DVRPC Data Happenings: 2045 Forecasts and *Rating the Region*

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Information Resources Exchange Group

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2045 Forecasts: Background

- DVRPC is required to maintain forecasts to the horizon year of the long-range plan.
- Updated population and employment forecasts were needed for the Connections 2045 long-range plan update, scheduled to be adopted in 2017.
- Updated 2020, 2025, 2030, 2035, and 2040 mid-year employment forecasts were needed for many DVRPC projects, including conformity determination and transportation facilities programming.
- Release of the 2015 population estimates by the U.S. Census Bureau and the availability of updated NETS data allowed staff to check DVRPC's previously adopted 2015 forecasts and provided a new base.

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2045 County Population Forecasts

- Three alternative forecast methods:
  - Application of a traditional age/sex cohort survival model to develop individual county forecasts.
  - Redistribution of the 2045 regional population from the age-cohort model to the nine counties based on the adopted 2040 population distribution.
  - Application of the five-year, county-level growth rates from the adopted 2040 forecasts to the 2015 Census population estimates, and extension of the 2040 forecasts to 2045.
- County-level 2045 alternatives were disaggregated to the municipal level, based on DVRPC's previously adopted 2040 population forecasts and the 2015 Census estimates.
- County planning staffs reviewed the three alternative forecasts and recommended a final set of county- and municipal-level 2045 population forecasts.

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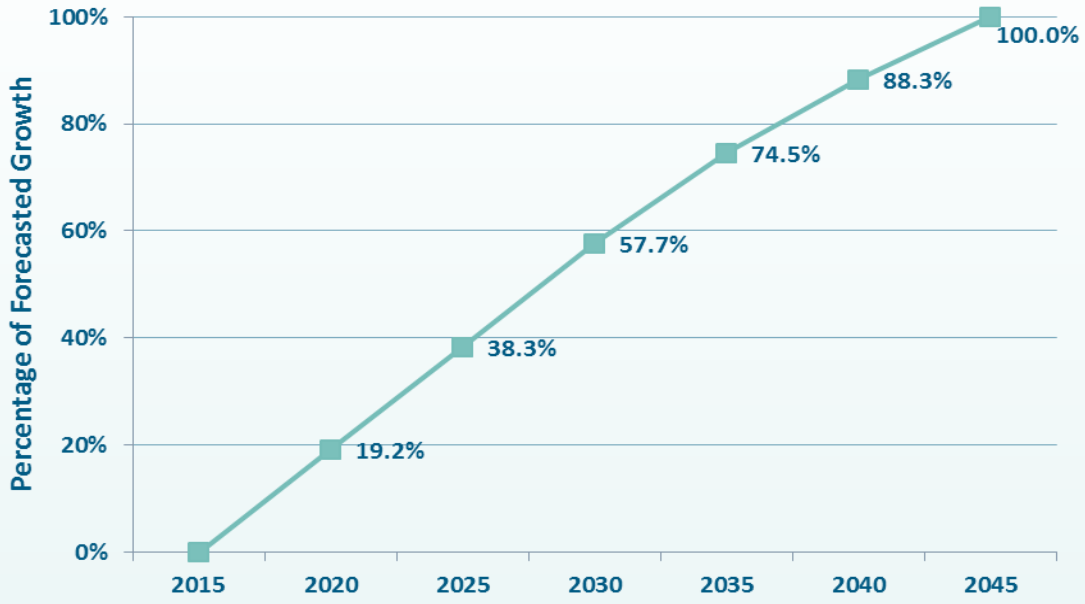
Mid-Year Population Forecasts

- 2020, 2025, 2030, 2035, and 2040 forecasts were calculated by DVRPC staff, based on the population growth predicted for each mid-year increment by the regional age-cohort model.



- County planners reviewed the mid-year forecasts and revised them as appropriate, based on local knowledge.

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Population, 2015 and 2045

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County	2015 Census	2045 Forecast	Absolute Change	Percent Change
Bucks	627,367	699,498	72,131	12%
Chester	515,939	662,283	146,344	28%
Delaware	563,894	587,037	23,143	4%
Montgomery	819,264	932,820	113,556	14%
Philadelphia	1,567,443	1,696,133	128,690	8%
5 Pennsylvania counties	**4,093,907**	**4,577,771**	**483,864**	**12%**
Burlington	450,226	492,709	42,483	9%
Camden	510,923	526,997	16,074	3%
Gloucester	291,479	376,308	84,829	29%
Mercer	371,398	402,283	30,885	8%
4 New Jersey counties	**1,624,026**	**1,798,296**	**174,270**	**11%**
9-county Region	**5,717,933**	**6,376,067**	**658,134**	**12%**

Population, 2015 and 2045

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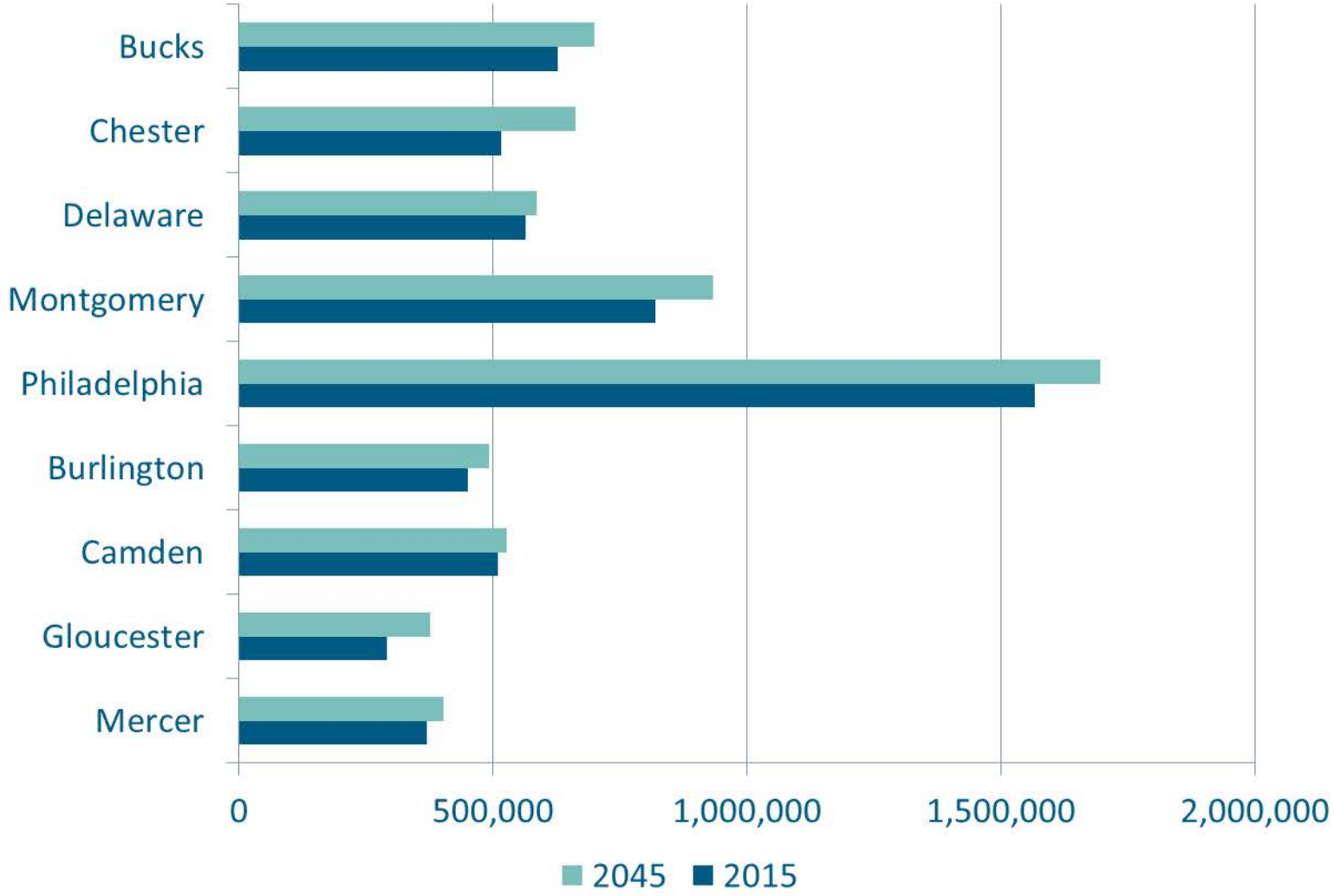

2045 Municipal Population Forecast

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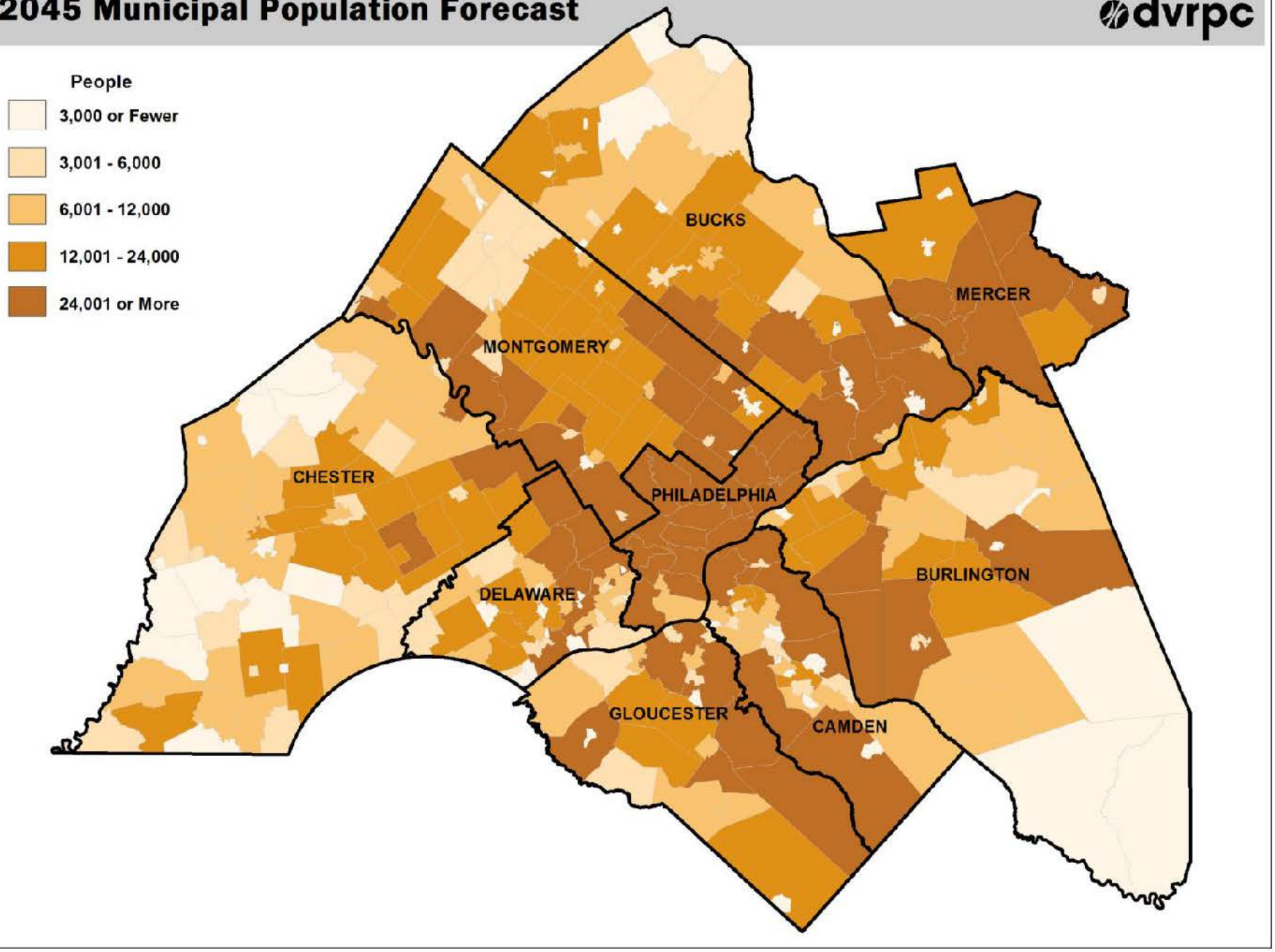

2045 Municipal Population Forecast

Absolute Change: 2015 - 2045

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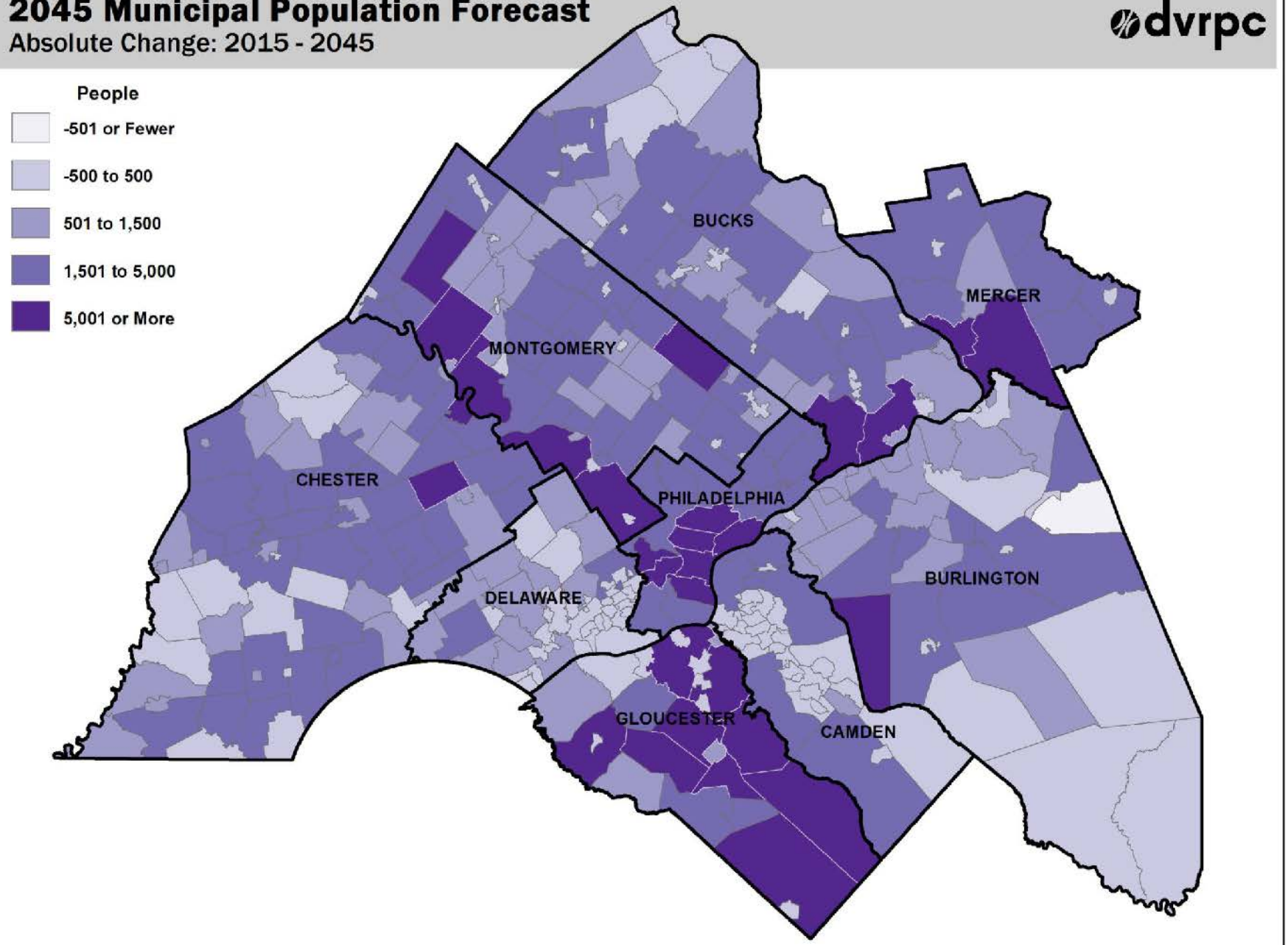

