THE EASTERN TRANSPORTATION COALITION

CONNECTING FOR SOLUTIONS

# Info Sharing Event: Next-Generation National Household Travel Survey (NextGen NHTS) - OD Data

*Overview, Products, and Use Cases*

**January 26, 2023**

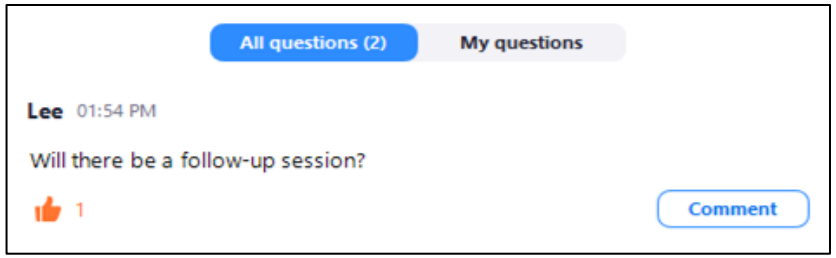
# Welcome

- We are using **Zoom Webinar**
- **AUDIO (Computer):** Use your computer speakers and microphone by clicking the “Join Audio” button at the bottom left of the screen.  You will be muted.
- **Alternate Audio (Phone):** Call into the meeting by dialing the phone number based on your location (provided in the confirmation email) and enter the Meeting ID at the prompt.  You will be muted.
- **This web meeting is being recorded.**
- **Questions** with the audio or web? Please contact Esther via email (ekleit@kmjinc.com)


# Asking Questions in the Q&A Box

- Click on the Q&A icon at the bottom of your screen

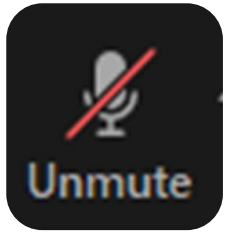

- The questions in the Q&A box will be monitored and answered either between presentations or at the end of the meeting
- You can keep track of your questions in the "My Questions" tab in the Q&A box



# Asking Questions Verbally

- Please raise your hand *(click on the hand icon at the bottom of the screen)*, and a host will unmute you.
- Please give your name and agency before asking your question


- **Please mute yourself when you are finished speaking**



# Welcome

**Denise Markow**
TSMO Program Director
The Eastern Transportation Coalition

**Stanley Young**
Chief Data Officer
The Eastern Transportation Coalition

# Coalition TSMO Update – Recent Events

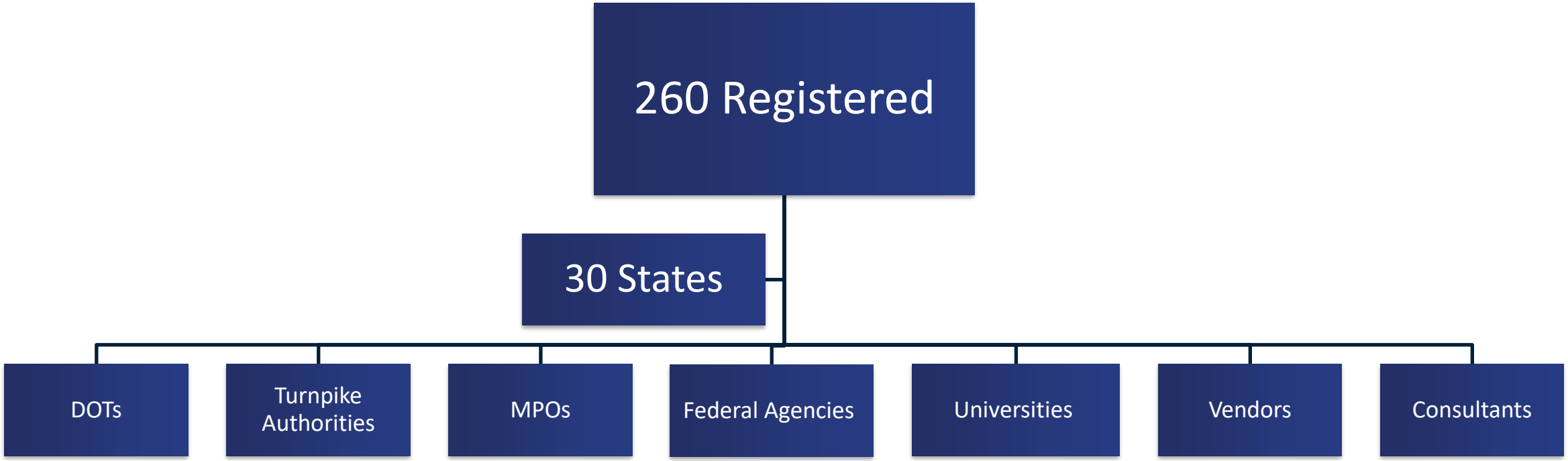
- ✓ Web Event: Everything you've ever wanted to know about ATSPMs - Nov. 9, 2022
- ✓ Highway Operations Group (HOGs) Exchanges (In Person) (*invite only*)
  - ✓ Potomac HOGs Exchange - Oct. 18, 2022
  - ✓ Del-Val HOGs Exchange - Nov. 2, 2022
  - ✓ Southern HOGs Exchange - Dec. 6-7, 2022
- ✓ Transportation Data Marketplace (TDM) (invite only)
  - ✓ TDM Validation Tech Advisory Committee Meeting - Oct. 11, 2022
  - ✓ TDM Validation Vendor Meeting - Nov. 1, 2022
  - ✓ TDM State Contracts Meeting - Nov. 29, 2022
  - ✓ TDM Validation Tech Advisory Committee Meeting - Jan. 24, 2023
- ✓ RITIS
  - ✓ User Group Web Meeting - October 20, 2022
  - ✓ Workshop #3 - After Action Templates - Nov. 17, 2022
- ✓ Waze and Google Product Updates Web Meeting (invite only) - Jan. 19, 2023

