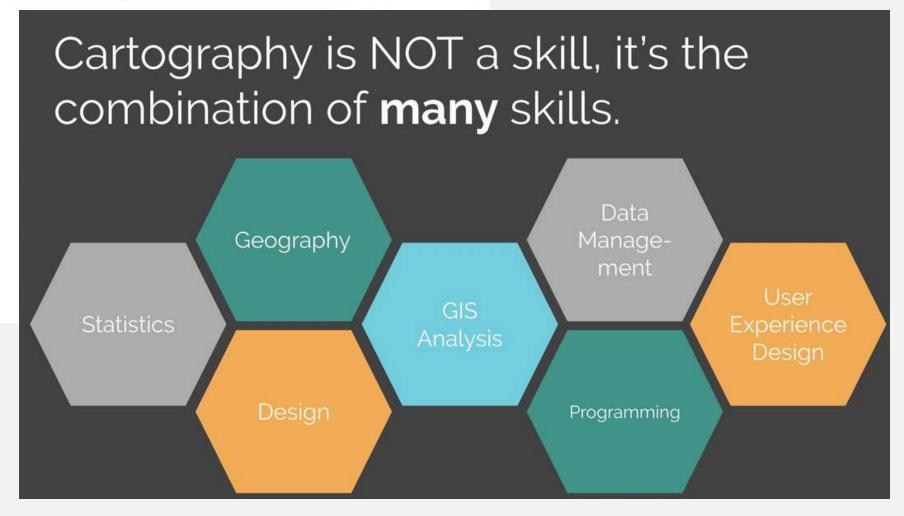
The Power of GIS and Data Viz





Katie Kowalsky @KatieKowalsky · Oct 18

I just talked at #nacis2018 about Tolkien, mapping tech, and how to build products for cartographers docs.google.com/presentation/d...



We care about accurate and reliable geospatial data to help foster regional data-driven decision making







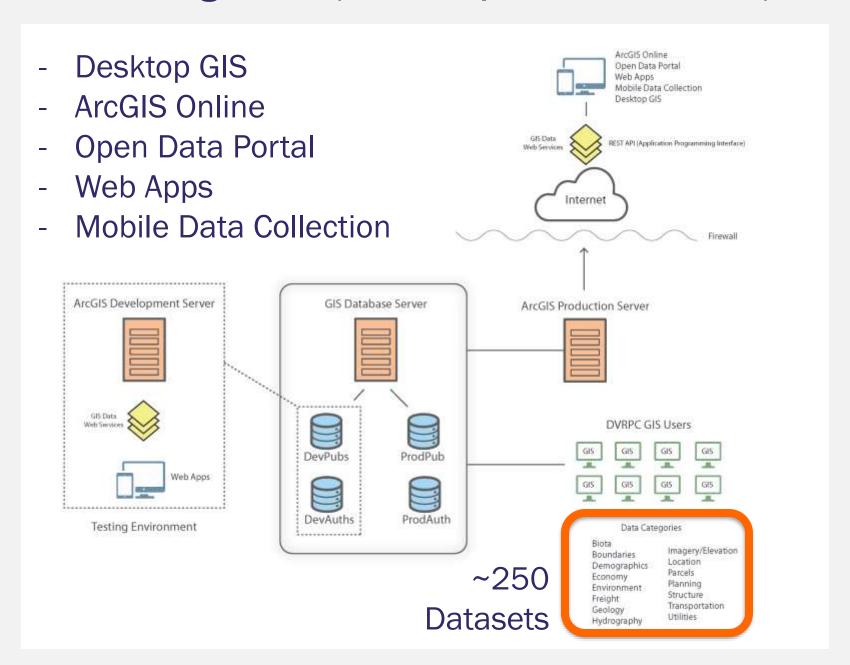


Good data leads to effective and trustworthy communication

Public Engagement - County Planning Effort (i.e. Master Plans)

Policy-Making – Project Implementation

Data Management (GIS Enterprise Infrastructure)



DVRPC GIS Portal - Our GIS Data lives here



(https://www.dvrpc.org/Mapping/Data/)



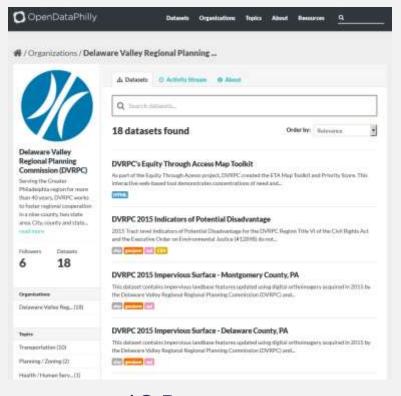
Close to **70** DVRPC and other agency datasets

- Traffic Counts
- Bicycle and Pedestrian Counts
- 2045 Long Range Plan Data Sets
- PA and NJ TIP
- Indicators of Potential Disadvantage
- 2015 DVRPC Land Use
- Impervious Surface
- Protected Open Space
- Building Footprints
- Passenger Rail
- Freight Rail

Where else can you find us



Open Data Philly



18 Datasets (Planning and Transportation)

PASDA



18 Datasets (Imagery)



Coming soon...