2045 Municipal Population Forecast

Percent Change: 2015 - 2045

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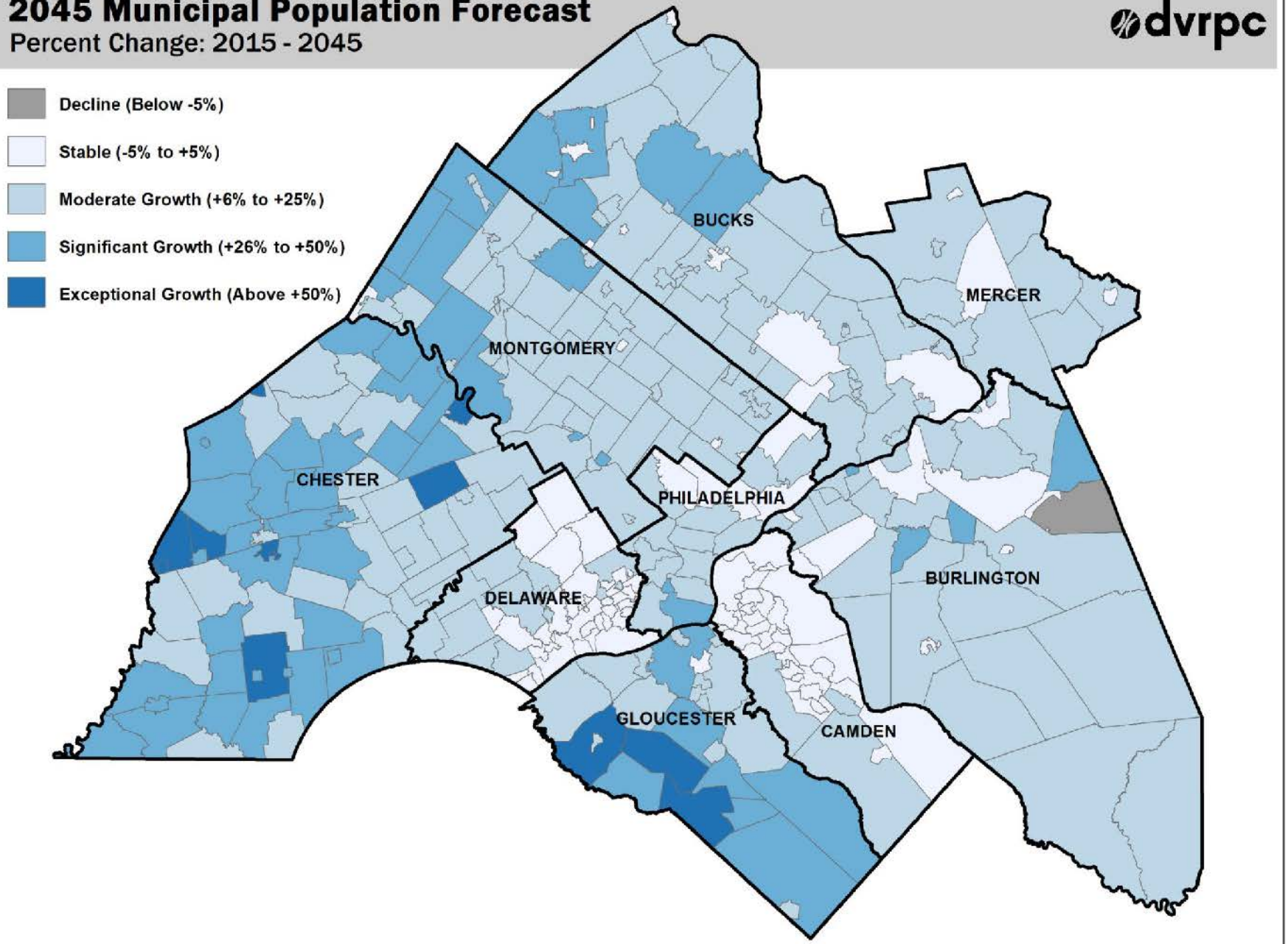

2045 Municipal Population Forecast

Absolute Change per Square Mile by Municipality:
2015 - 2045

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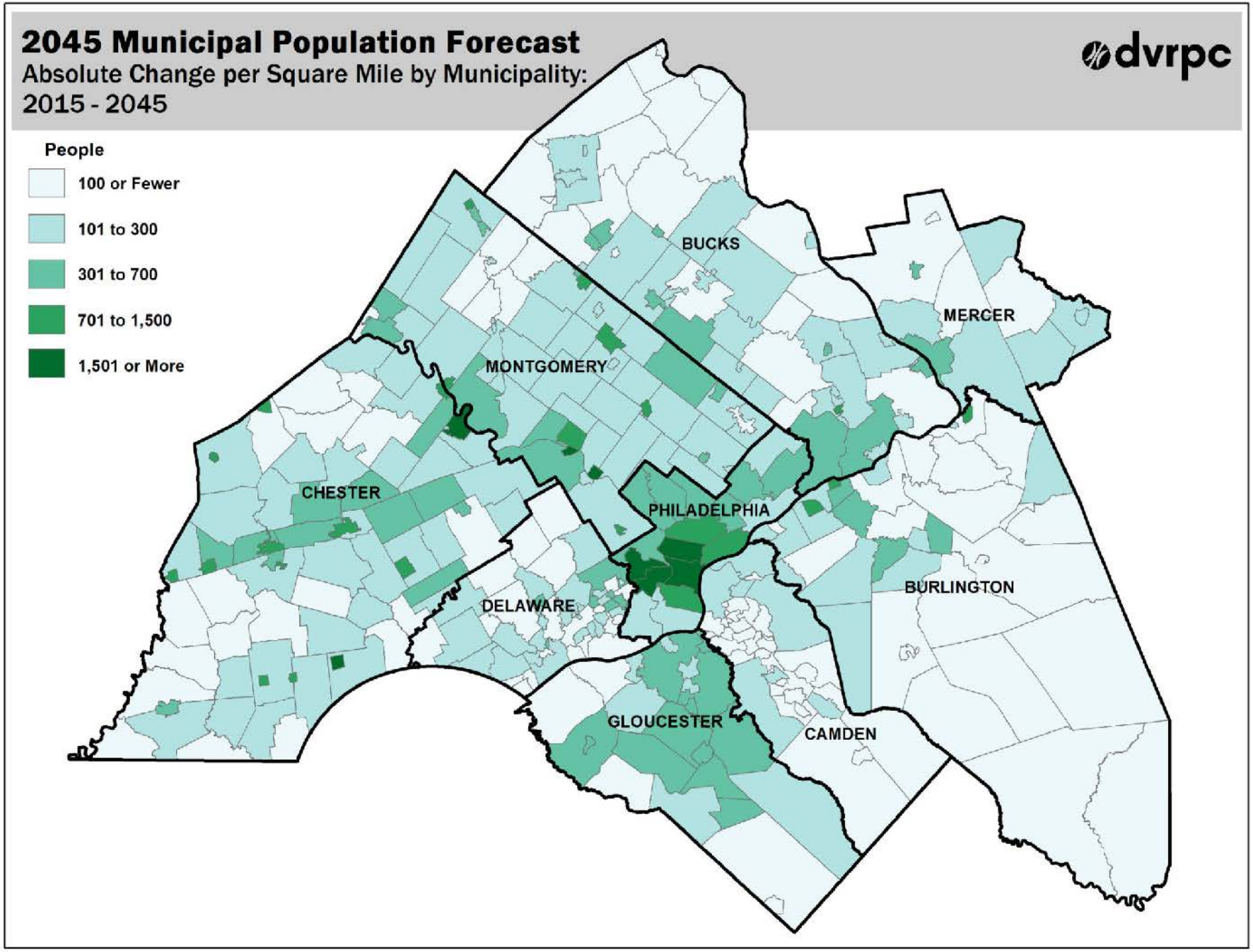

2045 Employment Forecasts: Method

- Updated 2010 and 2013 NETS employment data was acquired in March 2016, and reviewed and revised by DVRPC staff, to eliminate obvious errors and improve spatial accuracy.
- Data was reviewed by the region's county planning staffs and further revisions were made based on local knowledge.
- 2015 employment was estimated based on NETS changes (2010-2013) and US Bureau of Labor Statistics changes (2010-2015).

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2045 Employment Forecasts

- Studies have shown that there is a direct relationship between the number of workers living in an area and the number of jobs, and that the relationship remains relatively constant over time.
- County-level employment forecasts were calculated in five-year increments through 2045, by estimating a future ratio of population to employment in each county and applying it to DVRPC's adopted 2045 population forecasts.

2045 Employment Forecasts

- County-level forecasts were disaggregated to the municipal level based on DVRPC's adopted 2040 employment forecasts, adjusted by the differences between the adopted 2015 forecasts and the 2015 NETS employment estimates.
- Military employment was added based on CTPP estimates, and kept constant over time.
- County planning staffs reviewed the draft forecasts and final revisions were made based on their recommendations.

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Employment, 2015 and 2045

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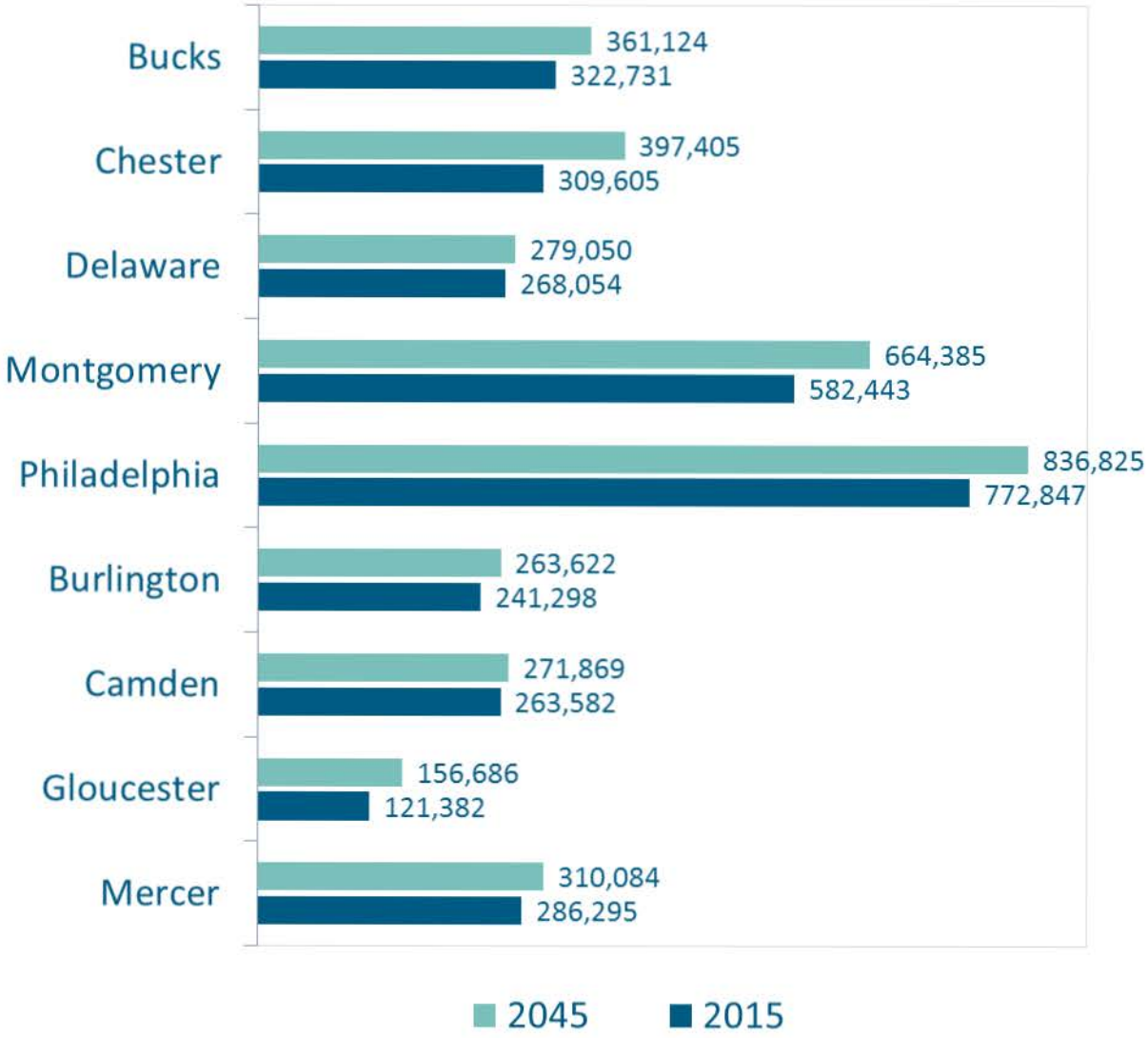
County	2015 Estimate	2045 Forecast	Absolute Change	Percent Change
Bucks	322,731	361,124	38,393	11.9%
Chester	309,605	397,405	87,800	28.4%
Delaware	268,054	279,050	10,996	4.1%
Montgomery	582,443	664,385	81,942	14.1%
Philadelphia	772,847	836,825	63,978	8.3%
5 Pennsylvania counties	**2,255,680**	**2,538,789**	**283,109**	**12.6%**
Burlington	241,298	263,622	22,324	9.3%
Camden	263,582	271,869	8,287	3.1%
Gloucester	121,382	156,686	35,304	29.1%
Mercer	286,295	310,084	23,789	8.3%
4 New Jersey counties	**912,557**	**1,002,261**	**89,704**	**9.8%**
9-county Region	**3,168,237**	**3,541,050**	**372,813**	**11.8%**

Source: Delaware Valley Regional Planning Commission, October 2016.