tetcoalition.org

# Coalition TSMO Update – Upcoming Events

- TDM Validation Vendor Meeting - January 31, 2023
- RITIS User Group Web Meeting - February 2, 2023
- TDM Analytics Platform Vendor Forums *(invite only)* - February 9 & 23, 2023
- RITIS Enhancement Working Group Meeting (*invite only*) - March 2, 2023
- Travel Information Virtual Info Summit - March 16, 2023
- TSMO Strategic Planning Session *(invite only)* - April 13, 2023
- Summit: A Unified Approach to Driving Change on the Roadway - May 8-10, 2023

# The Eastern Transportation Coalition Sponsored Event



# Why We Are Here

- TETC's Transportation Data Market Place (TDM) has various offerings for Origin & Destination Data
- Many states are eager to investigate and apply OD data from the TDM
- FHWA has been investing in NextGEN NHTS for a few years and the product is starting to flow
- TETC States are inquiring about the availability of NextGEN NHTS products and how they compare to TDM marketplace offerings
- **As a result – Today's Information Exchange is on the *Status and Use of NextGEN NHTS products***

# Agenda

| Topic | Speaker |
|---|---|
| Housekeeping | Joanna Reagle, KMJ Consulting, Inc. |
| Welcome & Update by the Eastern Transportation Coalition | Stanley Young, Chief Data Officer, The Eastern Transportation Coalition |
| Overview of NextGen NHTS Objectives | Patrick Zhang, PE, Transportation Specialist, Travel Monitoring and Surveys Division, Office of Highway Policy Information, Federal Highway Administration |
| How It's Made: Behind the Scenes of the NextGen Data Product and Supporting Tools | Michael Pack, Director, University of Maryland CATT Lab |
| NextGen NHTS OD Data Product Tools and Resources | Ross Wang, R&D Associate, Oak Ridge National Laboratory |
| Purchase and Use of Origin-Destination Data: Add-On Product | Habte Kassa, Assistant State Transportation Planning Administrator, Georgia DOT<br>Guy Rousseau, Transportation Model Development & Applications Manager, Atlanta Regional Commission |
| Q&A and Discussion | Stanley Young |

# Speakers

**Patrick Zhang**

**Transportation Specialist, Travel Monitoring and**

**Surveys Division, Office of Highway Policy Information**

**Federal Highway Administration**

**Michael Pack**

**Director**

**University of Maryland CATT Lab**

**Ross Wang**

**R&D Associate**

**Oak Ridge National Laboratory**

**Habte Kassa**

**Assistant State Transportation Planning Administrator**

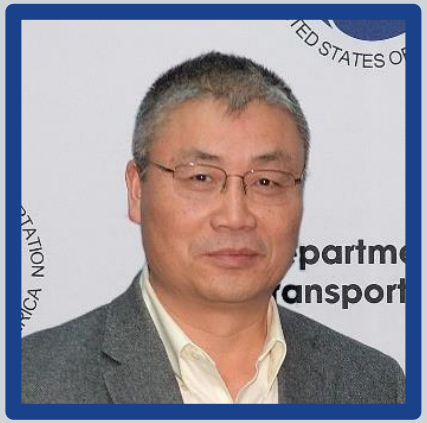
**Georgia DOT**

**Guy Rousseau**

**Transportation Model Development & Applications Manager**

**Atlanta Regional Commission**

# Overview of NextGen NHTS Objectives



**Patrick Zhang**
Transportation Specialist, Travel Monitoring and Surveys Division, Office of Highway Policy Information
Federal Highway Administration

Presentation to
Eastern Transportation Coalition

# Introduction and Overview: NextGen NHTS OD Products

Patrick Zhang, PhD, PE
Travel Monitoring and Surveys Division
Office of Highway Policy Information, FHWA

