Visualizing Transit Data

Virginia Transit Association 2024 Conference
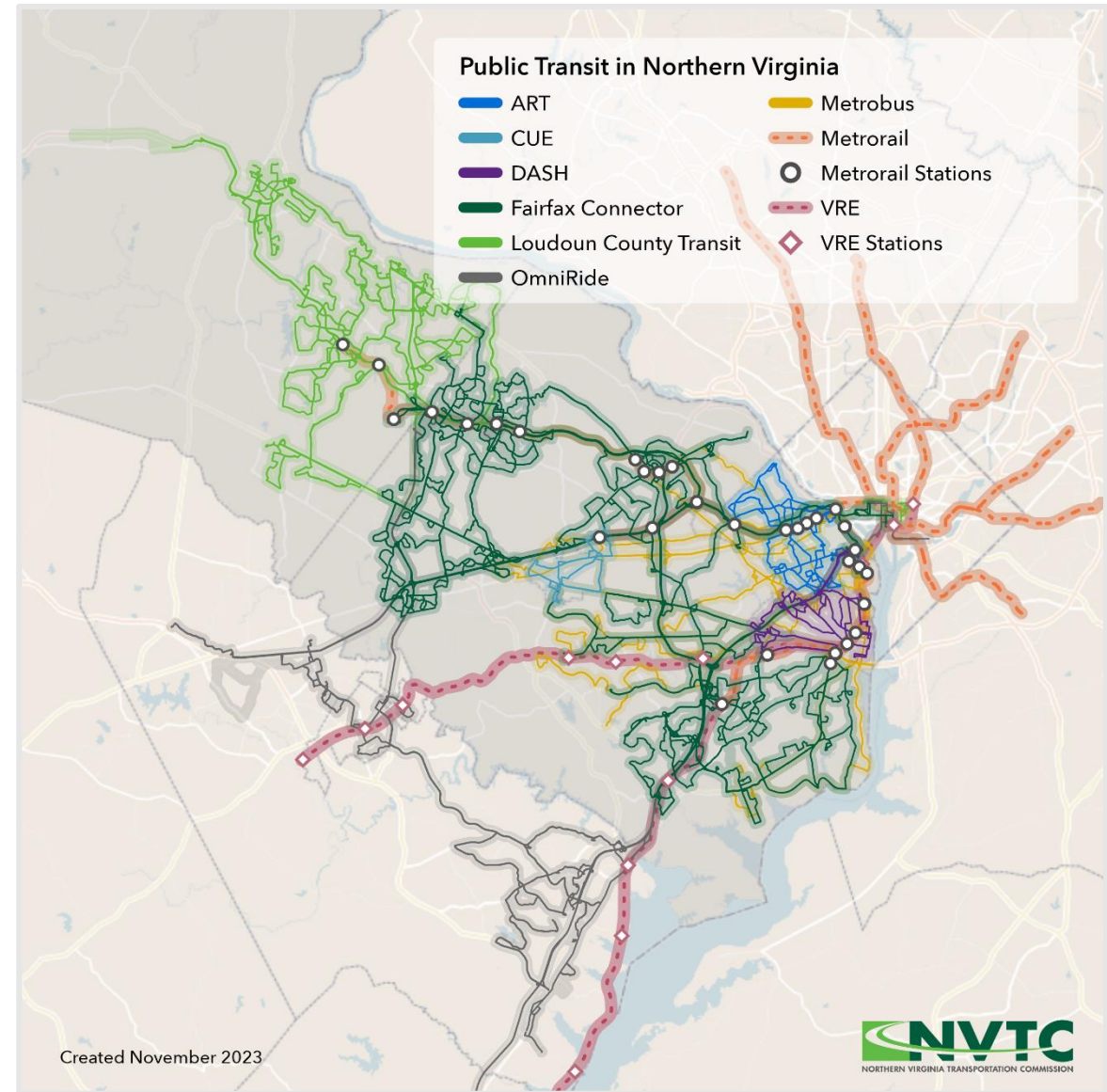
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- Regional transit policy, governance, and funding organization

- 3 cities and 3 counties
  - **2M** people
  - **62%** within ¼ mile of a bus stop

- Area includes **8** transit providers: bus, heavy rail and commuter rail
  - **1.7M** weekly transit riders

Public Transit in Northern Virginia

- ART
- CUE
- DASH
- Fairfax Connector
- Loudoun County Transit
- OmniRide
- Metrobus
- Metrorail
- Metrorail Stations
- VRE
- VRE Stations

Created November 2023

Transit Data & Analysis Program

Why is Data Visualization Important?