Employment, 2015 and 2045



2045 Municipal Employment Forecast

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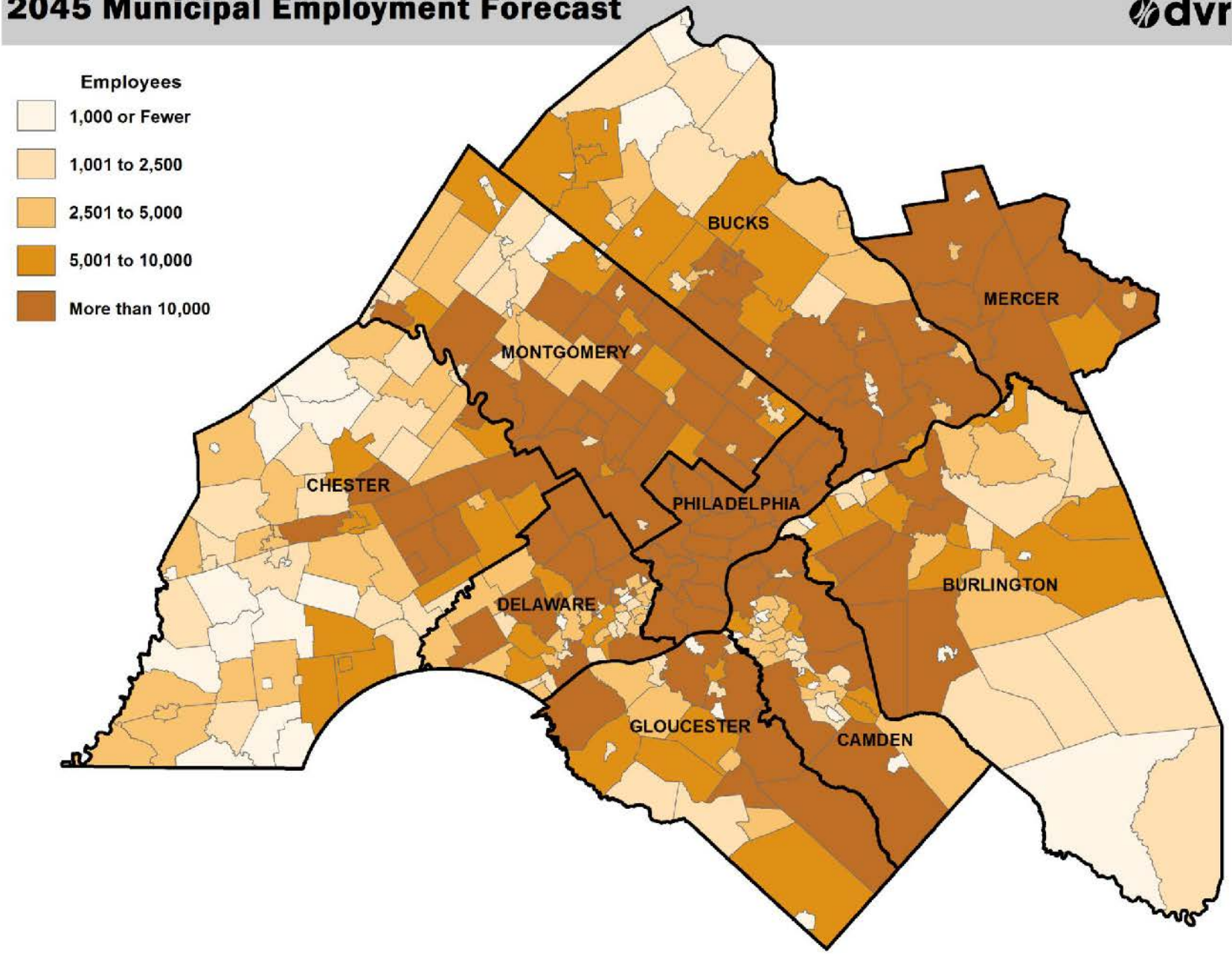

2045 Employment Population Forecast

Absolute Change: 2015—2045

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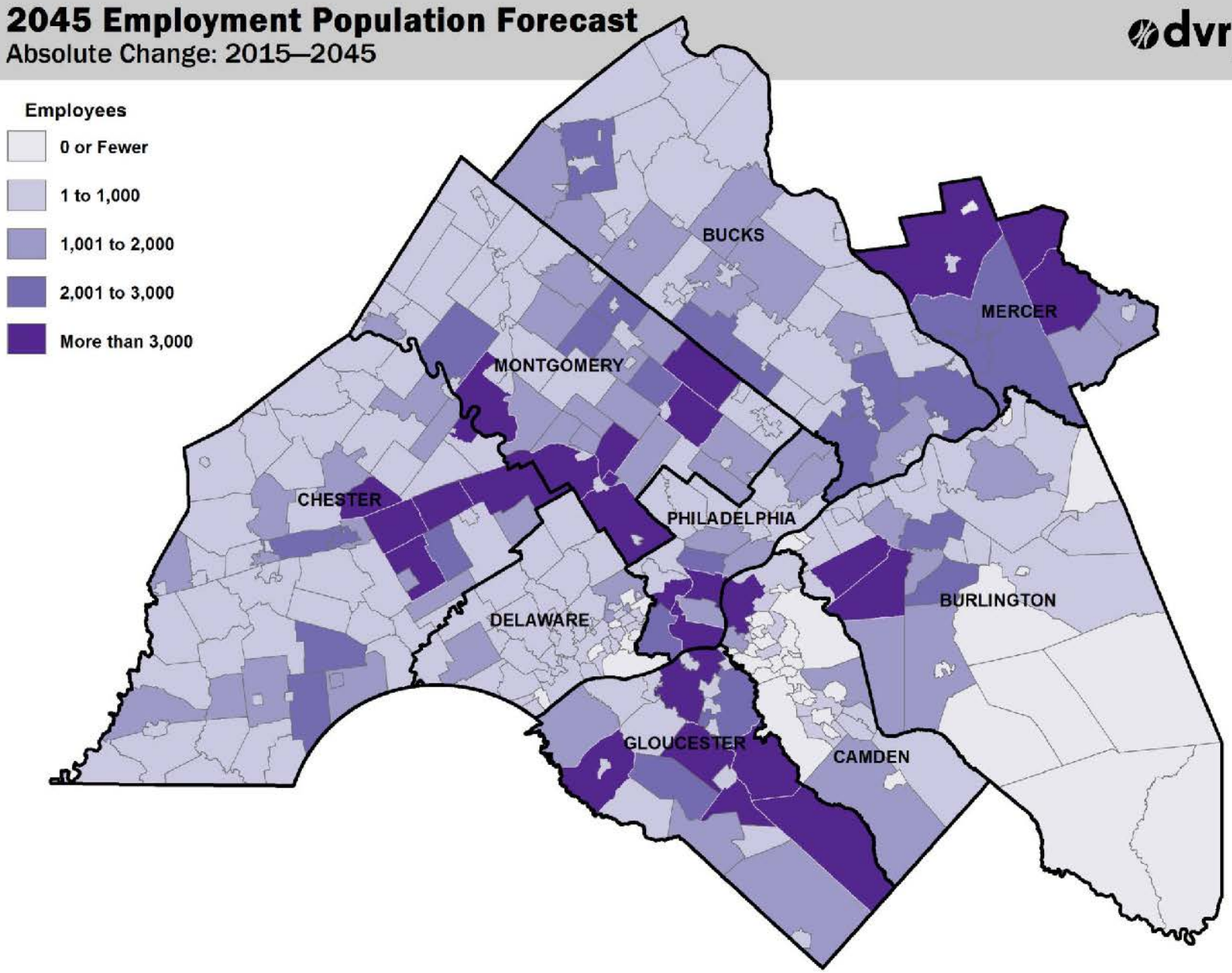

2045 Municipal Employment Forecast

Percentage Change: 2015—2045

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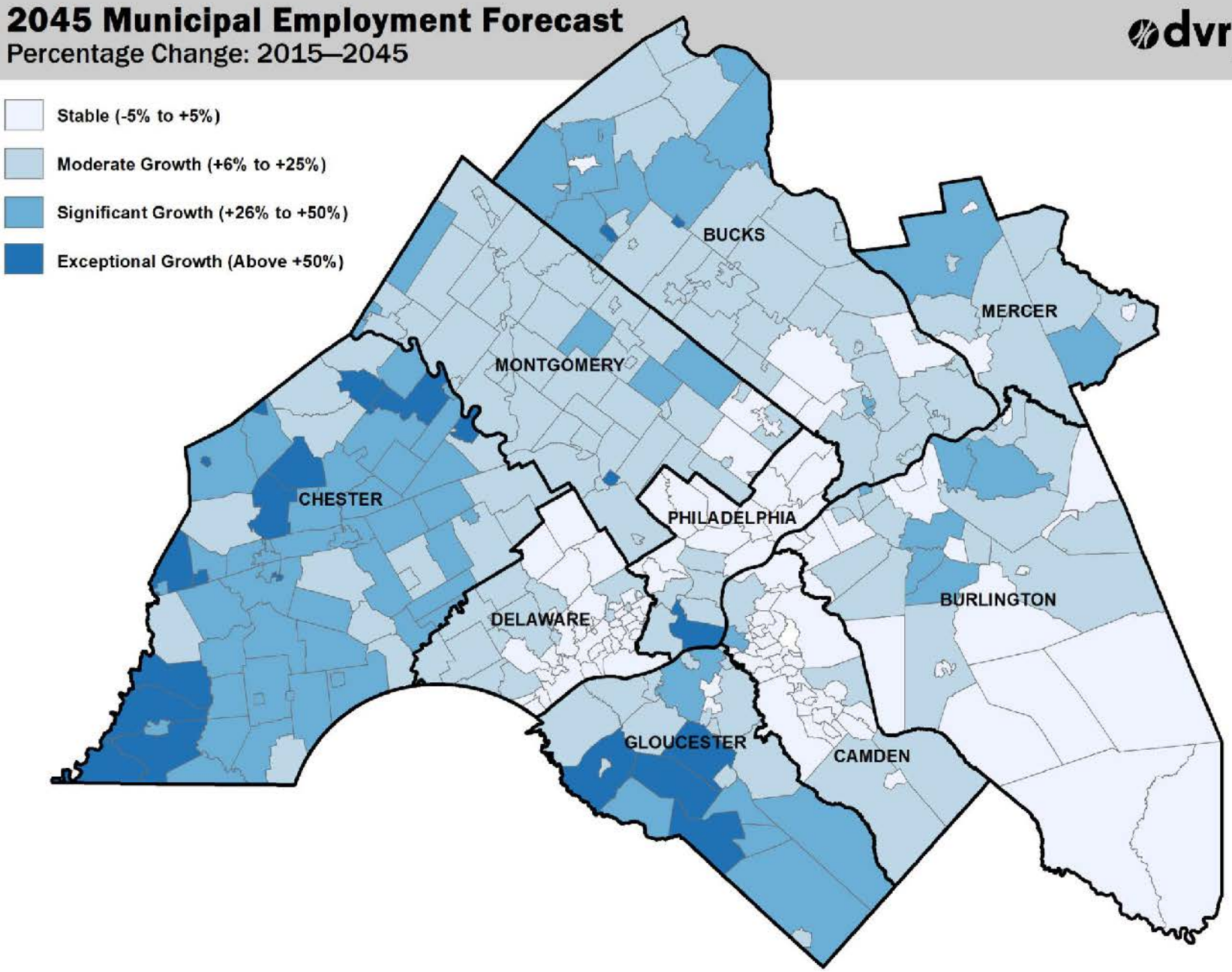

2045 Municipal Employment Forecast

Absolute Change per Square Mile by Municipality: 2015—2045

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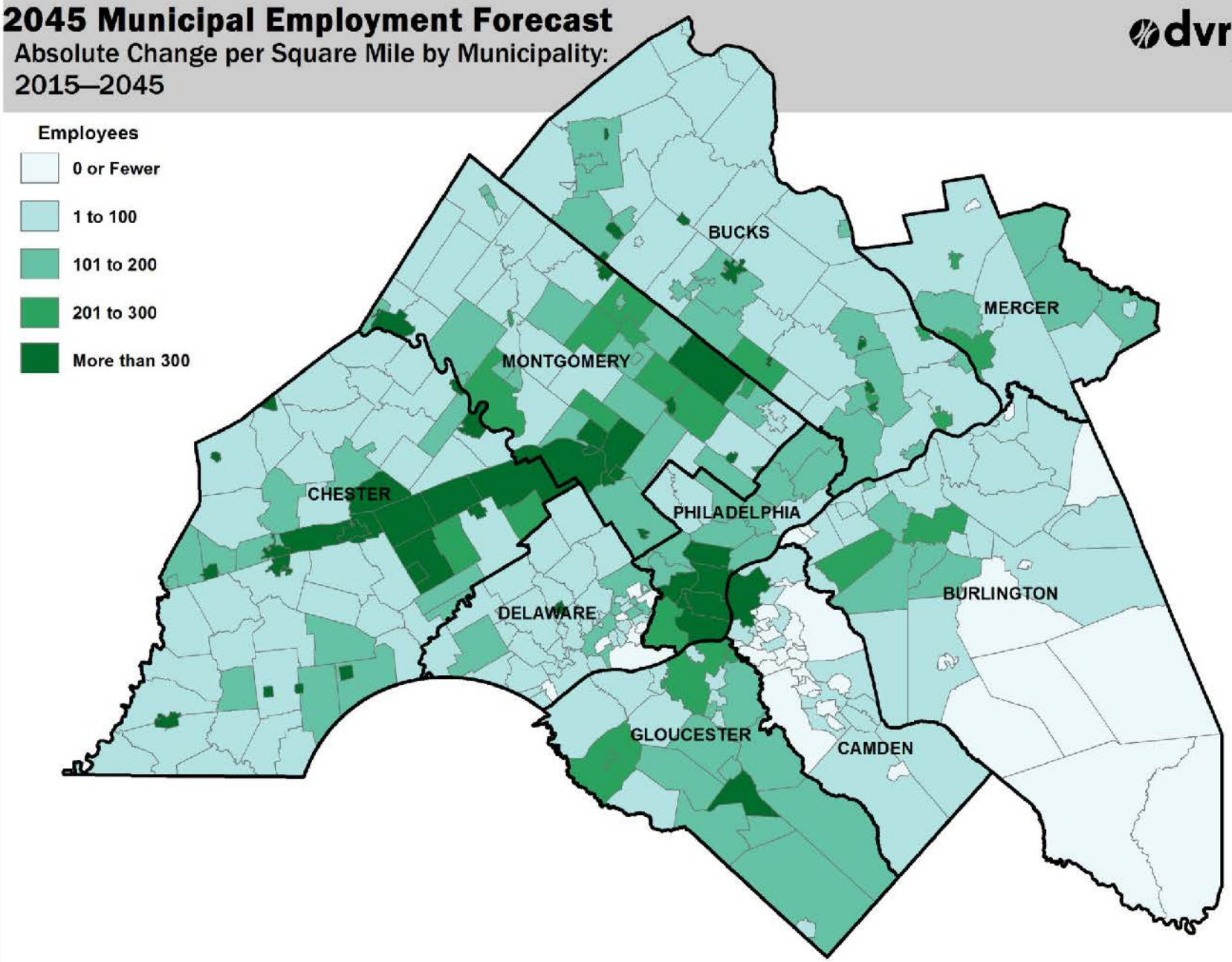

Rating the Region

- Similar reports were completed in 1993 and 2007.
- Compares the Philadelphia metro to 24 other large metros plus Trenton-Ewing.
- For many indicators, compares each primary city to their MSA as a whole.
- Purpose is to identify regional strengths, weaknesses, opportunities, and threats.
- Along with *Tracking Progress*, lays the foundation for the development of *Connections 2045.*

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Indicators

- Demographics (population, population trends, race, ethnicity, national origin, age and dependency, educational attainment, income, poverty, housing tenure and occupancy)
- The Environment and Natural Resources (parks, air quality, clean jobs, CO_2 produced during congestion)
- Livable Communities (housing value, housing affordability, cost of living, crime, arts, culture, recreation, educational opportunity, health care, governance)
- The Economy (employment, labor, income, real estate, GDP, Fortune 500 company headquarters, exports, innovation, internet access)
- Transportation (commuting, congestion, transit ridership, maritime trade, aviation)

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Metro Areas Studied …

Metro Area	2014 Population	Metro Area	2014 Population
New York	20.1 million	Detroit	4.3 million
Los Angeles	13.3 million	Seattle	3.7 million
Chicago	9.6 million	Minneapolis-St. Paul	3.5 million
Dallas-Fort Worth	7.0 million	San Diego	3.3 million
Houston	6.5 million	Tampa	2.9 million
Philadelphia	6.1 million	St. Louis	2.8 million
Washington, DC	6.0 million	Baltimore	2.8 million
Miami	5.9 million	Denver	2.8 million
Atlanta	5.6 million	Charlotte	2.4 million
Boston	4.7 million	Pittsburgh	2.4 million
San Francisco	4.6 million	Portland	2.3 million
Phoenix	4.5 million	San Antonio	2.3 million
Riverside	4.4 million	Trenton-Ewing	371,532