January 26, 2022

# Outlines

NHTS Program Overview

Origin-Destination (OD) Data Products

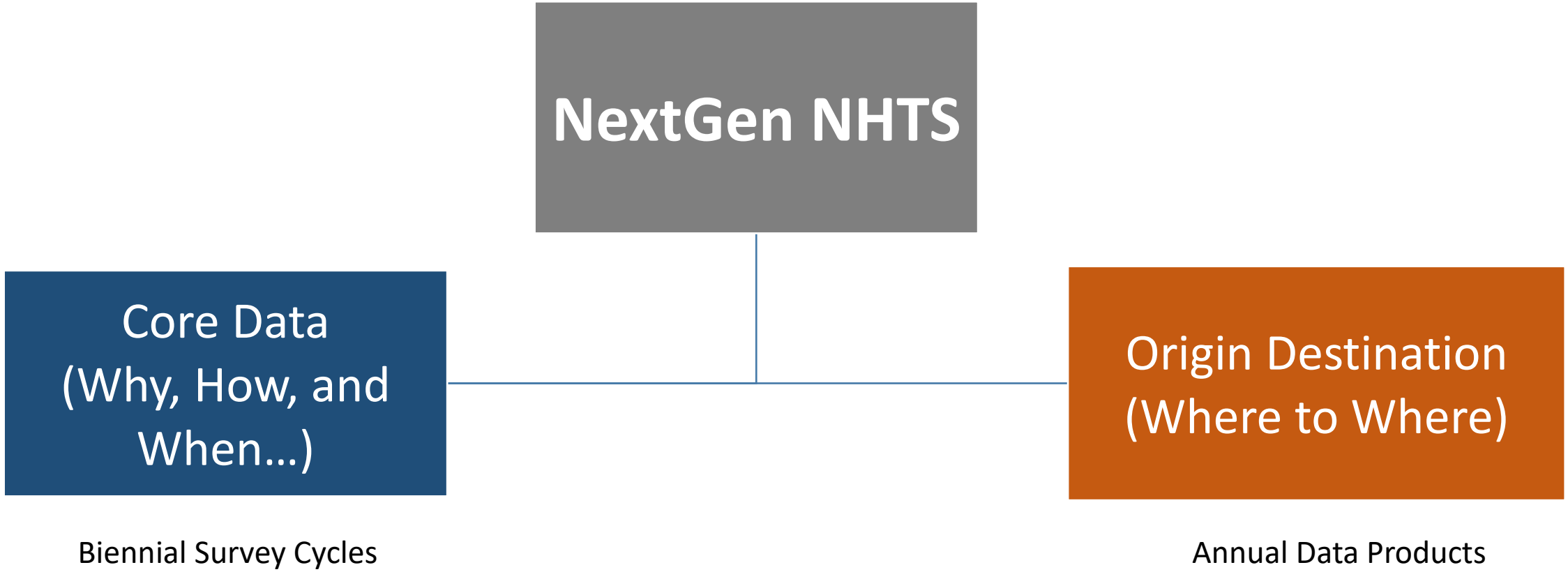
Add-on OD Data Products

Status

# NHTS Program Overview

- 1969-2017 - National Household Travel Survey (NHTS) is a periodic national survey providing travel behavior data to support transportation policy and planning efforts (conducted every 5-8 years)
- 2018 FHWA launched the NextGen NHTS
  - Take advantage of new data sources (passive OD data)
  - Provide insights into long-distance travel
  - Switch to a biennial household survey design
  - Collect both trip rate and OD data
  - Provide pooled fund agencies with shared research and data purchase opportunities

# NextGen NHTS Components

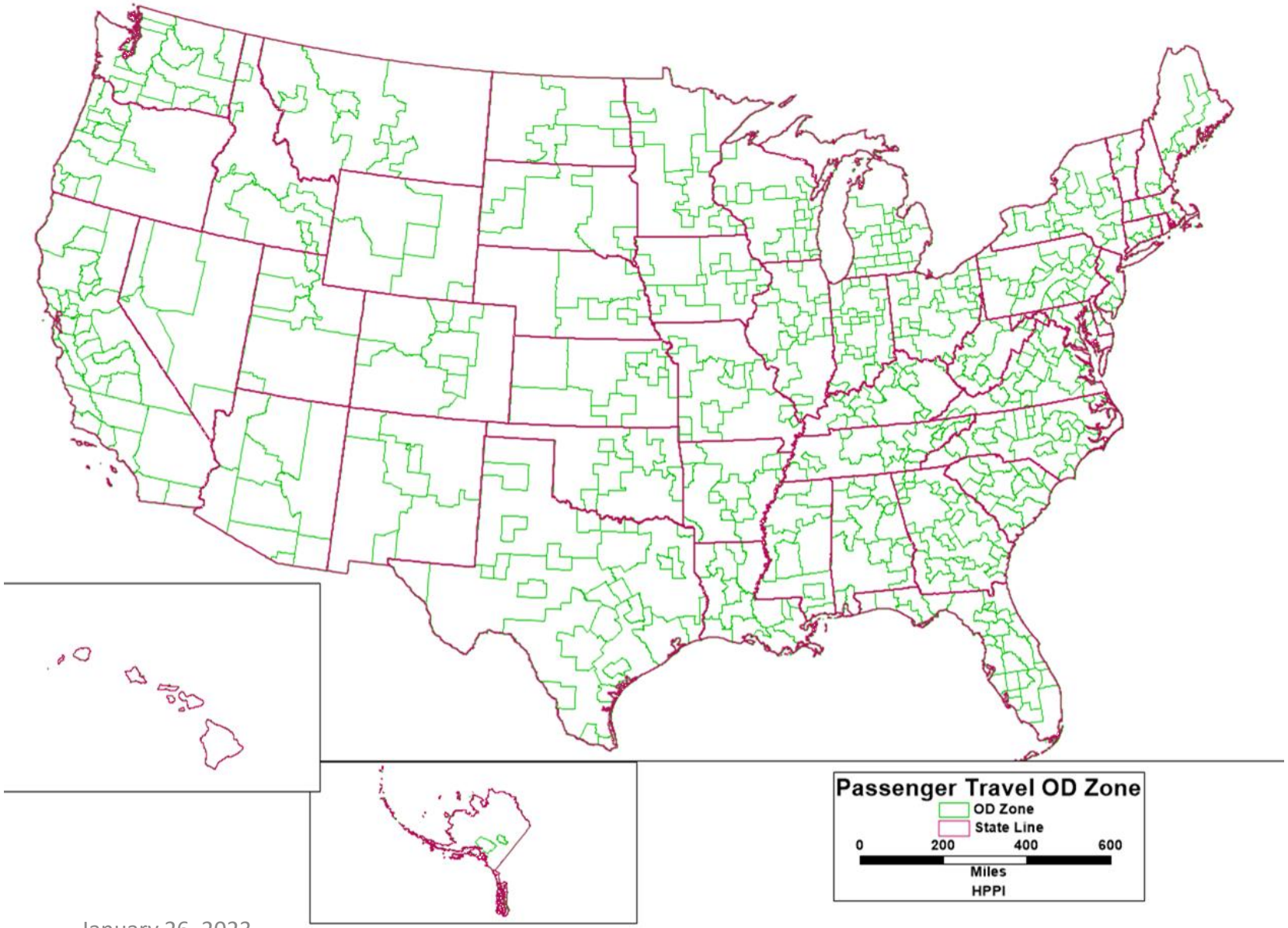


# OD Data Products

National and sub-national OD data products

1. FHWA – National OD on an annual basis, 2020-2024
   a) Truck OD Data
   b) Passenger OD Data
2. Add-on Partners – Sub-national level OD for specific year(s) between 2019-2024
   a) Passenger OD Data

# National OD Product Zone Structure




**583 zones**

These zones include:

a) 446 MSA based zones divided into state specific MSAs for these multistate MSA zones, and

b) 137 new zones created from counties of remainder of States.