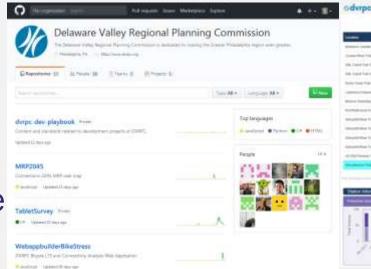


Web Mapping Tools



ArcView GIS& ArcIMS& Esri Leaflet& Mapbox& CARTO& Leaflet& AGO Web Maps& ArcGIS API for JS& **Story Maps&** Highcharts& D3& GitHub are simply awesome











Analysis



Energy Use and Greenhouse Gas **Emissions Reduction** Projects















Municipal Energy and Emissions Profiles





Bicycle Counts



CyclePhilly





Delaware Valley Suburban Retail Districts



Corridor Studies Database



Smart Growth Project Database



Transportation and Community Development Initiative (TCDI)



Community Investment Index (CI2)



Aerial Imagery Indexes











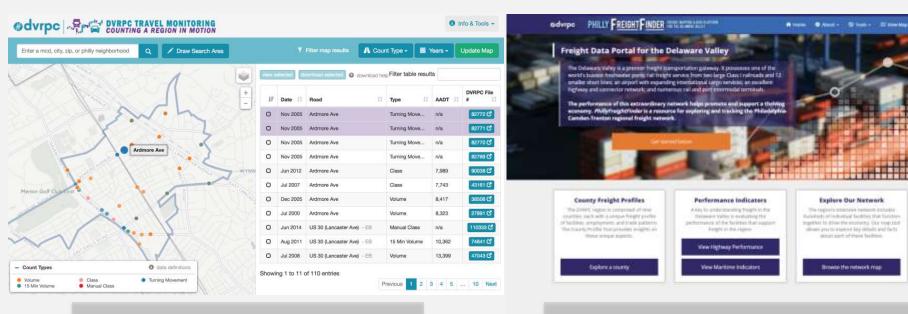


Process (CMP)

Interactive Maps (Tech Focus)

Travel Monitoring





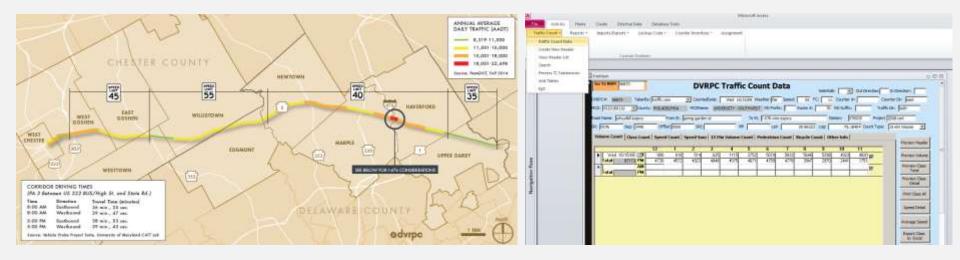
Philly Freight Finder

Tech Focus on Travel Monitoring









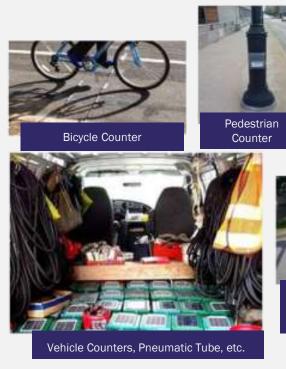
Equipment



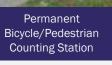
tools of the trade













Why Count?



"What gets measured, gets managed"

Funding, performance

May be necessary for funding applications and tracking of performance measures

Trend analysis

Historic data allows for the development of trends

Project justification

Analysis of before and after conditions

Measuring safety

Useful in calculation of exposure and risk



the result:
a database with over
100,000 traffic counts

How do we get all this great data to potential users?

Data Management Tools



```
cursor.execute("SELECT DISTINCT (recordnum_after), TC_HEADER." FROM header_audit INNER 101W TC_HEADER ON header_audit.RECORDNUM_AFTER
   with open(changes, 'wb') as fout:
        writer - csv.writer(fout)
        writer.writerow([ 1[0] for i in cursor.description ]) ###heading row
        writer.writerows(cursor.fetchall())
    ids - [i for i, in arcpy.da.SearchCursor
           (changes, "RECORDNUM_AFTER") if i | None]
   edit arcpy.da.Editor(workspace)
   edit.startEditing()
   edit.startOperation()
    with arcpy.da.UpdateCursor (tc, "RECORDNUM") we tocursor:
        for recordnum, in tecursor:
            if recordnum in ids:
                tccursor.deleteRow ()
   tccursor
48 arcpy.env.overwriteOutput = True
49 whereid="TYPE NOT LIKE 'Bicycle%' and TYPE NOT LIKE 'Ped%'"
58 wherebike="TYPE LIKE 'Bicycle%'"
   whereped "TYPE LIKE 'Ped%'"
   arcpy.MakeXYEventLayer_management(changes,"LONGITUDE","LATITUDE","changeslyr", wgs)
   arcpy.Exists(tcshp):
        arcpy.Delete management(tcshp)
   arcpy.Exists(bikeshp):
        arcpy.Delete management(bikeshp)
   If arcpy.Exists(pedshp):
        arcpy.Delete management(pedshp)
   arcpy.Select_analysis("changeslyr",tcshp, whereid)
   arcpy.Select_analysis("changeslyr",bikeshp,wherebike)
    arcpy.Select_analysis("changeslyr", pedshp, whereped)
    arcpy.RepairGeometry_management (tcshp, "DELETE NULL")
    with arcpy.da.UpdateCursor(tcshp,"SETDATE", ""SETDATE" IS MULL") as delcur:
        for row in delcur:
            delcur.deleteRow()
   delcur
                                                                                                                   df - acopy respects Lindon Frances [and [1]]
   fieldmappings = arcpy.FieldMappings()
                                                                                                              # doc online foreign and a
   fieldmappings.addTable(tcshp)
    arcpy.Append_management(tcshp,tc,"NO_TEST", fieldmappings)
```

Travel Monitoring (Esri Leaflet) - DEMO





Search Traffic Counts by Location

(initial time range set to 2011 - 2016)

Enter a municipality, city, zip code, or philadelphia neighborhood

advanced options



Custom Search

Create custom shapes with the draw tool on the map.