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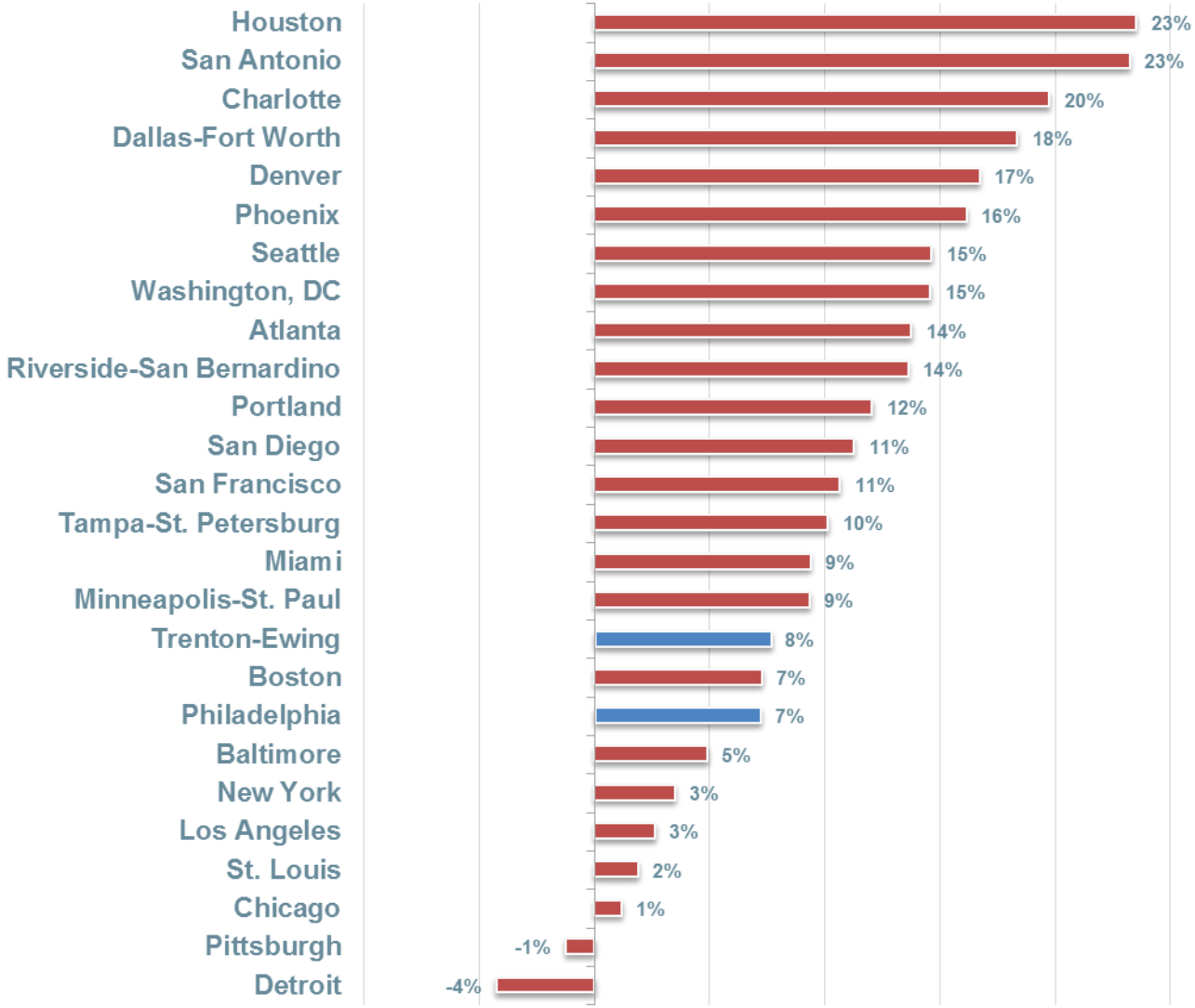
Change in MSA Population, 2005-2014



Source: U.S. Census Bureau, American Community Survey.

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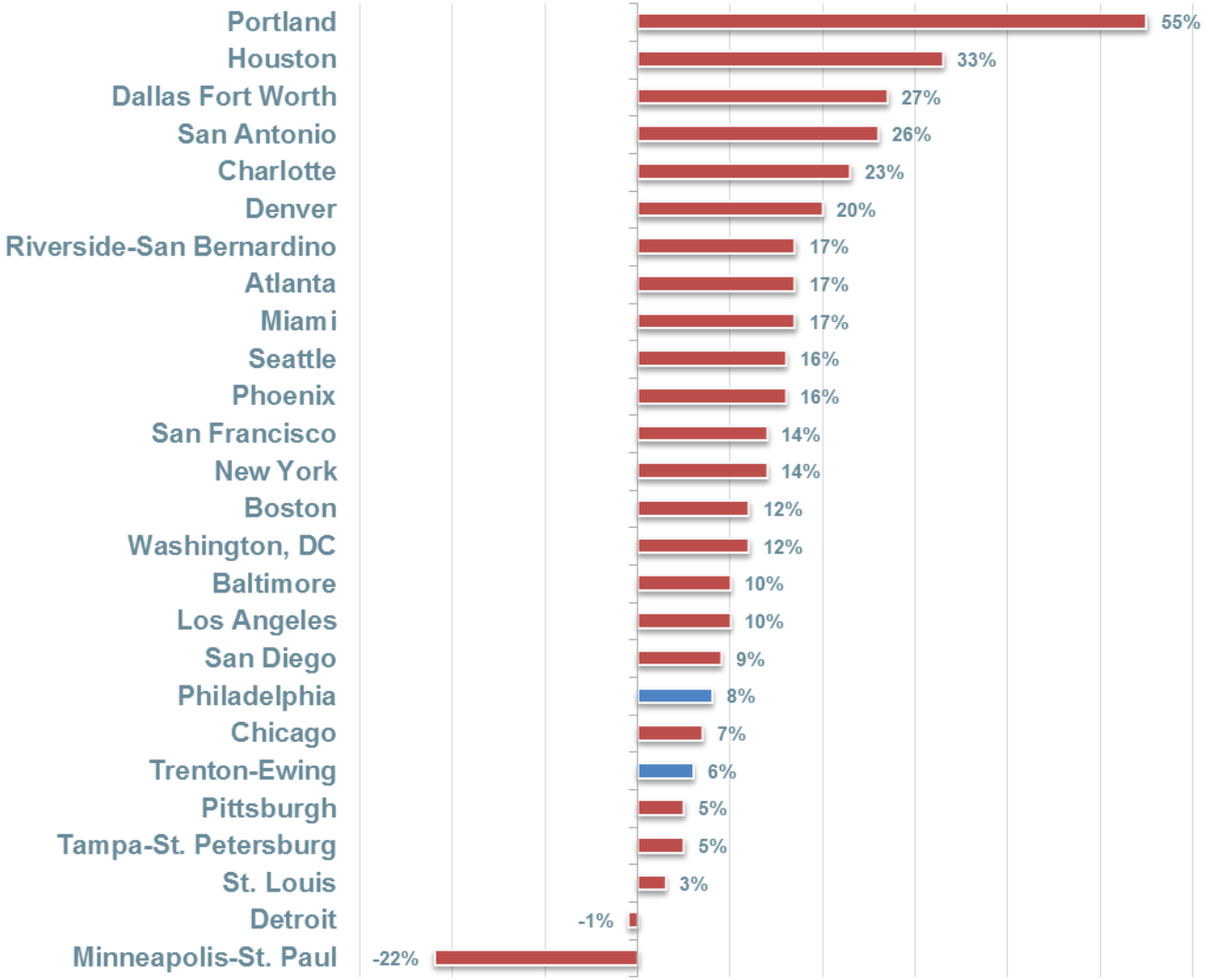
Change in MSA Employment, 2004-2014



Source: U.S. Bureau of Economic Analysis

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Quality of Life

- **Strengths**
  - Access to arts, culture, and recreation
  - Urban parkland
  - Walkable park access in the primary city
  - Improving air quality
  - Access to health care
  - Relatively low crime rate
- **Weaknesses**
  - Urban expenditures on parks
  - Days with an unhealthy air quality index
  - CO_2 produced by autos during congestion
  - Crimes occurring in the primary city

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Housing

- **Strengths**
  - Affordability (particularly when considering the combined cost of housing and transportation)
  - High homeownership rate
  - Residential construction in the primary city
- **Weaknesses**
  - Increasing rental housing costs
  - Limited affordable housing opportunities close to suburban job centers
  - Relatively high mortgage foreclosure rate
  - Relatively few residential permits as a percent of the region's existing housing stock

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Education

- **Strengths**
  - Percentage of adults with a college degree
  - Extensive network of educational facilities
  - Education and knowledge creation workers per capita
  - Funding per student in the primary city
- **Weaknesses**
  - Percentage of adults who did not finish high school in the primary city versus the metro area
  - Literacy in the primary city
  - Households with internet access in the primary city

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Income and Wages

- **Strengths**
  - Earnings per job
  - Median household income
  - Per capita income
- **Weaknesses**
  - Relatively low cost-of-living adjusted wage
  - Change in per capita and household income
  - Income disparity between the city and the metro area as a whole
  - Concentration of poverty in the primary city

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The Economy

- **Strengths**
  - Economic diversity
  - Relatively low unemployment
  - Fortune 500 company headquarters
  - Capacity for innovation
- **Weaknesses**
  - Employment growth
  - Relatively low labor force participation rate
  - Exports per capita
  - R & D expenditures
  - Venture capital investments
  - Relatively high tax burden

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Transportation

- **Strengths**
  - Relatively short average daily commute times
  - Relatively high percentages of workers who use transit, walk, or bike to work
  - Low average daily vehicle miles traveled
  - Total tonnage moving through the region's ports
  - International passenger activity at PHL
- **Weaknesses**
  - Aging transportation infrastructure
  - Declining tonnage moving through the region's ports

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Conclusion

- The region can address its weaknesses and threats by capitalizing and building on its strengths and opportunities:
  - Lackluster population and employment growth → market the region's high quality of life, relative affordability, quality transportation network, and extensive education and health care networks.
  - Increasing service needs and mobility challenges associated with an aging population → quality health care facilities and transportation network.

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Conclusion

- Disparities between urban and suburban educational attainment → expand partnerships within the region's vast network of public and private educational facilities.
- Disparities between urban and suburban labor force participation and unemployment → provide job training and improve transportation access to suburban employment centers.

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What's Next?

- 2015 Land Use Analytical Report
- Data Snapshots:
  - Manufacturing and Energy
  - Hospitality and Tourism

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Thank You!

Questions? Comments?

For more information please contact
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mbell@dvrpc.org

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What's New with CARTO

Andrew Thompson
Solutions Engineer - IREG regular

CARTO


CARTODB


NYC H20 Quality
Edit metadata...
DATA VIEW
MAP VIEW
Edit
SHARE
Add Element
Preview Map
Export Image
10
Change basemap
Options
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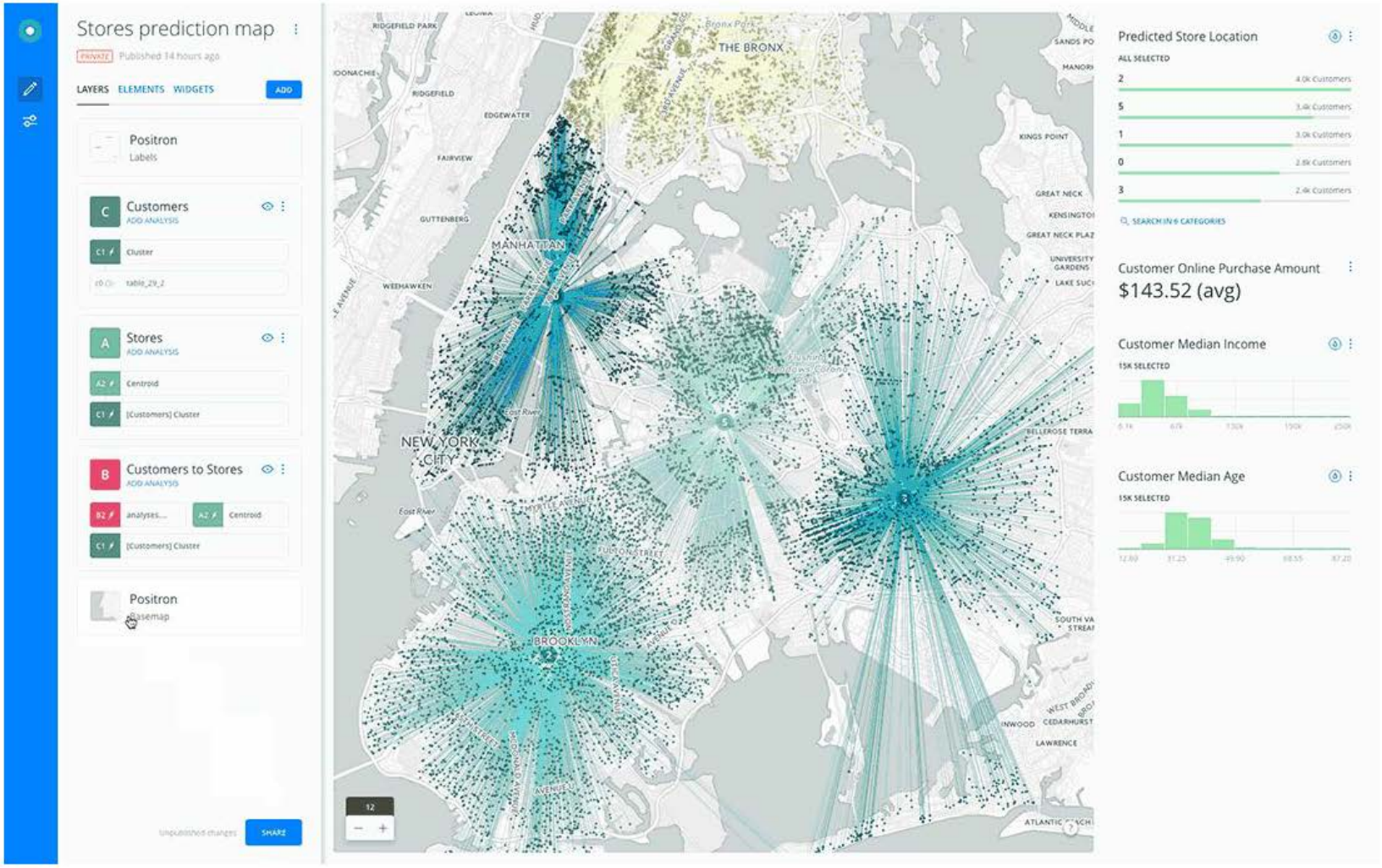
CARTO


Stores prediction map
PRIVATE Published 14 hours ago
LAYERS ELEMENTS WIDGETS
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NEW YORK CITY
BROOKLYN
RIDGEFIELD PARK
RIDGEFIELD
EDGEWATER
FAIRVIEW
GUTTENBERG
WEEHAWKEN
KINGS POINT
GREAT NECK
East River
12
Predicted Store Location
ALL SELECTED
2 4.0k Customers
5 3.4k Customers
1 3.0k Customers
0 2.8k Customers
3 2.4k Customers
SEARCH IN 6 CATEGORIES
Customer Online Purchase Amount
$143.52 (avg)
Customer Median Income
15K SELECTED
Customer Median Age
15K SELECTED

How did CARTO get here?