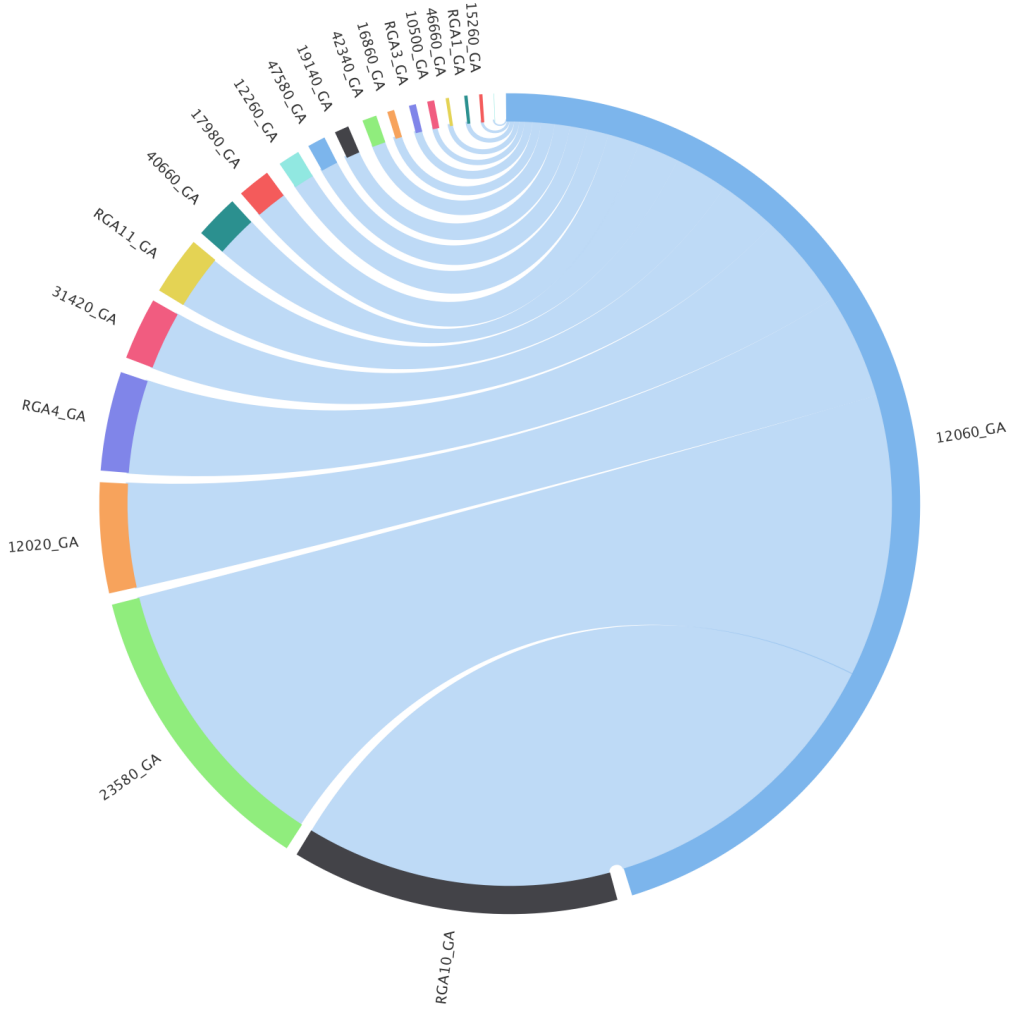
https://www.fhwa.dot.gov/policyinformation/analysisframework/04.cfm

# NextGen NHTS OD Product Summary

| Specification | National Truck | National Passenger | Add-on Passenger |
|---|---|---|---|
| Trip Count | Annual | Annual | Annual, monthly, weekday/ weekend, and hour of day |
| Coverage | 50 States + DC | 50 States + DC | Agency-specified |
| Zone | FHWA's 583 Zones | FHWA's 583 Zones | Agency-specified |
| Distance | 8 categories | 8 categories | 8 categories |
| Travel Mode (imputed) | N/A | Air, rail, vehicle, other | Air, rail, car, bus, walk, bike, other |
| Trip Purpose (imputed) | N/A | Work, non-work | Home-based work, home-based other, work-based other, and other |
| Demographics (imputed) | N/A | N/A | Age, gender, and income |

# National OD Data Products

- ✓Data files
- ✓Independent quality control and validation
- ✓Technical and supporting documents
- ✓Interactive analytics & visualizations



# OD Program Status

- 2020 National OD data products
  - Released June 2022
  - Online tool available for all users
- 2021 National OD data products
  - Development complete, release soon
  - Online tool being updated for 2021 products