DVRPC File #

Search traffic counts by DVRPC file number.

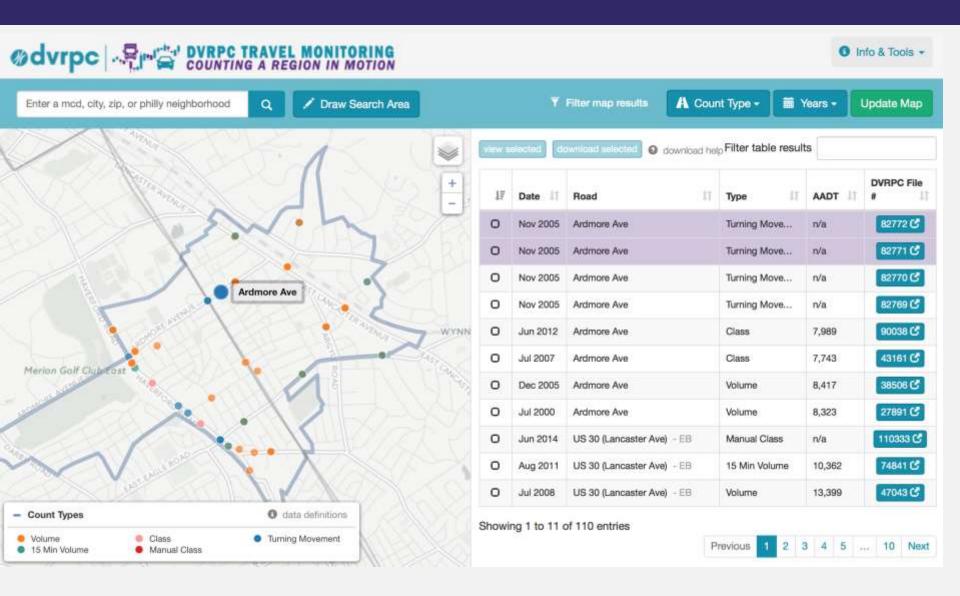


Map Service

Connect directly to our ArcGIS Server map services.

Travel Monitoring (Esri Leaflet)

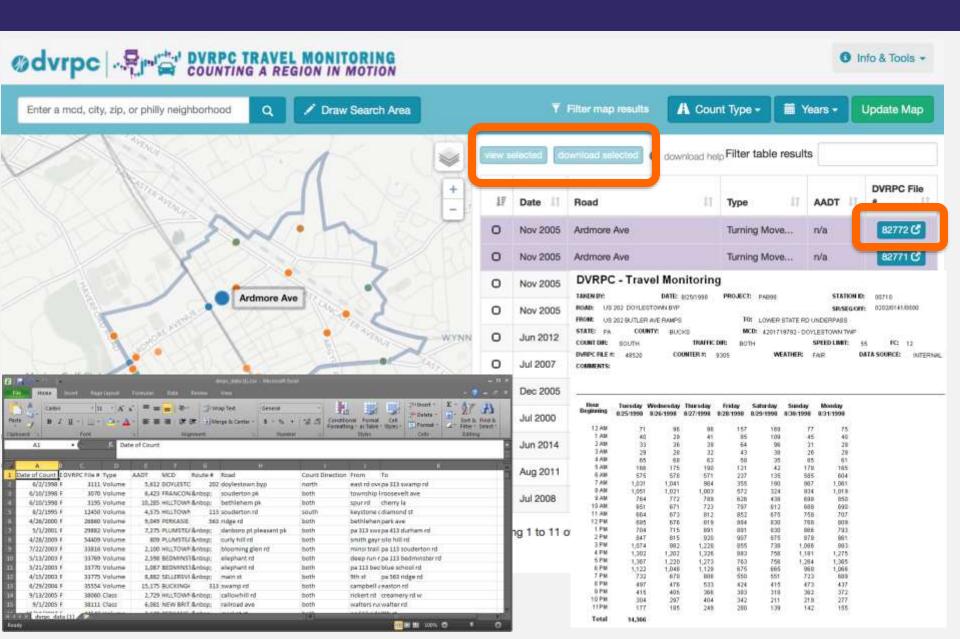




Esri Leaflet is a project from the Esri PDX R&D Center and the Esri Community

Travel Monitoring

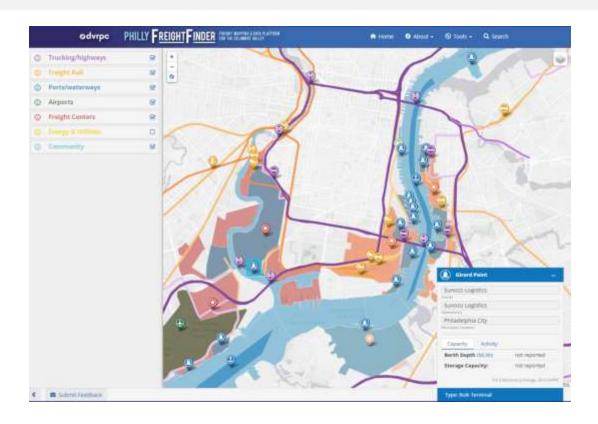






Tech Focus on PhillyFreightFinder

The Delaware Valley is a premier freight transportation gateway. The performance of its extraordinary network helps promote and support a thriving economy. *PhillyFreightFinder* is a resource for exploring and tracking this Philadelphia-Camden-Trenton regional freight network.