- Started as **Vizzuality** in April 2008
    - Company focused on visualization projects
- Every geospatial project had **the same stack**:
    - Database + Map Server + APIs + client code
- 2011: **CartoDB** began internally to deploy this geo-stack **faster**
- 2016: Rebranding to **CARTO** and Builder development to make the geo-stack less necessary for more users

Our Mission: Democratize Location Intelligence

- Make Better Decisions
- Improve Operational Efficiency
- Increase Performance
- Understand Customers and Markets
- Foster Innovation and Impact

DATA ANALYTICS

tableau
Spotfire TIBCO Software
Microsoft
splunk>
QlikView

LOCATION BASED SERVICES

Google
TELENAV
Mapbox
mapquest
MAPZEN
here

TRADITIONAL GIS

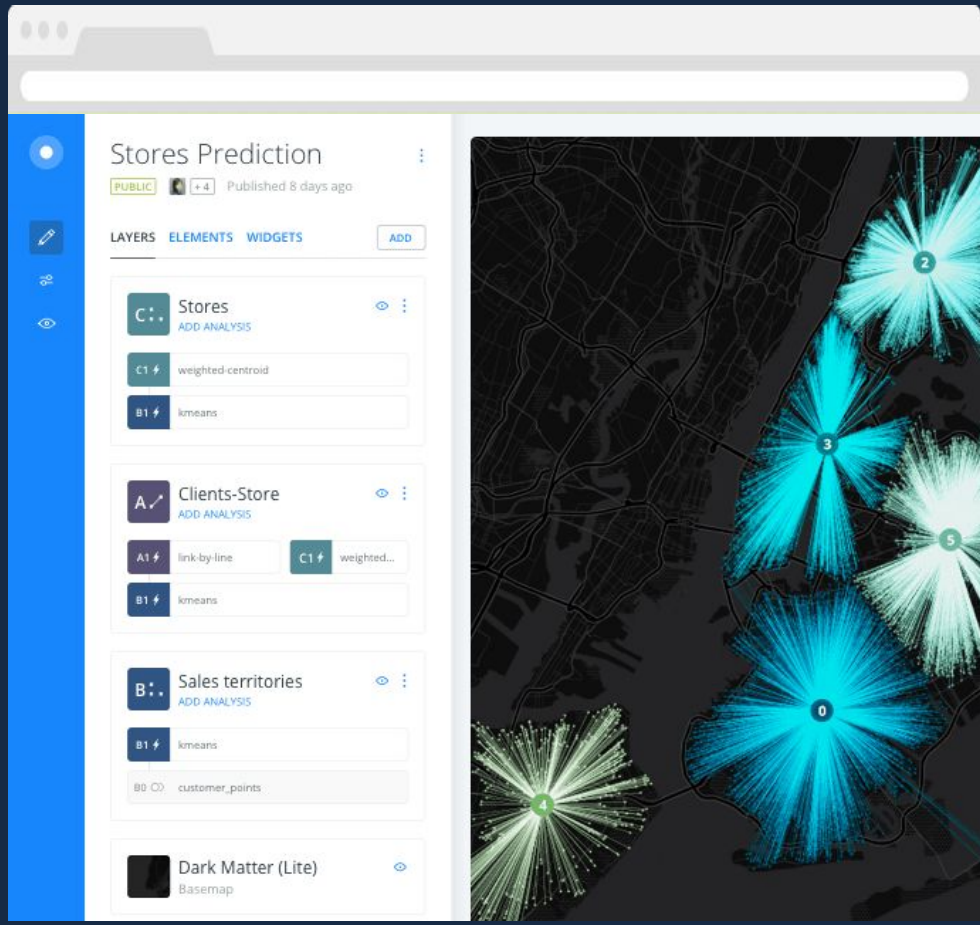
ArcGIS ESRI
GIS
MapInfo.
Google Maps Engine

BUILDER

LOCATION INTELLIGENCE FINALLY INTUITIVE

A web-based drag and drop analysis tool for business users and analysts to discover and predict key insights from location data.

CARTO Builder unleashes the power of location intelligence with self-service, actionable dashboards you can share across your whole organization.

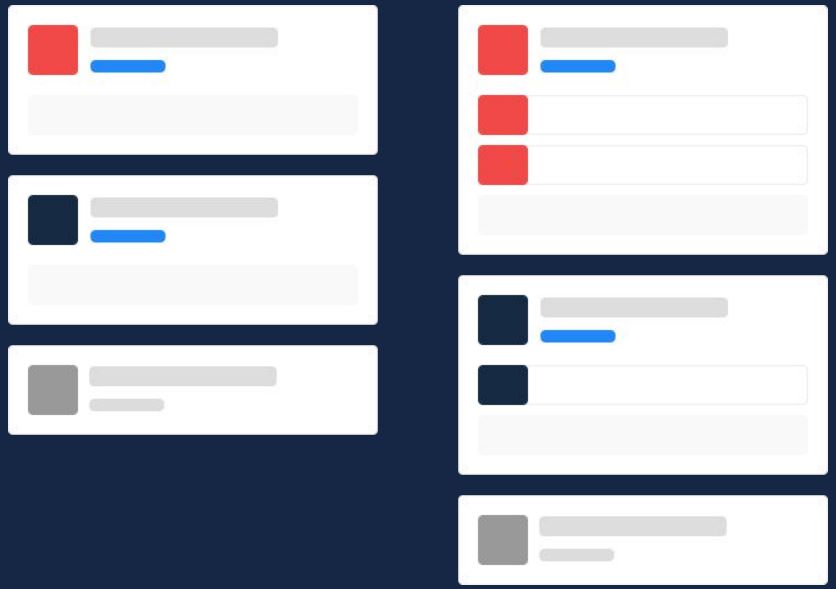


DESIGN STRATEGIES

DESIGN

SCALABILITY

No matter the size,
everything scales.



DESIGN

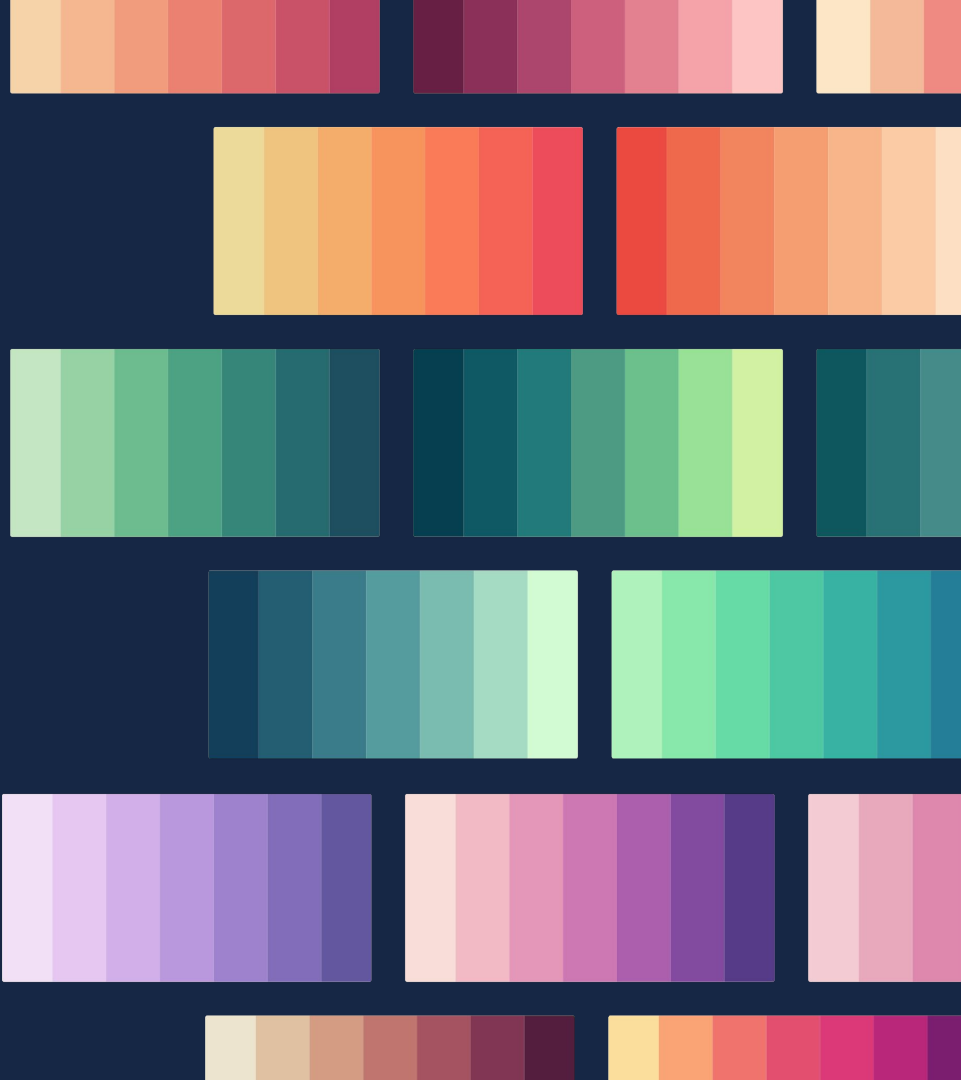
SIMPLICITY

- Patterns
- Actions
- Shapes

DESIGN

COLORFUL

- Palettes for ramps
- Autocolor
- Each geometry type owns its proper color
- Cartography

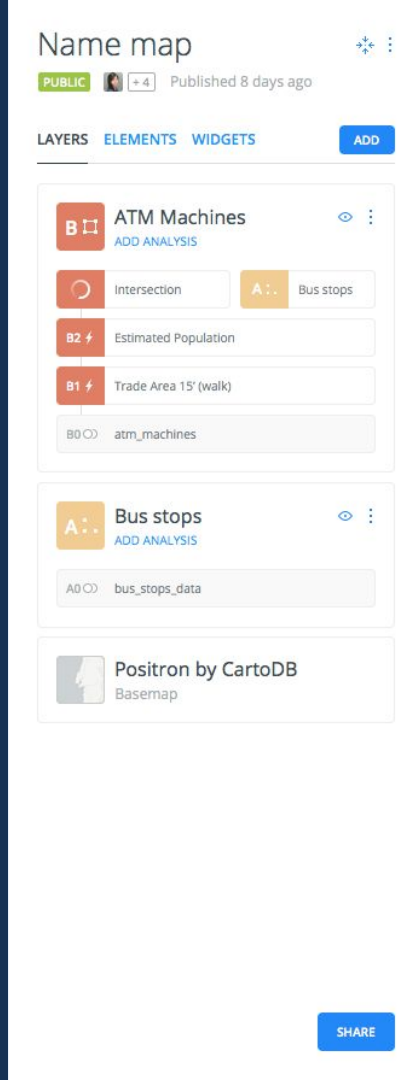


BUILDER LAYOUT

DISTRIBUTION

SIDEBAR

- Moved to the left
- Editing
- Settings
- Feedback!



DISTRIBUTION

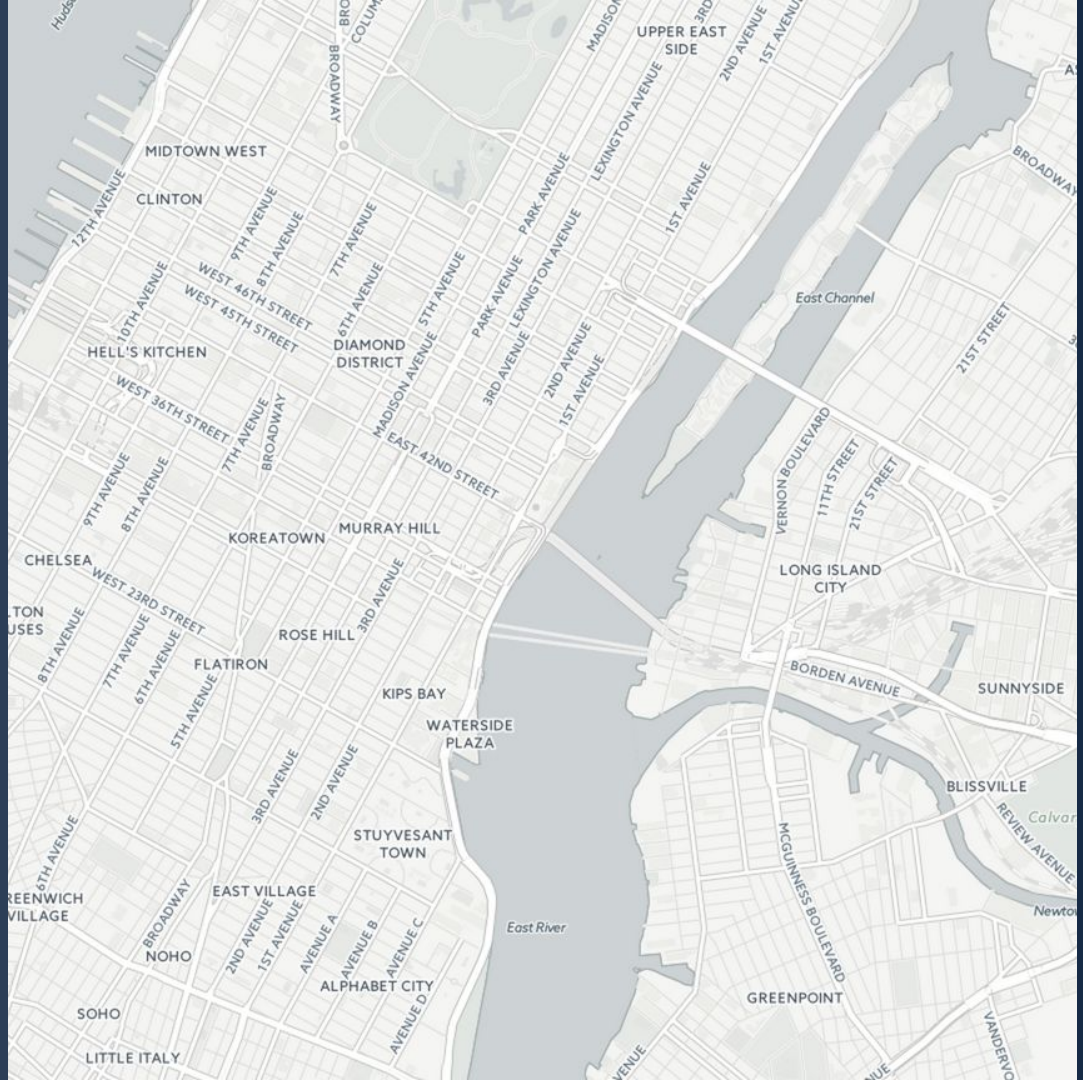
EDITING

- Drag functionality
- Readable lists
- Expert mode
- Panels navigation

DISTRIBUTION

MAP

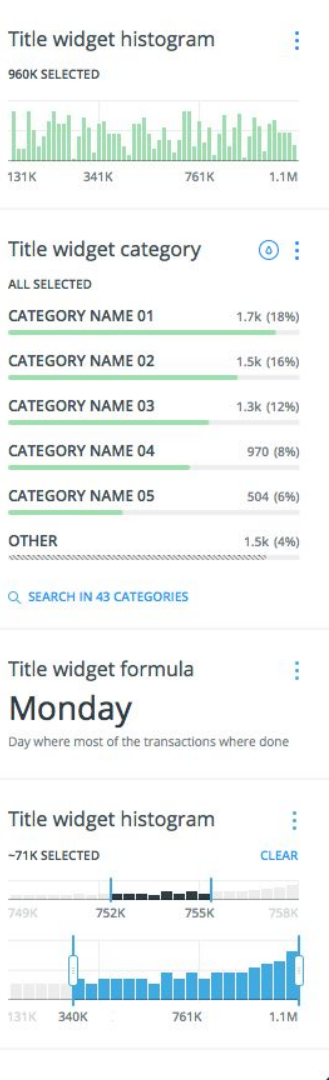
- Same easy map
- Editing controls
- Redesigned popups
- New legends



DISTRIBUTION

WIDGETS

- Filter your data live
- Four different types
- Auto-style enhancement



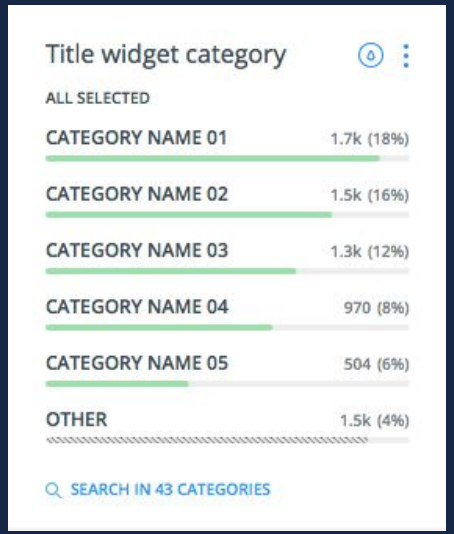
BUILDER: NEW FEATURES

NEW FEATURES

WIDGETS

Find insights over your filtered data.