# Contact Information

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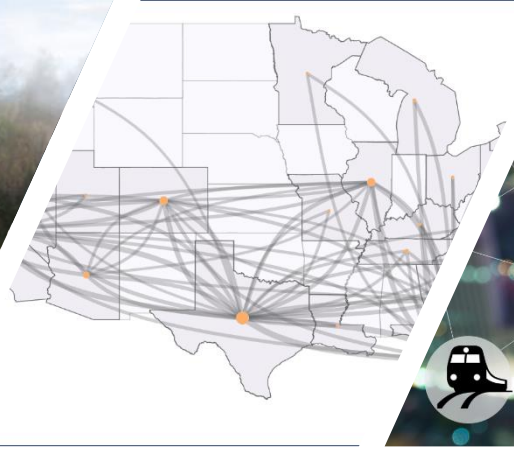
202-366-1941
patrick.zhang@dot.gov

# How It's Made: Behind the Scenes of the NextGen Data Product and Supporting Tools

**Michael Pack**
Director
University of Maryland CATT Lab

# How it’s made

Michael Pack ◦ January 26, 2023

Behind the scenes of the next-gen data product and supporting tools.

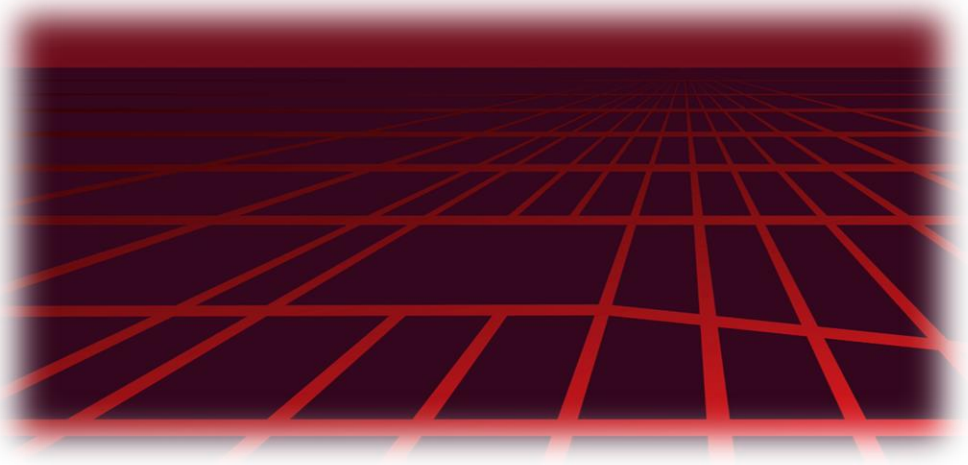
# Three NextGen NHTS Data Products

| | National Truck | National Passenger | Add-on Passenger |
|---|---|---|---|
| **Trip Count** | Annual | Annual | Annual, monthly, weekday/ weekend, and hour of day |
| **Coverage** | 50 States + DC | 50 States + DC | Agency-specified |
| **Zone** | FHWA's 583 Zones | FHWA's 583 Zones | Agency-specified |
| **Distance** | 8 categories | 8 categories | 8 categories |
| **Travel Mode** (imputed) | N/A | Air, rail, vehicle, other | Air, rail, car, bus, walk, bike, other |
| **Trip Purpose** (imputed) | N/A | Work, non-work | Home-based work, home-based other, work-based other, and other |
| **Demographics** (imputed) | N/A | N/A | Age, gender, and income |

# How it's made: passenger file methodology

## Data Sources

- UMD team integrates and fuses data from multiple anonymous data sources to ensure wide data coverage and quality