Background

AN **ONLINE**, **INTERACTIVE** PLATFORM FOR SHARING FREIGHT
NETWORK **DATA TO ENHANCE THE UNDERSTANDING** OF
PERFORMANCE AND VALUE OF FREIGHT IN THE REGIONAL ECONOMY

LAUNCHED 2013

With support from the DVRPC Freight Advisory Committee, the initial product was made public in 2013. The FAC assisted with identification of data and included a mix of public and private-sector members.

DVRPC FREIGHT

PhillyFreightFinder was built internally through the DVRPC freight office, building on a foundation of technical work that was conducted over 20+ years. The project remains an integral part of the annual work of the DVRPC Office of Freight.



Why build *PhillyFreightFinder*

- Expand reach of freight planning efforts
- Improve visibility + availability of freight data
- Educate regional planners and the public
- Develop better data sharing with public- and private-sectors





Components of PFF

FRONTEND APPLICATION

- Built 100% in-house
- Flexible, lightweight
- Open Source code
- Independent of Esri stack



BACKEND DATA WAREHOUSE

- ArcGIS Server + PostgreSQL
- Python for data intake
- Automation of data updates built-in to workflow





Data, data, and more data!

WE PRIORITIZE DATA

- essential to understanding the intermodal supply for freight movements;
- that explains freight demand and supplychain logic; and
- that measures system performance.

| Total | Tota

4 internal

4 private

11 public



Data, data, and more data!

WHAT WE LEARNED

- recency/frequency is a key consideration
- consistency and reliability impact the utility of data for planning and tracking purposes
- telling the story of freight with data requires an ongoing commitment

HAVE A PLAN

be clear in your practical uses of all the data you collect as it makes it easier to adapt to availability and budgetary restrictions



Value to our partners

- County planners have expanded freight planning capacity
- Engaged new partners (public + private)
- Centralized, accessible data resource for region
- Foundation for additional performance measure tracking

ADDED VALUE TO OUR WORK

being a resource **improves visibility** of all our products and **improves the quality and level** of input we get in our process



New Tool Freight Centers of Greater Philadelphia

Explore the freight economy and its impact on regional development and employment patterns

Start Exploring

County Freight Profiles

The DVRPC region is comprised of nine counties, each with a unique freight profile of facilities, employment, and trade patterns. The County Profile Tool provides insights on these unique aspects.

Discover a county

Performance Indicators

A key to understanding freight in the Delaware Valley is evaluating the performance of the facilities that support freight in the region.

View Highway Performance

View Maritime Indicators

Explore Our Network

The region's extensive network includes hundreds of individual facilities that function together to drive the economy. Our map tool allows you to explore key details and facts about each of these facilities.

Browse the network map



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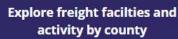
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DVRPC Region Overview

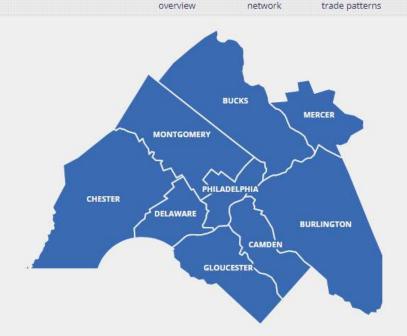
The Delaware Valley region consists of nine counties: Bucks, Chester, Delaware, Montgomery and Philadelphia in Pennsylvania, and Burlington, Camden, Gloucester and Mercer in New Jersey.

The DVRPC region contains an impressive freight transportation network consisting of highways, rail lines, ports, airports, and pipelines. These key linkages unite an expansive list of facilities including warehouses, manufacturing sites, rail yards, and truck stops.

Strategically positioned in the middle of the densest population center in the United States; over 100 million people live within a 500-mile radius of Philadelphia, representing a vast consumer base and making the region ideally situated as a manufacturing and distribution hub.



(select a county of interest)



@dvrpc

About

Tools

190 N. Independence Mall West, 8th Floor,

DVRPC Freight Planning

County Profiles

Data Disclaimer | License | Policies C

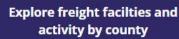
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DVRPC Region Overview

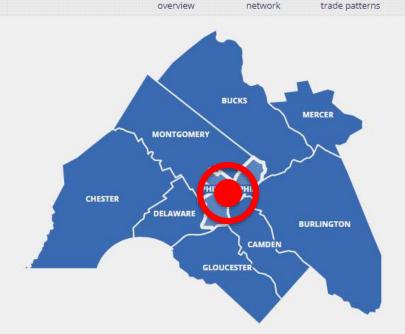
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overview

Philadelphia County Network

Like powerful Internet networking tools, Philadelphia, Pennsylvania's freight system affords rapid, productive, and global connections. Once known as the Workshop of the World, Philadelphia now serves as the calling card of the Delaware Valley region's impressive freight assets. For even the casual observer, the City's prominence in international commerce is abundantly evident: mammoth container cranes, multi-cultural company logos, and non-stop daily pick-up and delivery patterns dot the landscape.