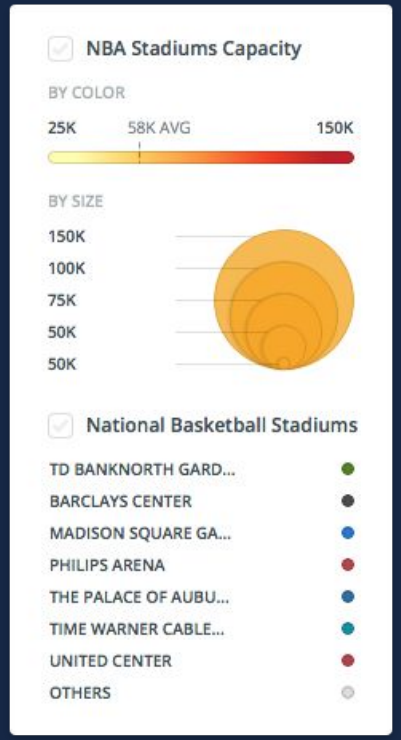
Style them in seconds in order to find patterns.

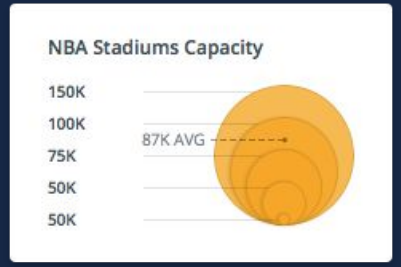


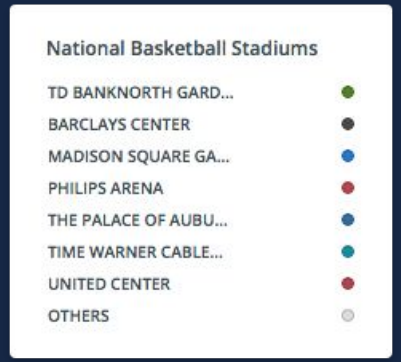
NEW FEATURES

LEGENDS

Created from scratch. They react to data changes. Possibility to have 2 different kinds of legends per layer.



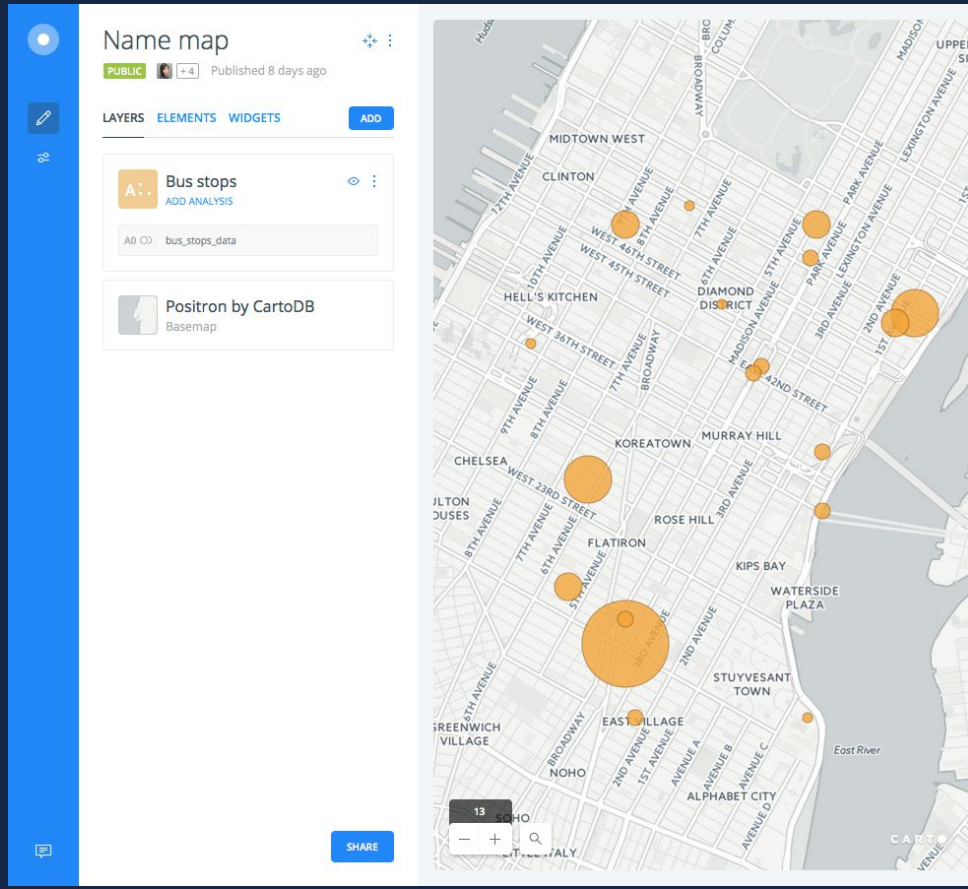


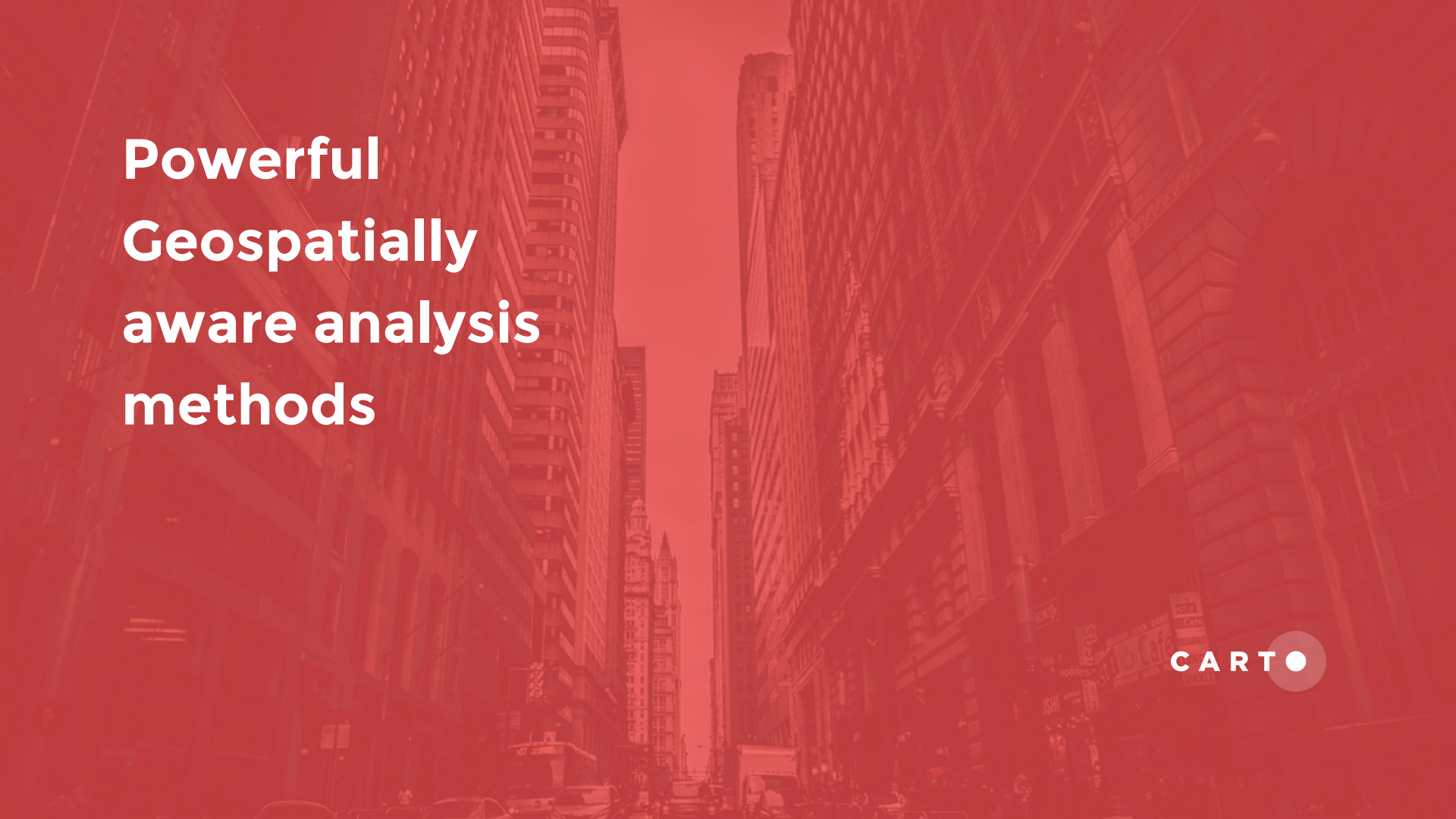


NEW FEATURES

PUBLISH

Save your map when you consider it is finished, and keep doing changes without touching the public one.

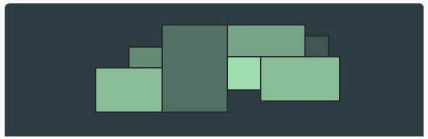



Powerful
Geospatially
aware analysis
methods
CARTO

Add a new analysis

Select the analysis you want to add

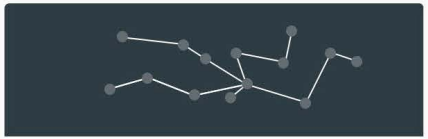
ALL CREATE AND CLEAN ANALYZE AND PREDICT TRANSFORM



Enrich from Data Observatory

Add a new column with contextual demographic and economic measures.

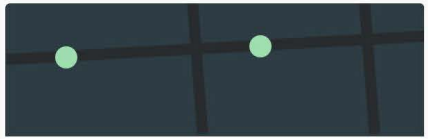
Info about analysis



Filter by layer

Filter your layer depending on a second layer such that widgets will effect both.

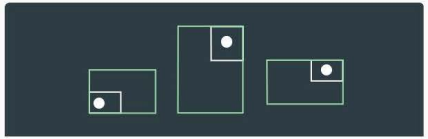
Info about analysis



Georeference

Use street addresses, city names, or other location text to generate point geometries.

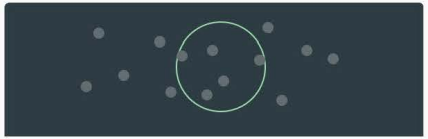
Info about analysis



Join columns from 2nd layer

Join columns from a second layer by linking a shared value found in both datasets.

Info about analysis



Intersect second layer

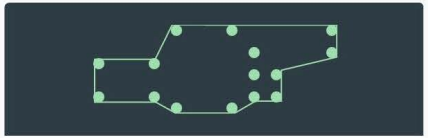
Intersect with a second layer and calculate aggregations on the fly.

Info about analysis

Create areas of influence

Use travel time (e.g. walking or driving) or distance to calculate areas of influence from points.

Info about analysis

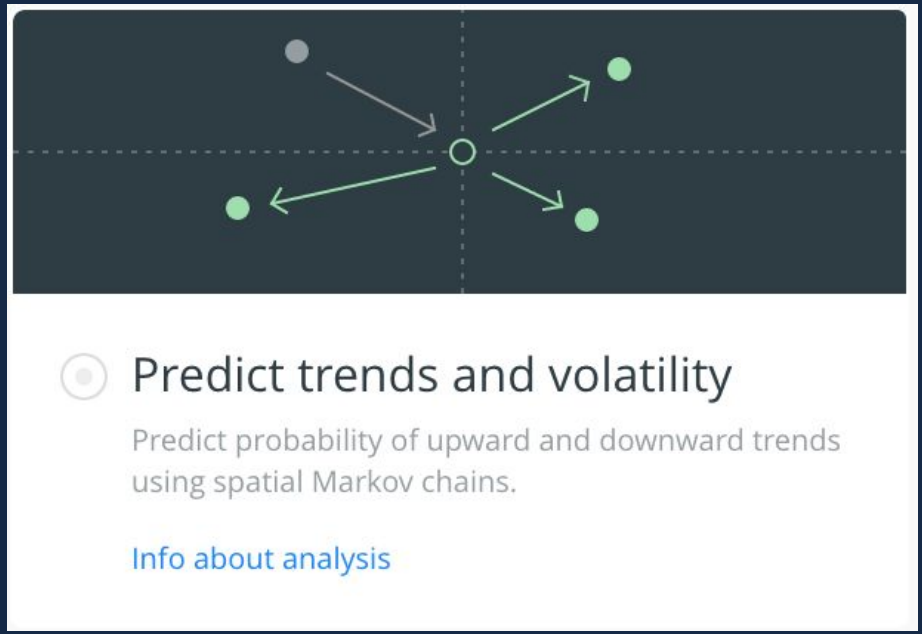


ADD ANALYSIS

ANALYSIS

Spatial Markov Chains

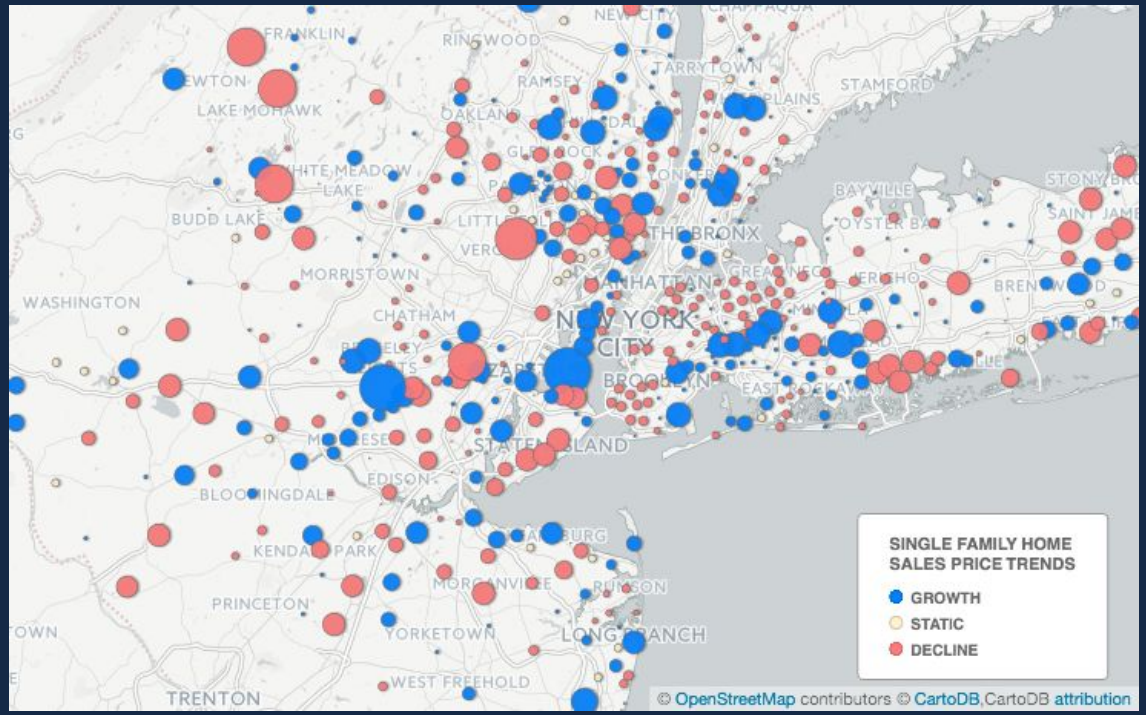
Predict across neighborhood boundaries and years