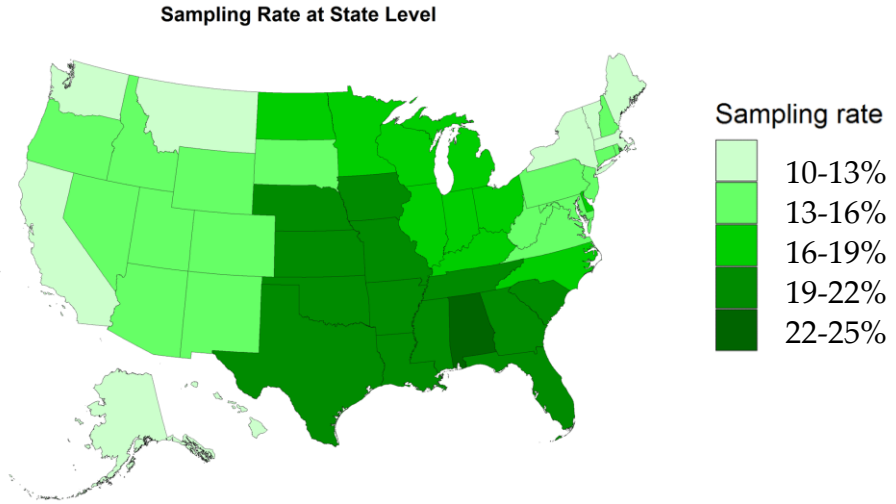


## What Does Raw Data Look Like?

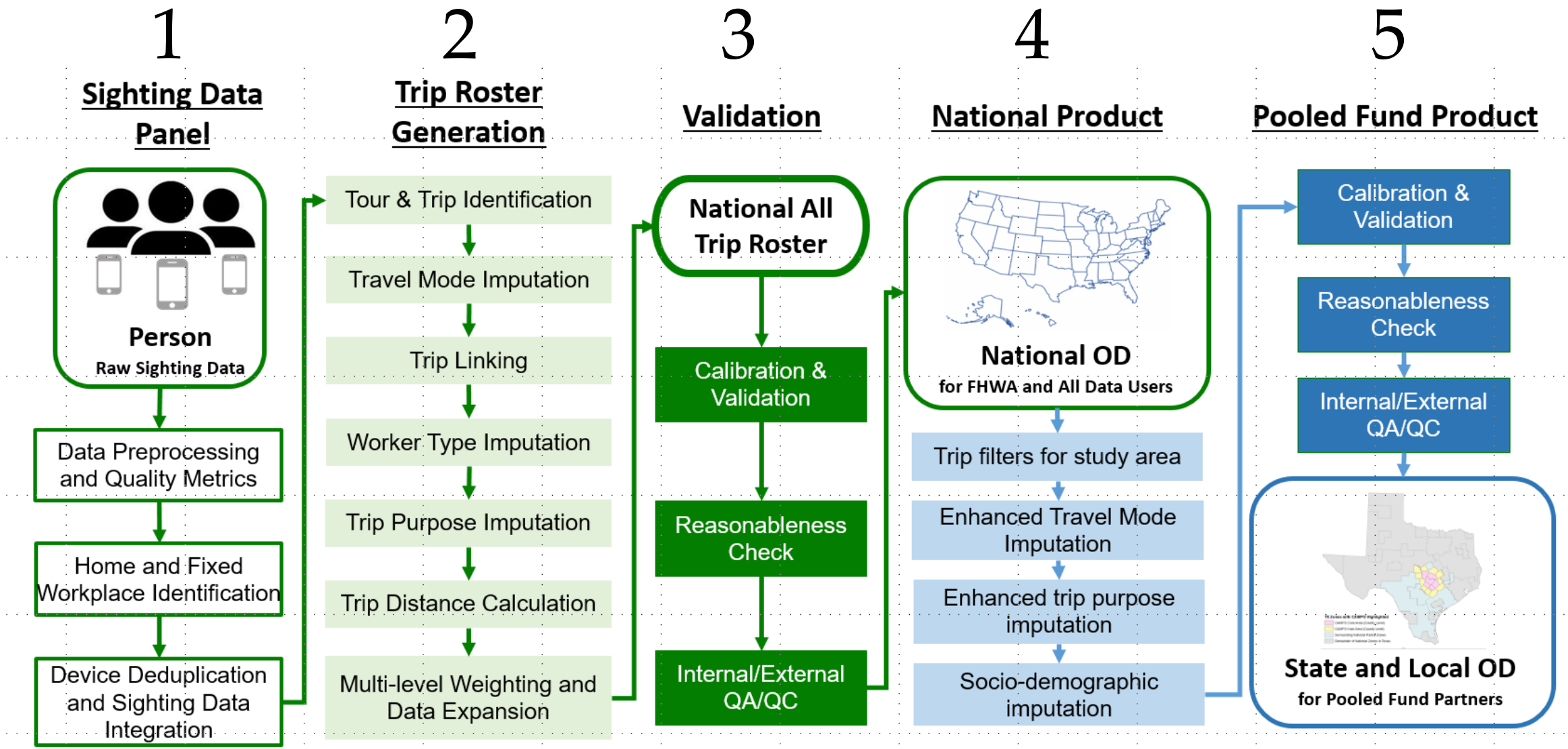
- Location points (sightings): latitude, longitude, timestamp, device ID, and spatial accuracy.
- Multimodal trips are recognized from the sighting data via a series of data-driven and AI algorithms

## Effective Penetration Rates in the U.S.

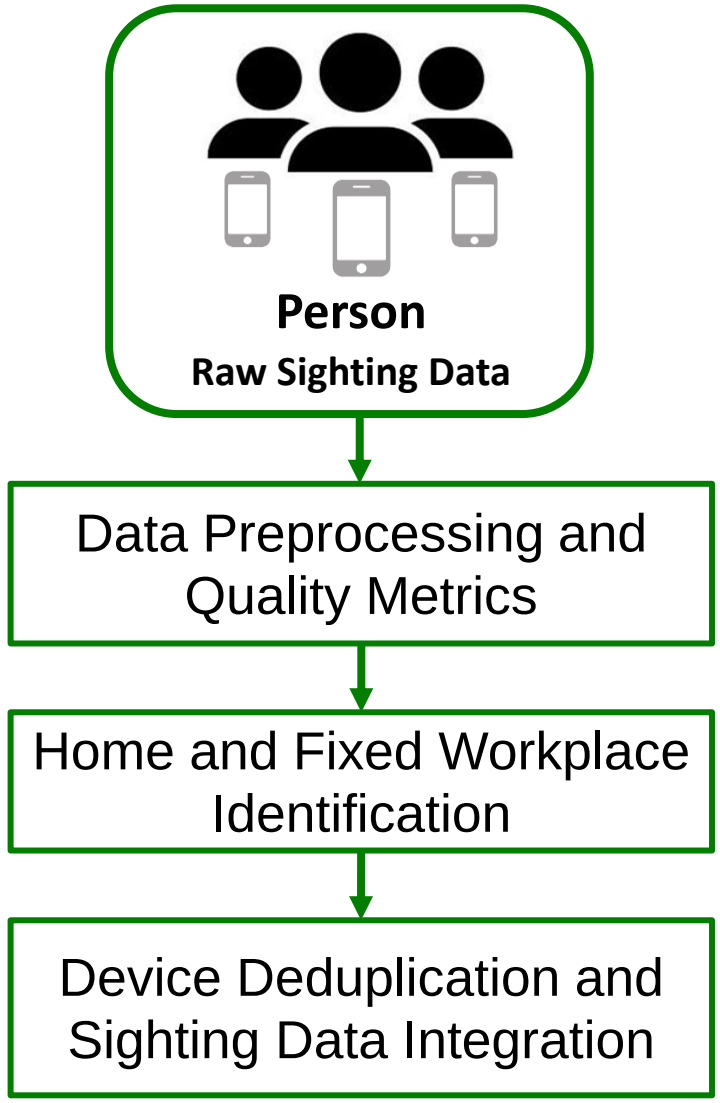
- 16.1% in the nation, after data preprocessing, deduplication, and integration.
- 10-25% in different states