(O)-

network





trade patterns

A Ship being unloaded at Packer **Avenue Marine Terminal**

Freight Network Statistics

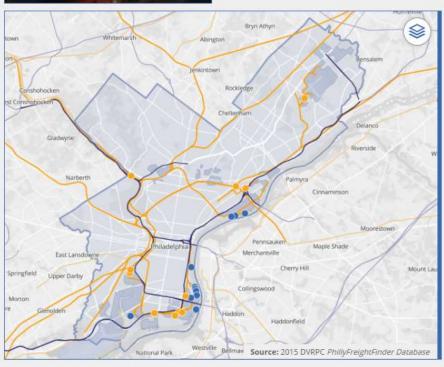








UNIQUE



overview

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(

network

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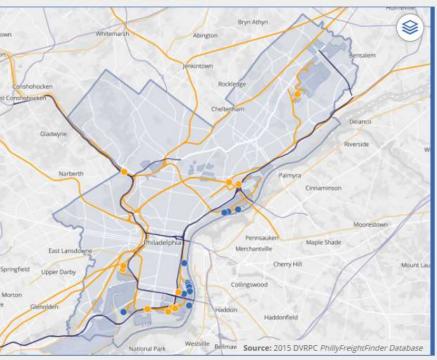
Freight Network Statistics



















W View Map

Philadelphia County | Domestic Trade Patterns

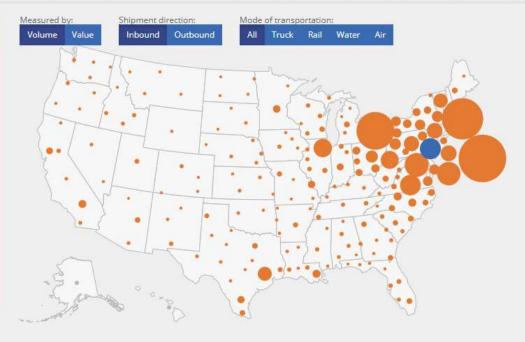


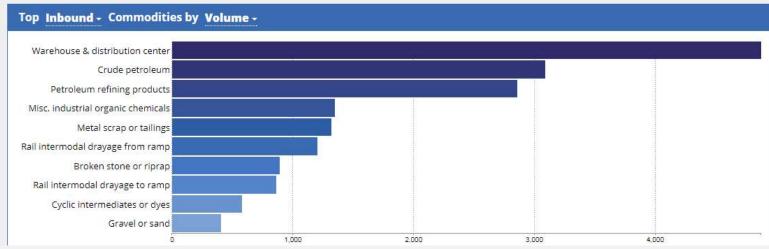




trade patterns	

Southern New Jersey	4,176.2 ktons
New York Metro Area	3,244.9 ktons
Harrisburg, PA	2,759.6 ktons
Delaware County, PA	1,195.9 ktons
Gloucester County, NJ	1,151.4 ktons
Washington DC Metro Area	903.2 ktons
Chicago, IL	719.0 ktons
Pittsburgh, PA	688.2 ktons
Chester County, PA	537.0 ktons
Bucks County, PA	518.4 ktons







518.4 ktons

overview

③ Tools ▼

network

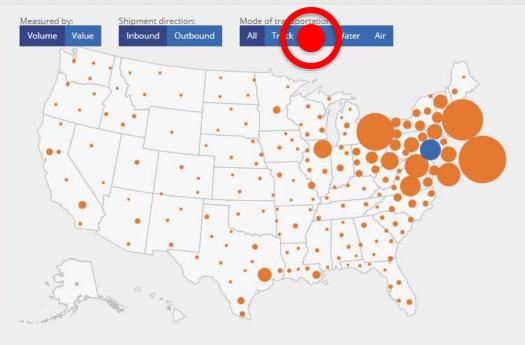
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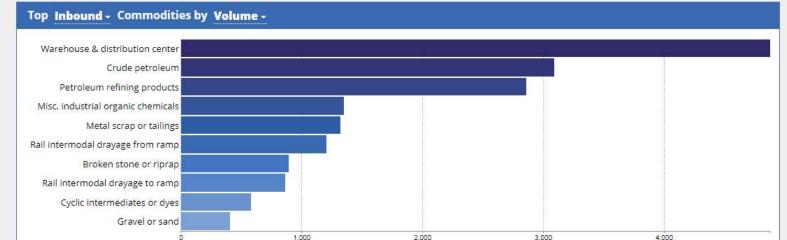
trade patterns

Philadelphia County | Domestic Trade Patterns

Bucks County, PA

Top Trading Partners	
Southern New Jersey	4,176.2 ktons
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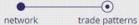