- Communicate complex ideas and findings in digestible way

- Tables and statistics are often not enough to get a point across

- Help reach technical and non-technical audiences
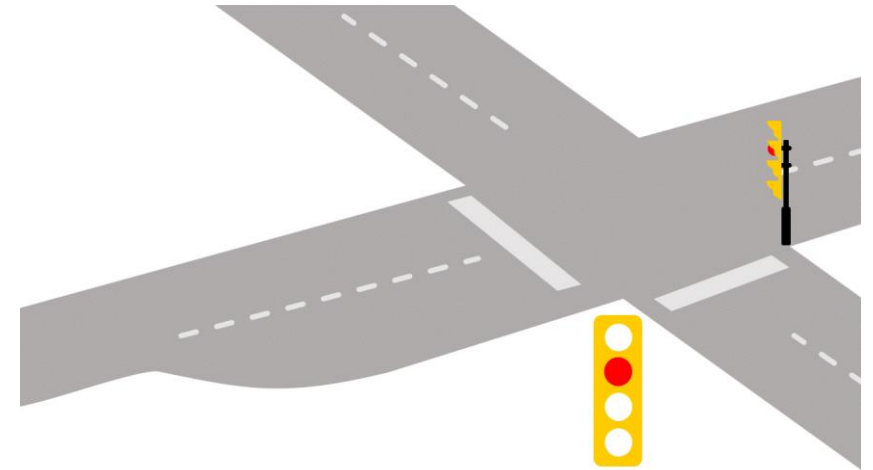
Audience	Why they are important	Challenges
Elected Officials	• Decision-makers • Communicate our work to other audiences	• Limited time • Not subject matter experts • Non-technical audience
Transit Agency Staff	• Often use their data • Primary beneficiary of our work	• Limited time

Data

Source	Type
DRPT Transit Performance Data	Ridership and service data
National Transit Database	Ridership and service data
GTFS	Service data
MWCOG Regional Travel Survey	Household, trips, and vehicle information
American Community Survey	Demographics

ART — 13 mph

DASH — 11 mph

Fairfax Connector — 17 mph

Loudoun County Transit — 20 mph

Metrobus — 13 mph

OmniRide — 14 mph

Benefits

- Publicly available
- Reproducible

Challenges

- Delays in publication and availability
- GTFS differences
- We don't produce any data

Tools & Software

Software	Functions	Cost	Learning Curve
ArcGIS	Maps, spatial analysis	Medium-High	Medium
R	Maps, spatial analysis	Free	Medium (ongoing)
Python	Spatial analysis	Free	Medium-High (ongoing)
Power BI	Dashboard	Low	Medium
PowerPoint	Presentations, GIFs, other visualizations	Low	Low