ANALYSIS

Spatial Markov Chains

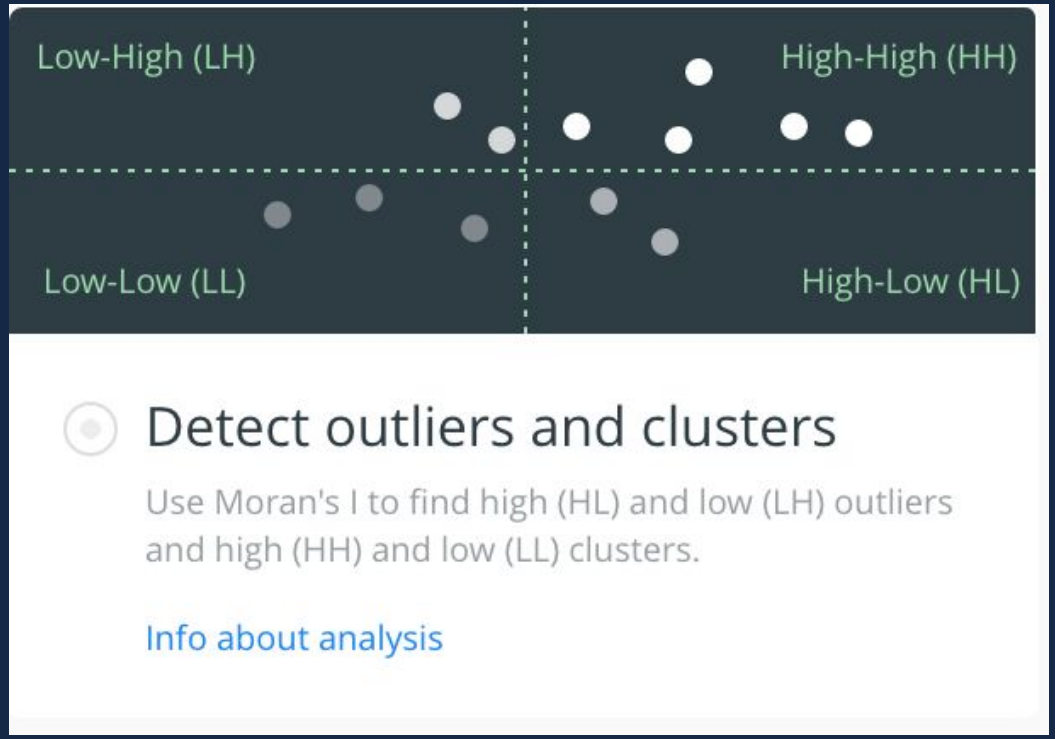
Housing prices in New York



ANALYSIS

Outliers and Clusters

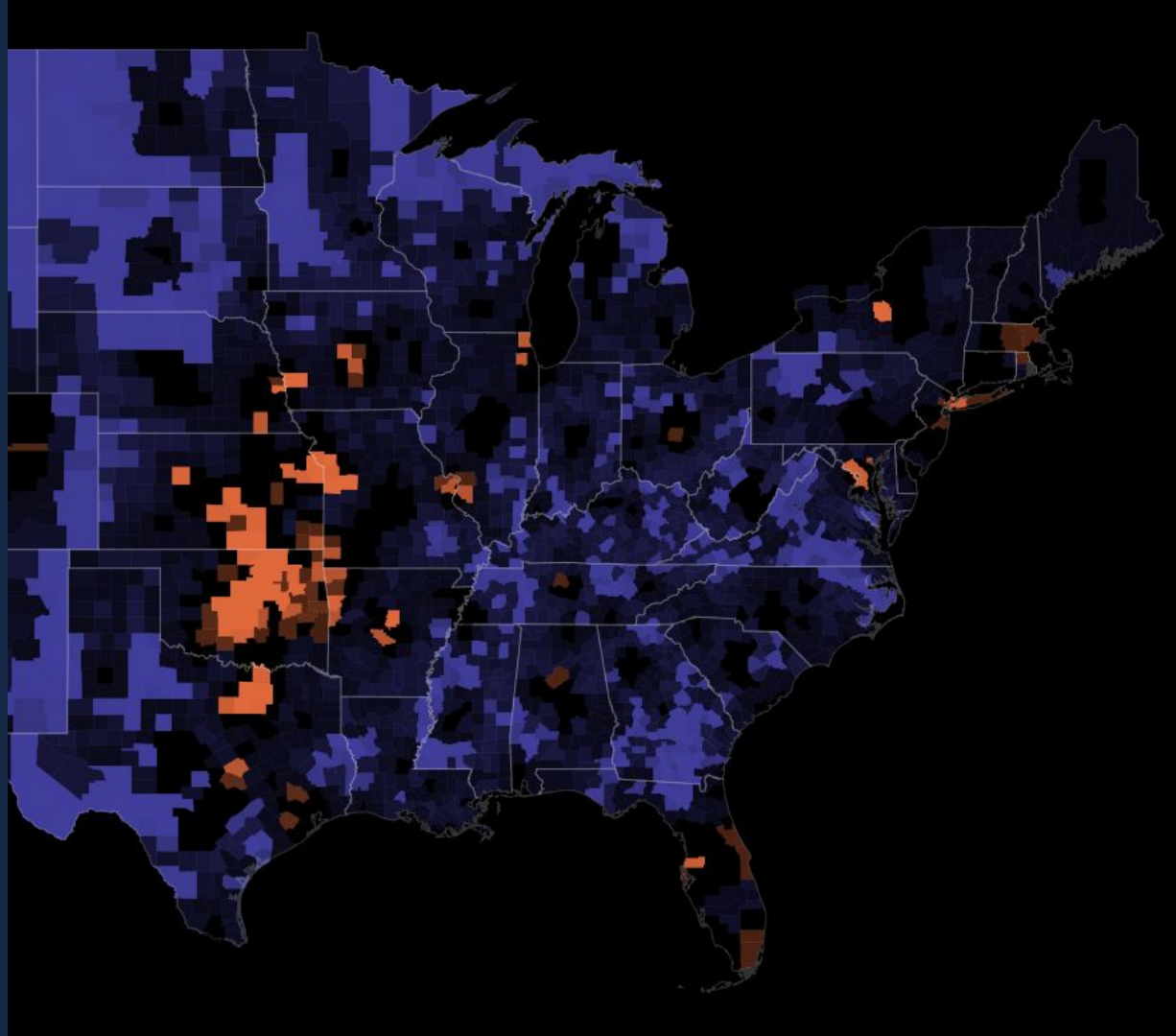
Find areas of anomalous areas of high or low values and outliers



ANALYSIS

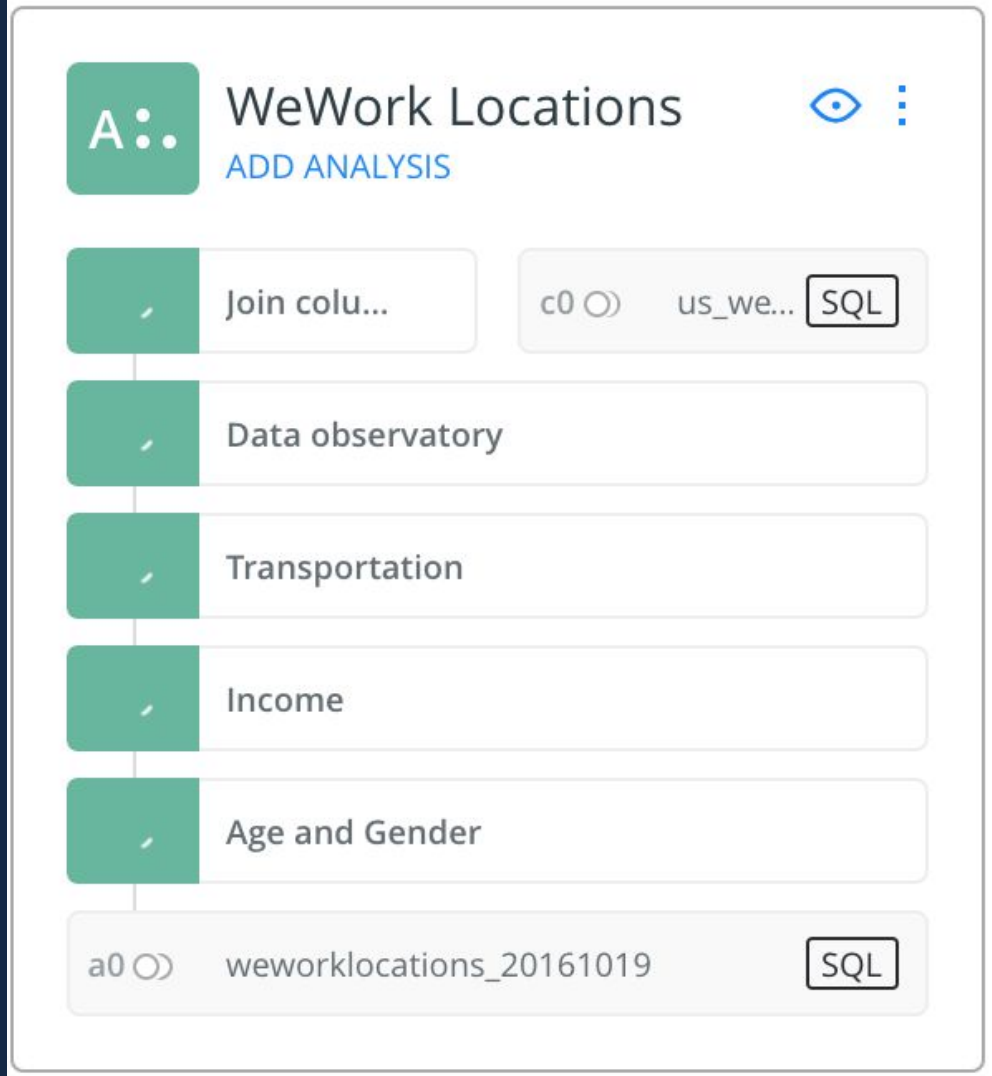
Outliers and Clusters

Mentions of ‘earthquake’ in tweets



CARTO APIS

Composable Analysis



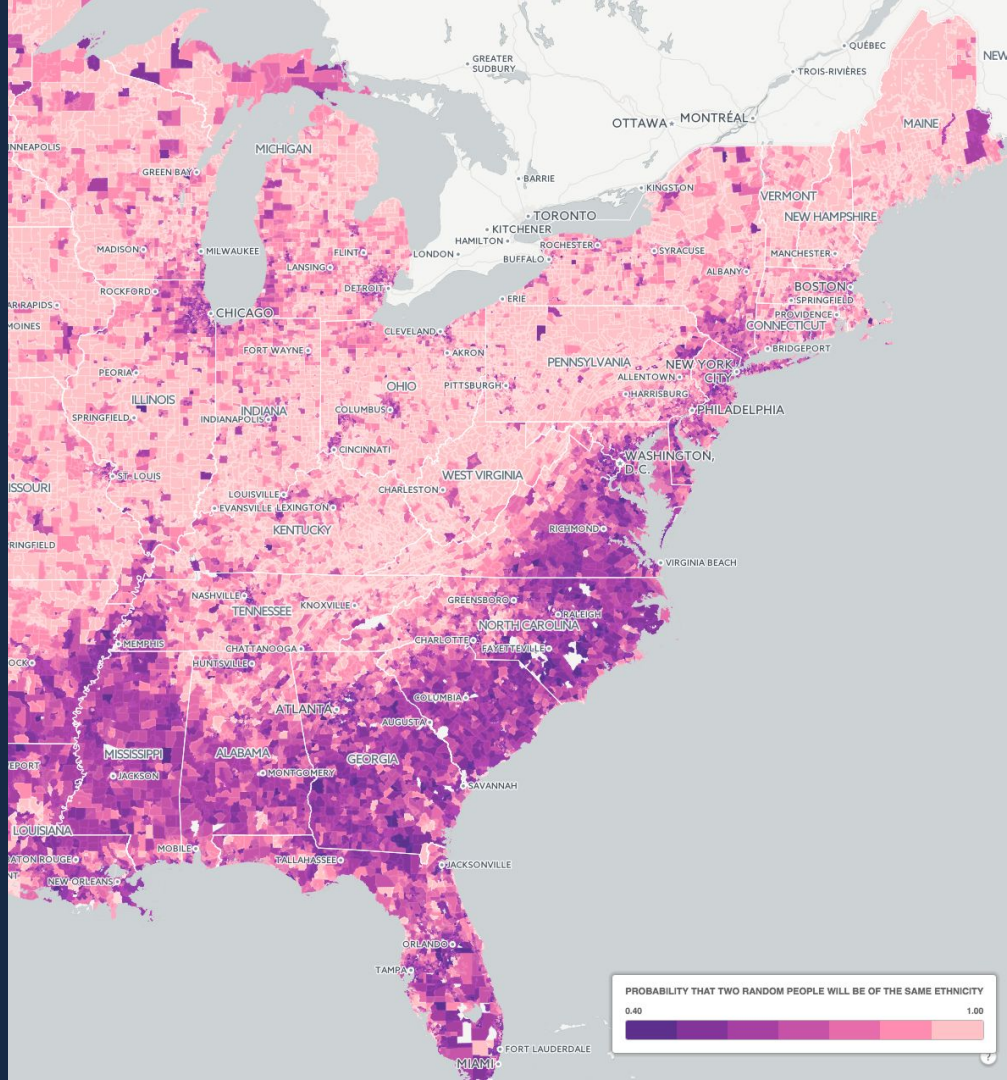
Leveraging Location-based Context with the Data Observatory

A location is connection to a universe of data all with a shared context

DATA OBSERVATORY

Data augmentation services and seamless access to borders, demographics, segmentation and high value location data layers.

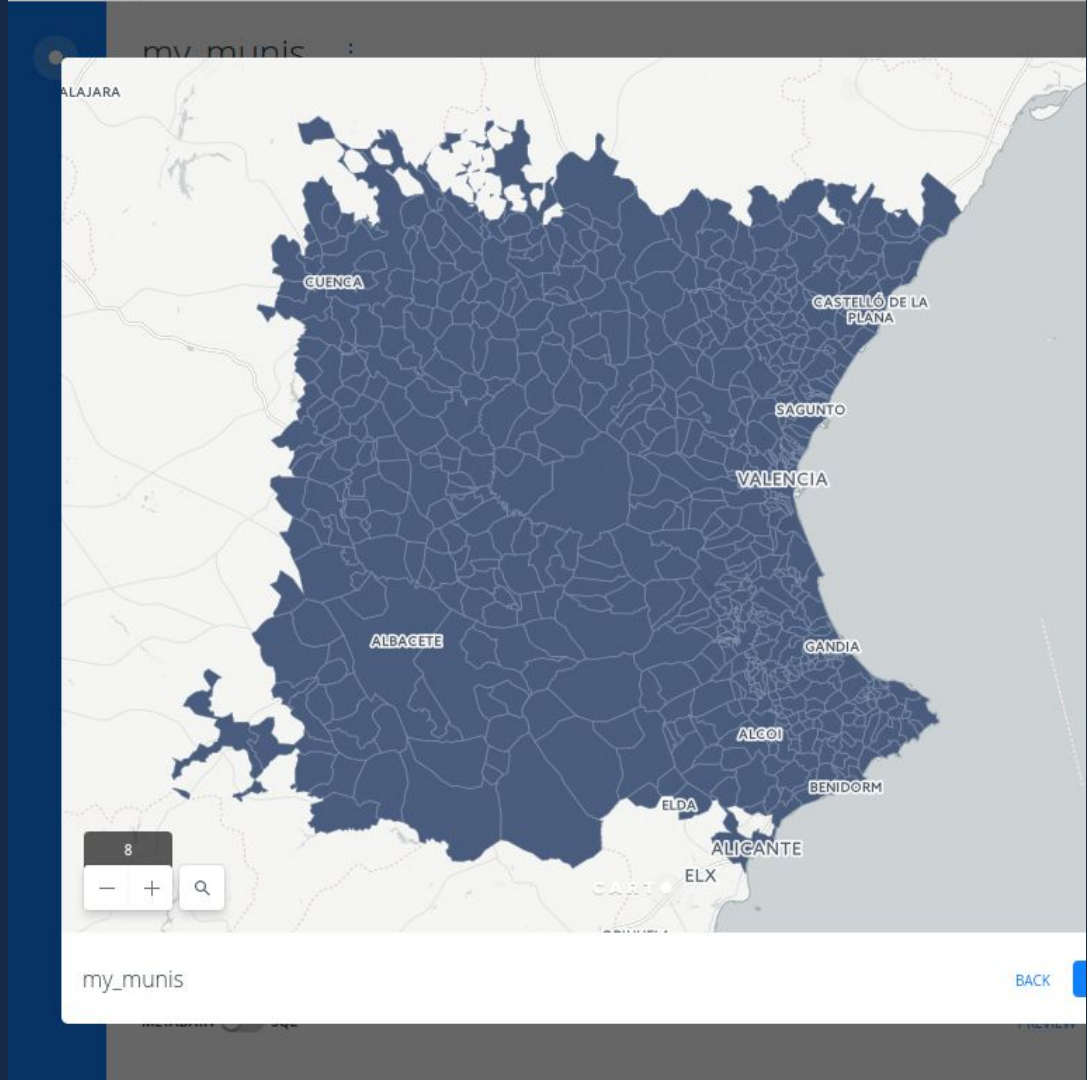
The world's most trusted sources of information to pair with your private location data or incorporate into your analysis workflows.