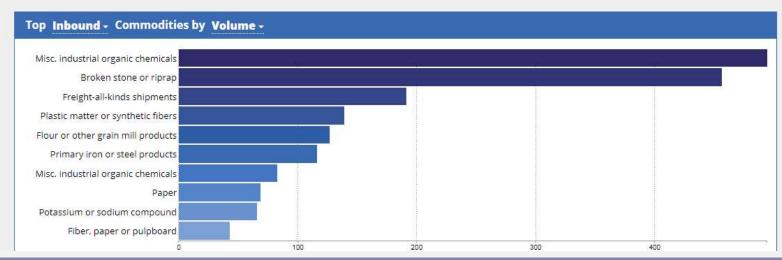
Philadelphia County | Domestic Trade Patterns















network

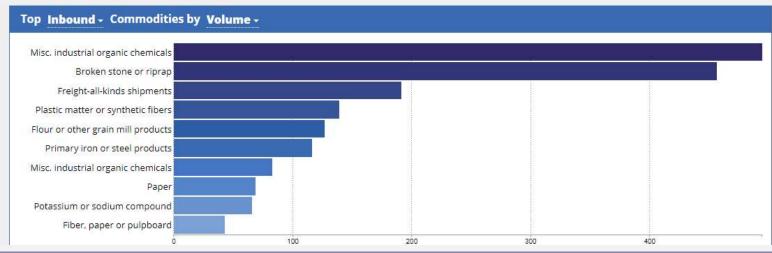
overview

-0

Philadelphia County | Domestic Trade Patterns

Chicago, IL	664.3 ktons
Harrisburg, PA	456.2 ktons
New Orleans, LA	85.8 ktons
St. Louis, MO	73.4 ktons
Toledo-Fremont, OH	62.7 ktons
Los Angeles-Long Beach, CA	58.9 ktons
Minneapolis, MN	51.0 ktons
Buffalo, NY	50.7 ktons
Indianapolis, IN	40.7 ktons
Cincinnati, OH	39.0 ktons









New Tool Freight Centers of Greater Philadelphia

Explore the freight economy and its impact on regional development and employment patterns

Start Exploring

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Browse the network map



Freight Centers of Greater Philadelphia

- Update to regional centers identification
- Better data driven process
- Regional analysis framework





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Introduction to DVRPC Freight Centers

The production and distribution of goods is an integral part of the region's economy, requiring dedicated expanses of land in order to meet the needs of businesses and consumers. This land is an essential resource for a prosperous economy and an important part and source of tax revenues for many communities. The goal of the DVRPC

Freight Centers inventory is to identify and categorize these key locations to enhance planning necessary to concentrate growth, invest in appropriate transportation infrastructure, and minimize conflict with host communities.

1. Defining Freight Employment

Greater Philadelphia is home to over 430,000 business establishments employing over 3.1 million individuals. The story of freight centers starts with these employers. The role that each business plays in the regional economy influences the movement of goods and services and informs the patterns of freight-related development.

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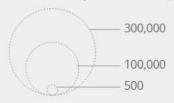


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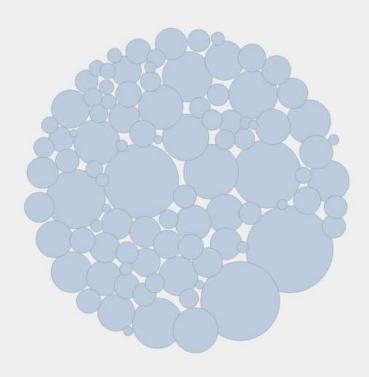
We can understand the role of businesses when they are grouped into industry subsectors based on the type of economic activity. To illustrate this we can portray each of the region's 97 industry subsectors as circles, scaled by it's regional employment.

Circles sized by number of employees



What is freight employment?

Not all of these industries rely on freight to an equal degree. The goal is to identify industries that are freight-intensive, meaning that the industry in question generates or attracts large amounts of freight trips or movements.



Source: 2013 NETS and 2016 Bureau of Labor Statistics

Industry Classifications

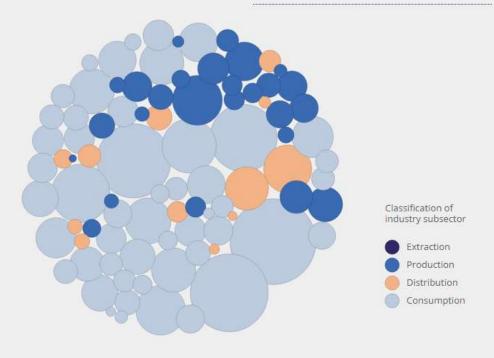
Extraction

These industries are involved in the extraction of raw materials from the earth and/or the raising of animals and crops. These industries represent a small but important part of the regional economy.

The region has approximately **12,600** employees working in extraction industries grouped in the following subsectors:

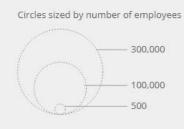
- 1. Crop Production
- 2. Support Activities for Agriculture and Forestry
- 3. Animal Production and Aquaculture
- 4. Mining (except Oil and Gas)
- 5. Support Activities for Mining
- 6. Oil and Gas Extraction
- 7. Forestry and Logging
- 8. Fishing, Hunting and Trapping