NoVaTransit Data Dashboard

- One-stop shop for regional transit data
- Reference tool for multiple audiences
- Quarterly updates
- Challenges with data, catering to multiple audiences
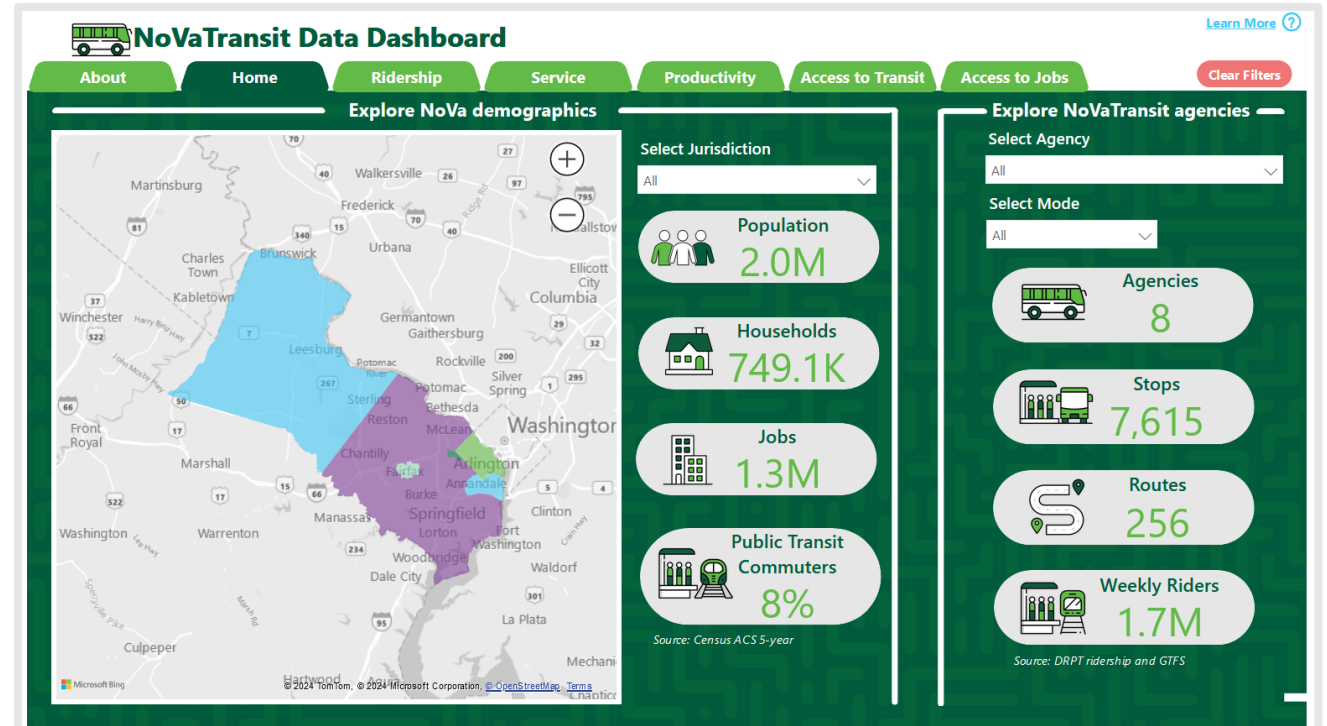
Data	Source
GTFS	Agencies
Demographics	Census
Performance Data	DRPT