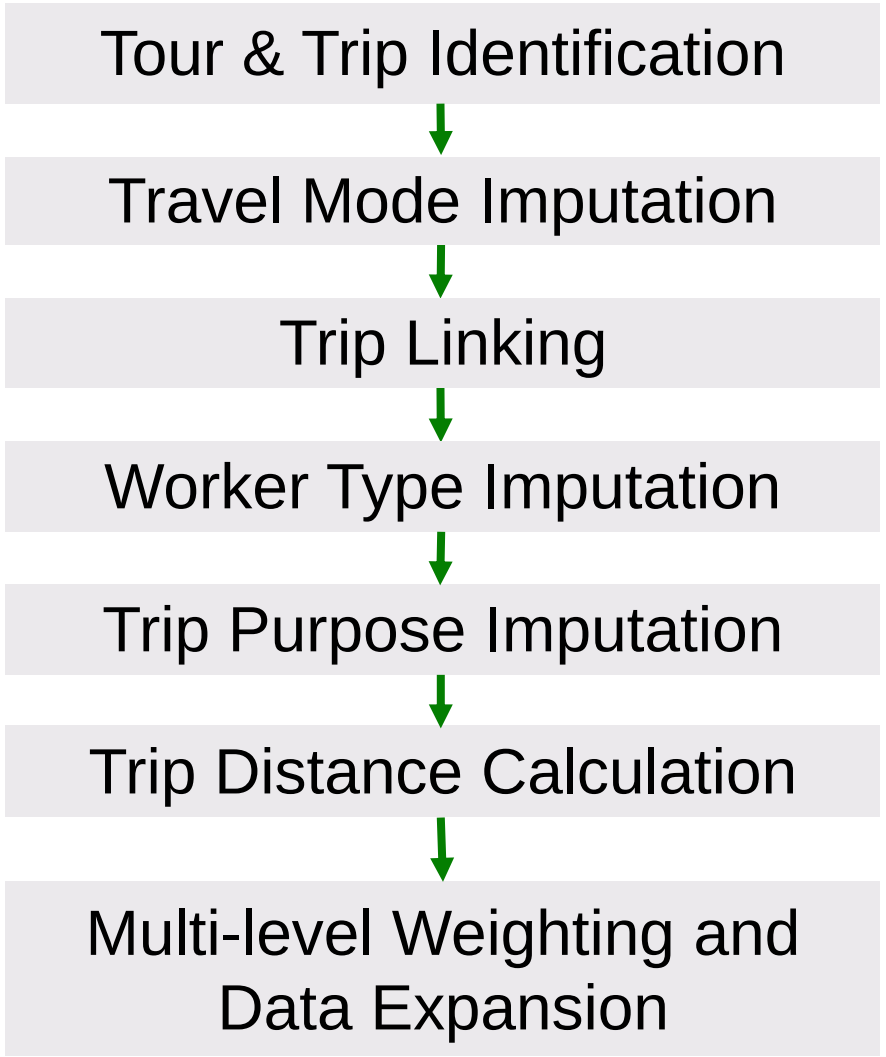
# Passenger File Creation Methodology



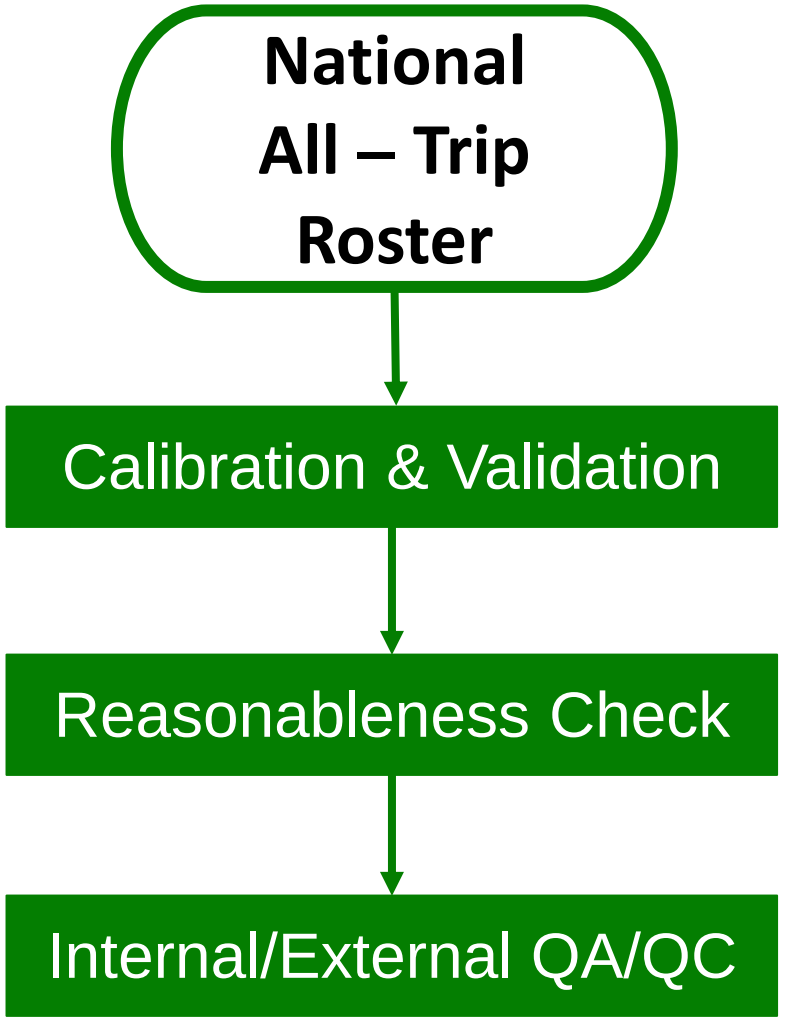
# Step 1: LBS Data Panel



# Step 2: Trip Roster Generation



# Step 3: Validation of the National Product



# Step 4: Pooled Fund Add-on Product Creation

**National OD**

**for FHWA and All Data Users**

↓