EMPLOYMENT BY INDUSTRY SUBSECTOR





Extraction



Source: 2013 NETS and 2016 Bureau of Labor Statistics

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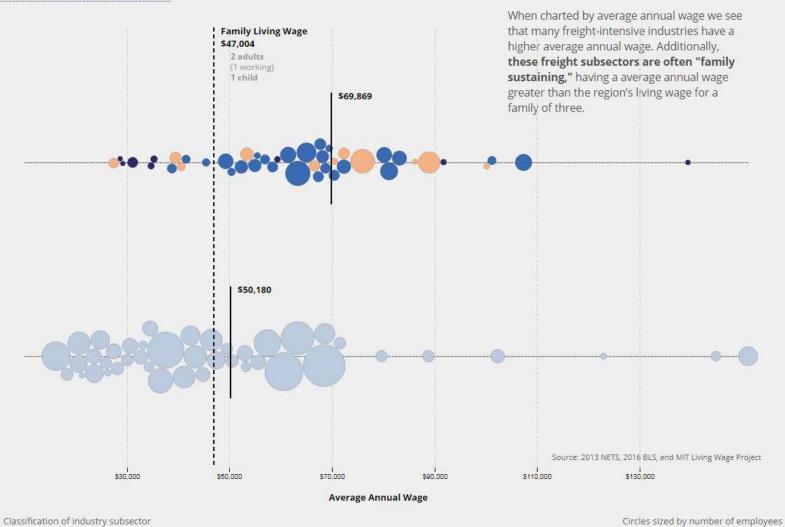
③ Tools ▼

300,000

100,000

500

AVERAGE WAGE BY SUBSECTOR





Distribution

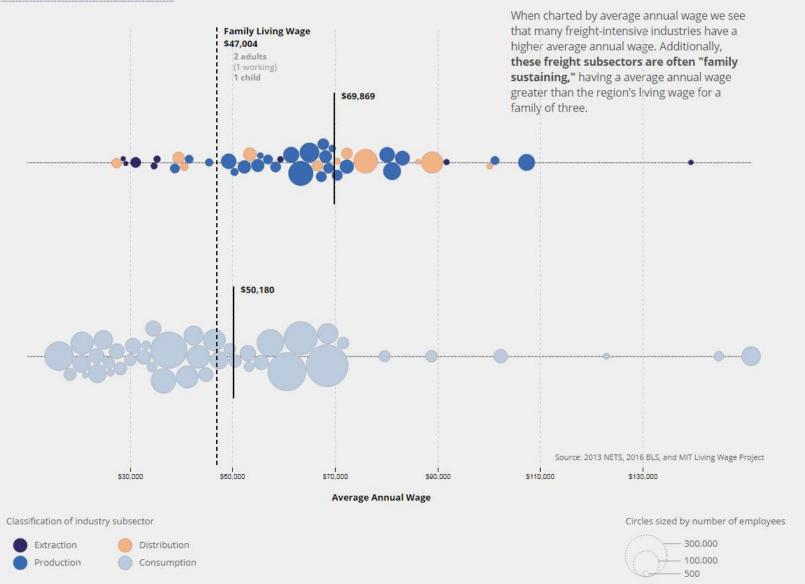
Consumption

Extraction

Production

③ Tools ▼

AVERAGE WAGE BY SUBSECTOR



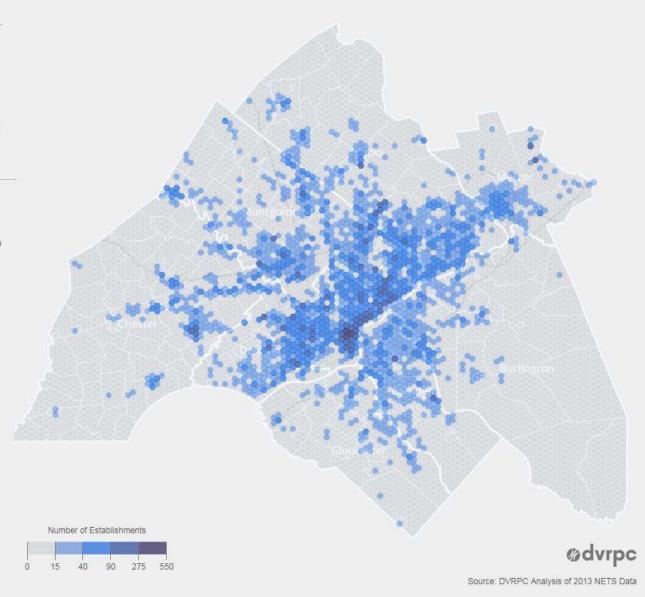
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Analysis Criteria

Freight-intensive Establishments

The distribution of freight establishments in the region provides a starting point for cluster analysis. These highlight the locations where there are many establishments located in proximity to each other.

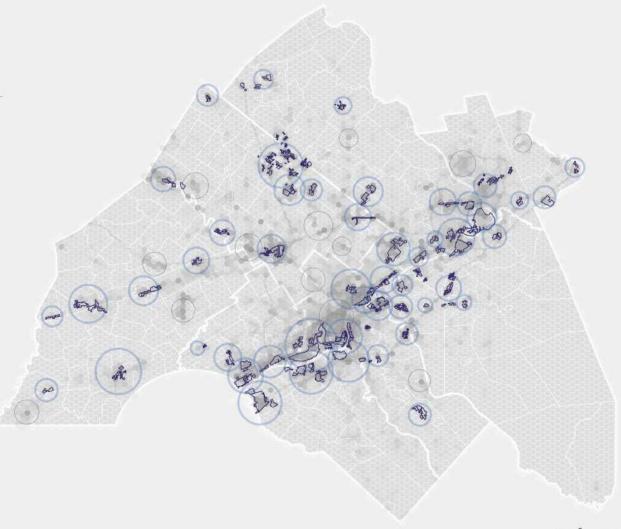
The distribution of freight employment using establishments can give unnecessary weight to a location with many small businesses that have relatively little freight activity associated with them.