| Software	Function
Excel	Analysis
R	Analysis
Power BI	Dashboard

Bus Speeds & Advancing Bus Priority

- Strategize bus priority improvements

- Bus speeds and estimated cost of bus delays

- Different audiences require different perspectives and level of detail

- ArcGIS StoryMap enhanced storytelling

Data	Source
GTFS	Agencies
Transit Costs	FTA NTD
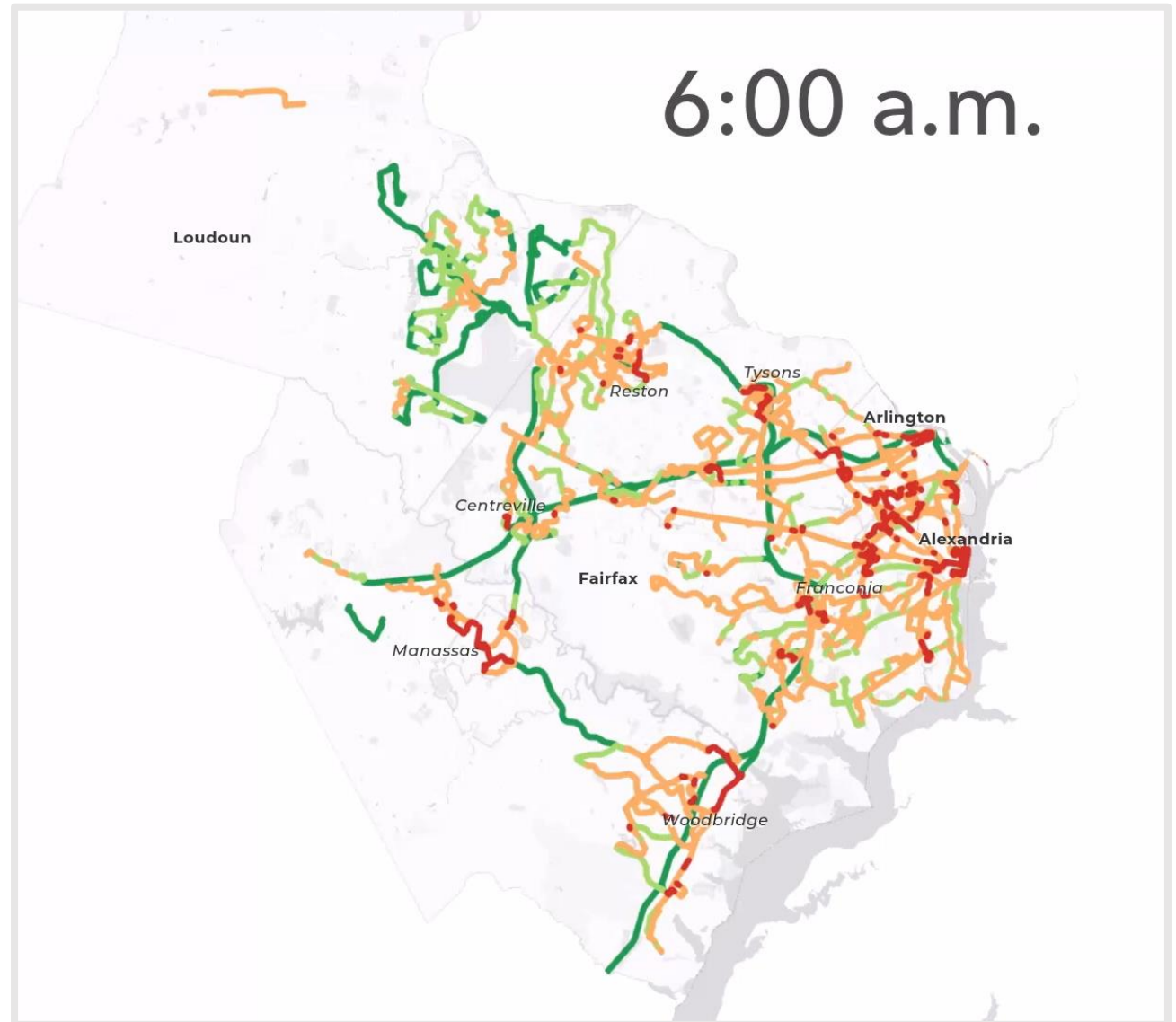
Software	Function
R	Analysis
Python	Analysis
ArcGIS	Analysis, Visuals

6:00 a.m.

Takeaways
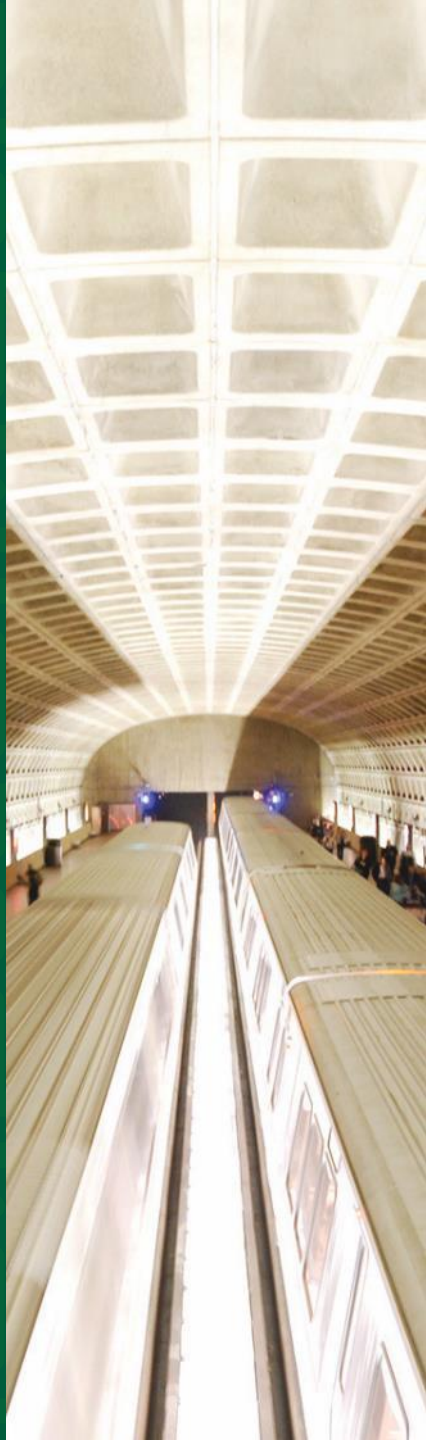
- **Data visualization can elevate your work and help reach more people**

- **It's possible at a low cost**

- **Everything feeds into everything else**

- **Always learning**

Thank You

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