CARTO APIS

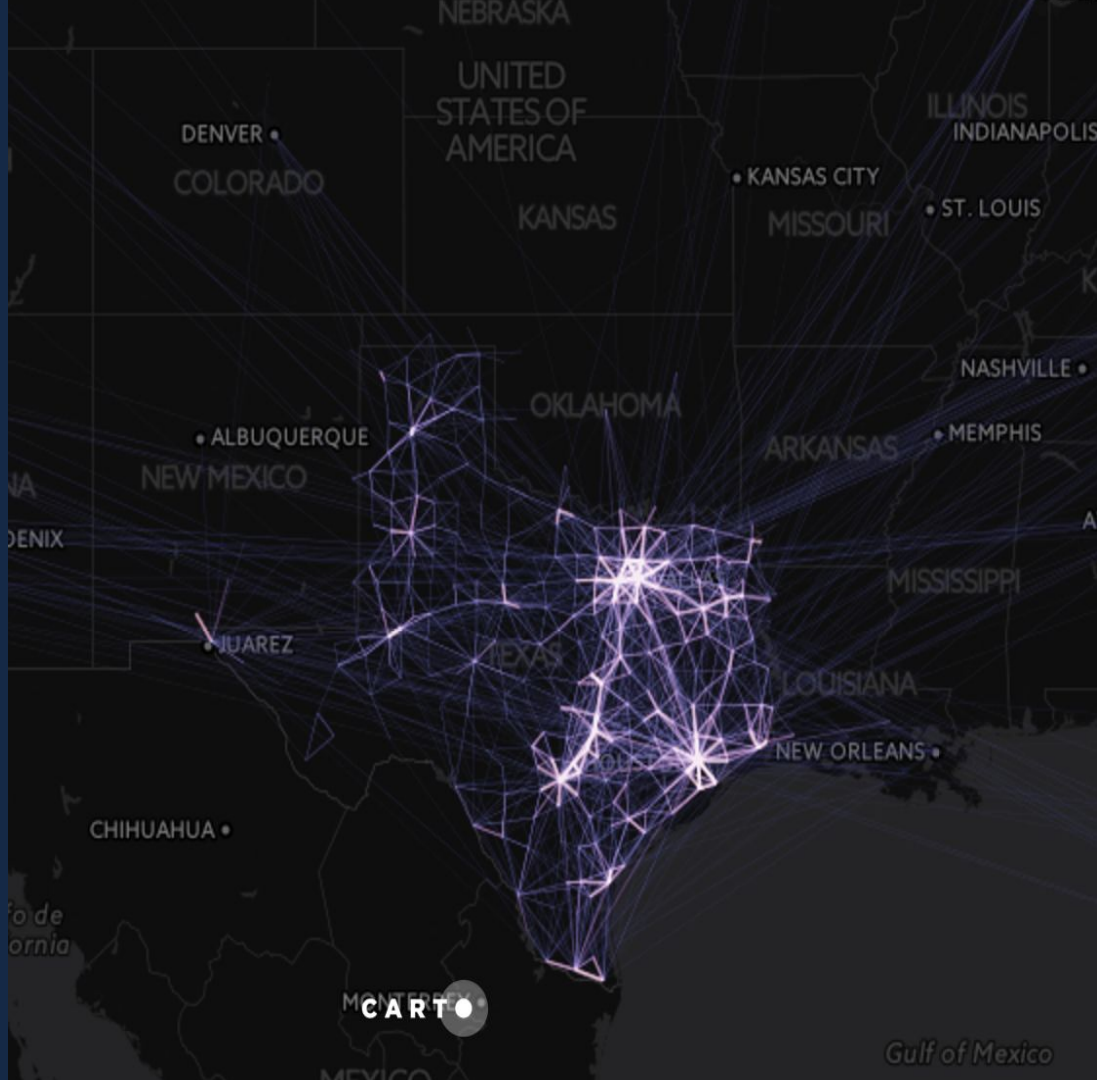
BOUNDARIES

GEOSPATIAL DATA READY TO USE



BOUNDARIES

- **Global:** Continents, Regions, Countries, Disputed and marine areas
- **Spain:** Census Tract, Municipality, Province, Region
- **UK:** Census output areas
- **USA:** States, Counties, Incorporated places, Secondary School Districts,...
- ...



MEASUREMENTS

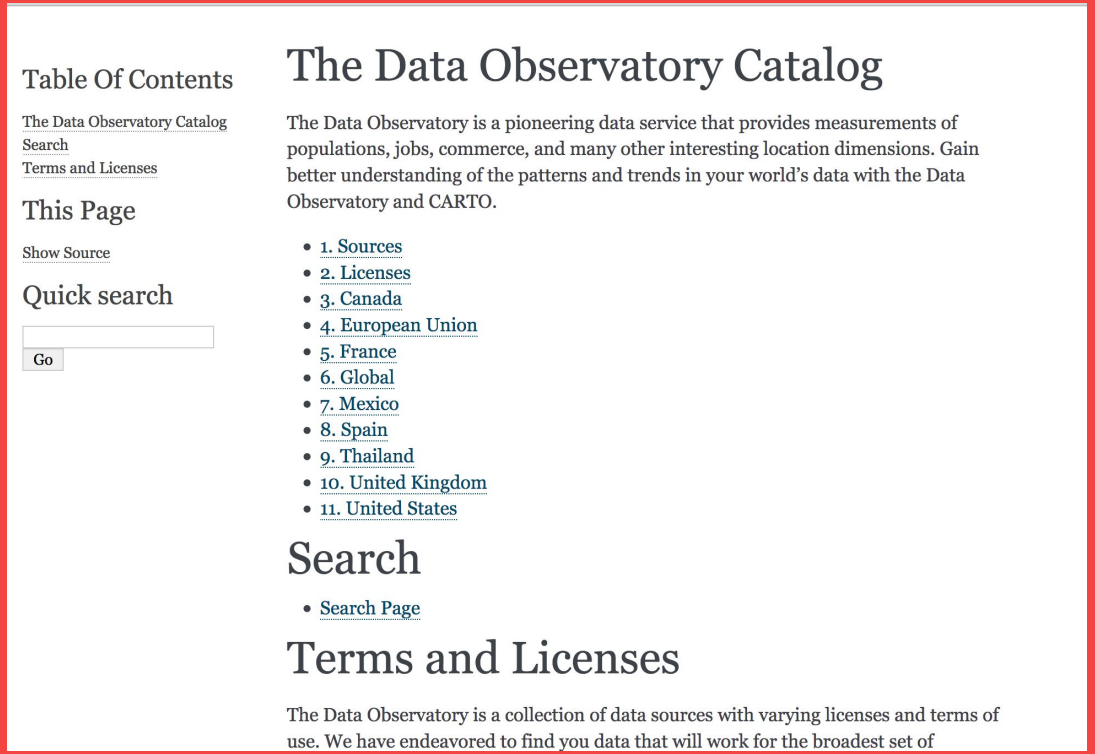
1. **DETAILS ABOUT LOCAL POPULATION, MARKETS, INDUSTRIES, AND OTHER DIMENSIONS**

2. **SEARCHABLE THROUGH DISCOVERY FUNCTIONS AND THE CATALOG**

3. **QUERY BY**

   - Point: density value like population per km2
   - Polygon: aggregated value like number of widowed persons

MEASUREMENTS



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The Data Observatory Catalog

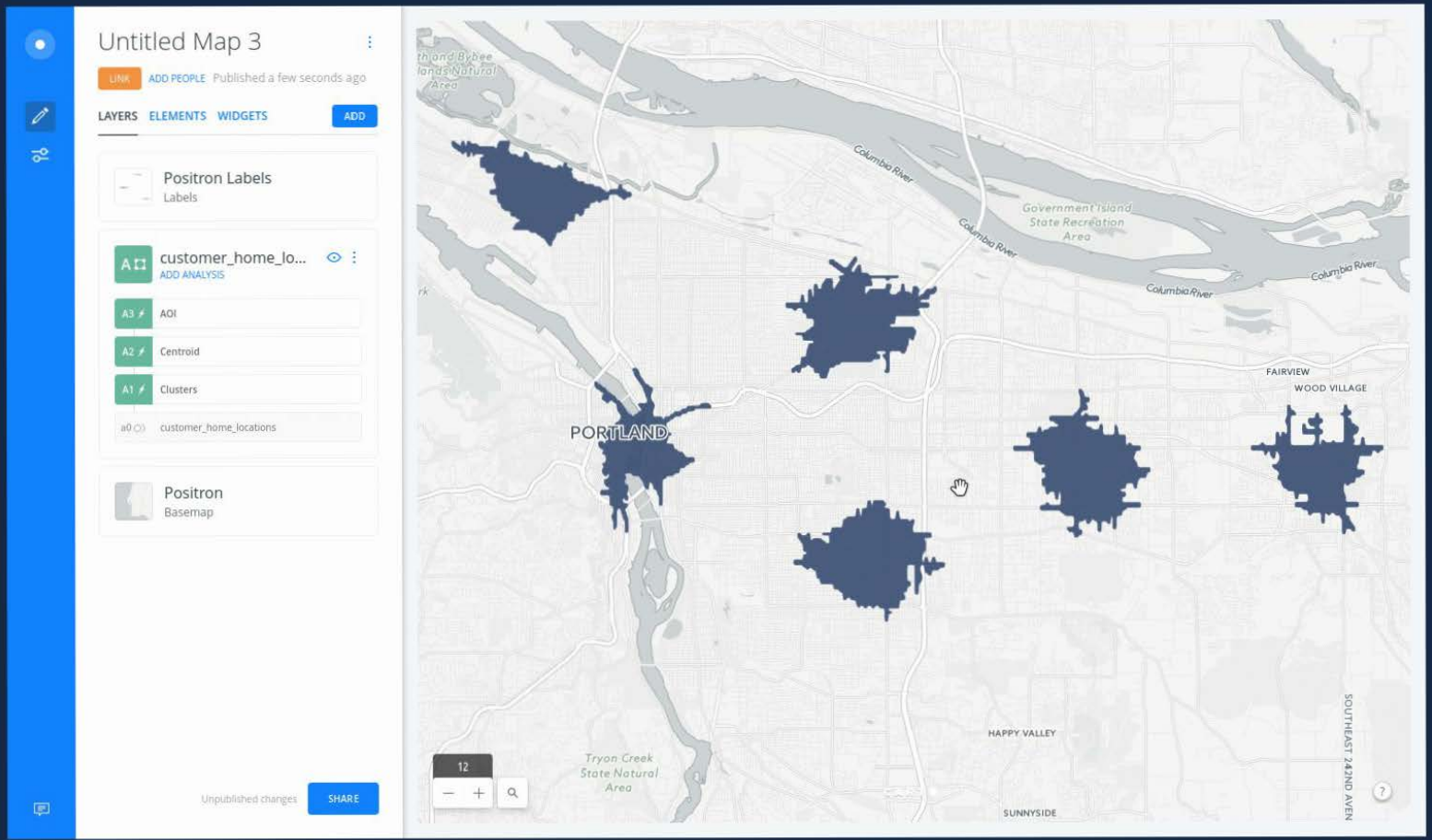
The Data Observatory is a pioneering data service that provides measurements of populations, jobs, commerce, and many other interesting location dimensions. Gain better understanding of the patterns and trends in your world's data with the Data Observatory and CARTO.

Search

- Search Page

Terms and Licenses

The Data Observatory is a collection of data sources with varying licenses and terms of use. We have endeavored to find you data that will work for the broadest set of


Untitled Map 3
LINK
ADD PEOPLE
Published a few seconds ago
LAYERS
ELEMENTS
WIDGETS
ADD
Positron Labels
Labels
customer_home_lo...
ADD ANALYSIS
A3 AOI
A2 Centroid
A1 Clusters
a0 customer_home_locations
Positron
Basemap
Unpublished changes
SHARE
Columbia River
Government Island State Recreation Area
PORTLAND
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WOOD VILLAGE
HAPPY VALLEY
SUNNYSIDE
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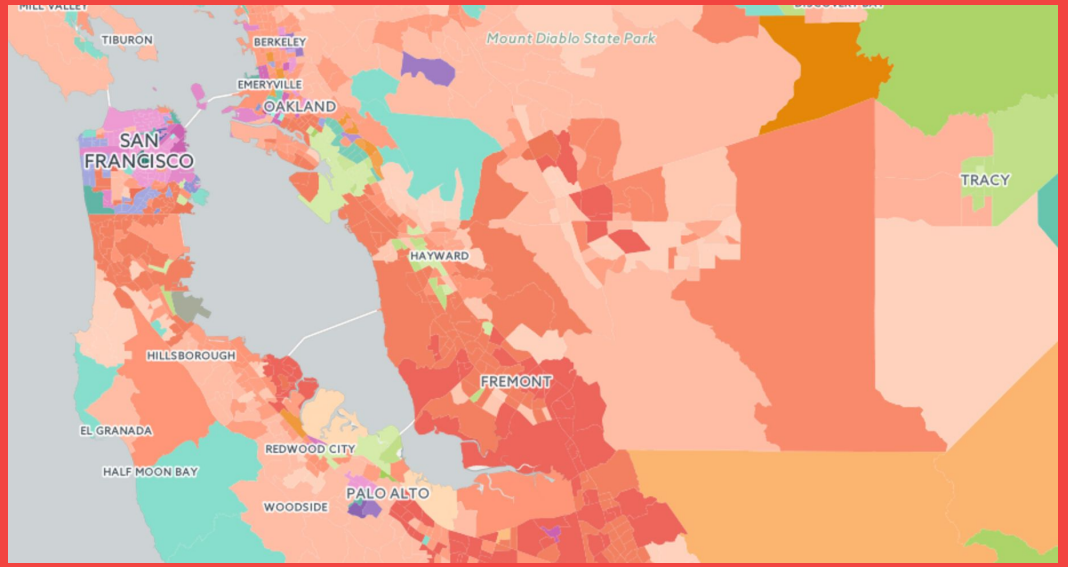
Unique CARTO built datasets.

US/UK Geodemographic regions



THANKS! – GET IN TOUCH

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ATHOMPSON@CARTO.COM · @ANDREWBT

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