DVRPC Freight Centers

The final result of the FQ analysis and evaluation of the potential freight centers identified the final set of Freight Centers in the region.

These geographies are the foundation of the final step in the identification process, the classification of centers.



@dvrpc

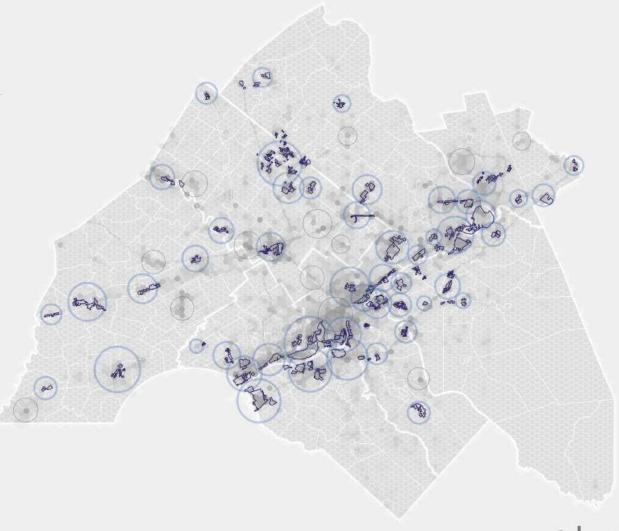
Source: DVRPC PhillyFreightFinder, 2018

DVRPC Freight Centers

The final result of the FQ analysis and evaluation of the potential freight centers identified the final set of Freight Centers in the region.

These geographies are the foundation of the final step in the identification process, the classification of centers.





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Source: DVRPC PhillyFreightFinder, 2018

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Typologies Overview

An analysis of each of the freight centers, grouping them by economic, transportation, and development activity resulted in classification into five typologies:



International Gateway



Heavy Industrial



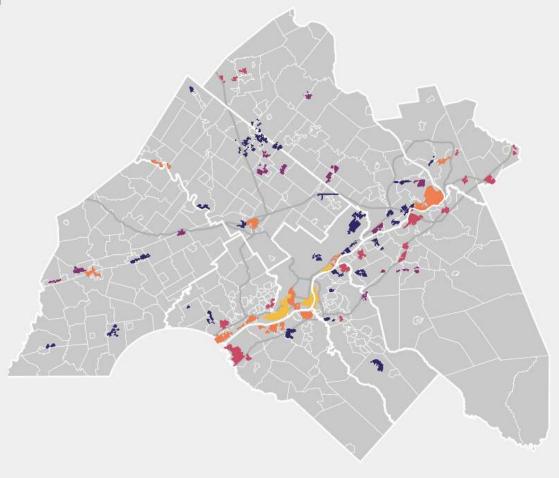
Distribution & Logistics



High Tech Manufacturing



Local Manufacturing & Distribution



Heavy Industrial

A Heavy Manufacturing Freight Center is a node focused around heavy industrial land uses involved in the manufacturing of goods. These centers are served by freight rail access and often have additional access to a port terminal allowing for the movement of bulk or break-bulk source materials.



Employment and Development

focused around manufacturing and production sectors



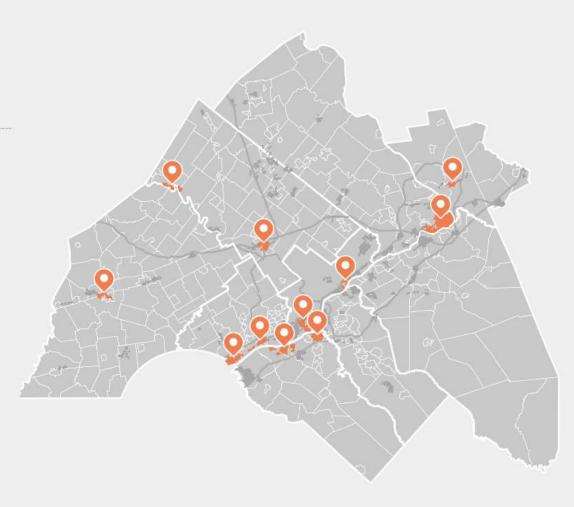
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Building Size and Distribution

highly dependent on manufacturing processes but often includes dedicated power plants, old industrial buildings, and tank farms







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New Tool Freight Centers of Greater Philadelphia

Explore the freight economy and its impact on regional development and employment patterns

Start Exploring

County Freight Profiles

The DVRPC region is comprised of nine counties, each with a unique freight profile of facilities, employment, and trade patterns. The County Profile Tool provides insights on these unique aspects.

Discover a county

Performance Indicators

A key to understanding freight in the Delaware Valley is evaluating the performance of the facilities that support freight in the region.

View Highway Performance

View Maritime Indicators

Explore Our Network

The region's extensive network includes hundreds of individual facilities that function together to drive the economy. Our map tool allows you to explore key details and facts about each of these facilities.

Browse the network map



PFF Online Data Visualizations

- Know your audience
- Tools can have many uses
 - Storytelling
 - Interactive infographics and dashboards
 - Analysis tools and explorers
- Use open source resources

front-end technologies











back-end technologies

🤑 python™











Thank You

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Traffic Counts: https://www.dvrpc.org/webmaps/trafficcounts/

PhillyFreightFinder: http://dvrpc.org/webmaps/phillyfreightfinder