Trip Filters for Study Area

↓

Enhanced Travel Mode Imputation

↓

Enhanced Trip Purpose Imputation

↓

Socio-demographic Imputation

# Step 5: Pooled Fund Add-on Product Validation

Calibration & Validation

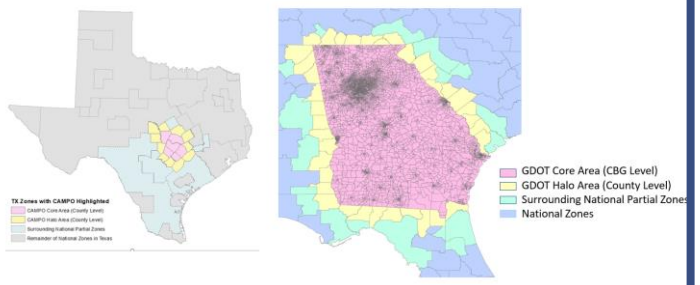
↓

Reasonableness Check

↓

Internal/External QA/QC

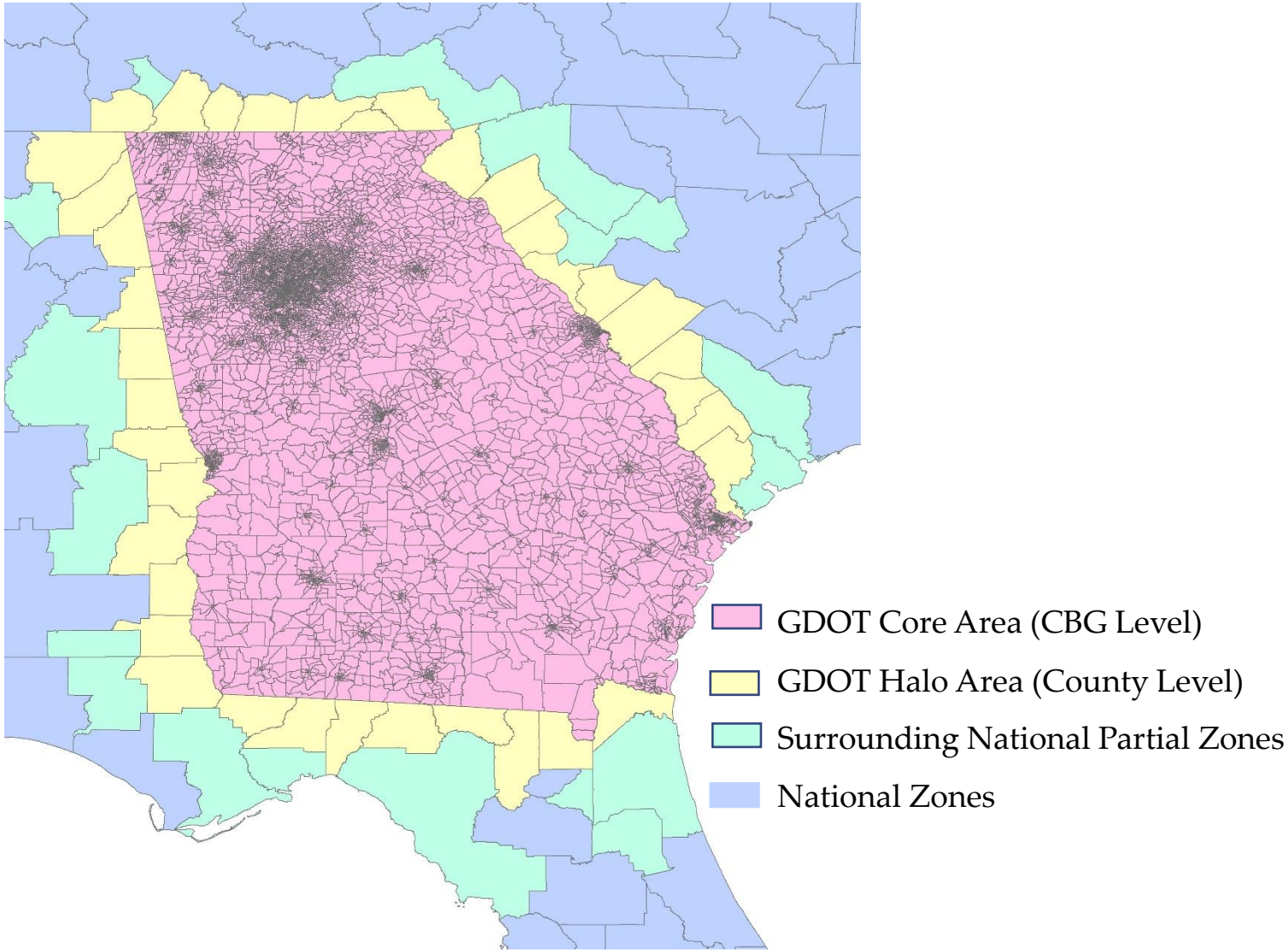
↓



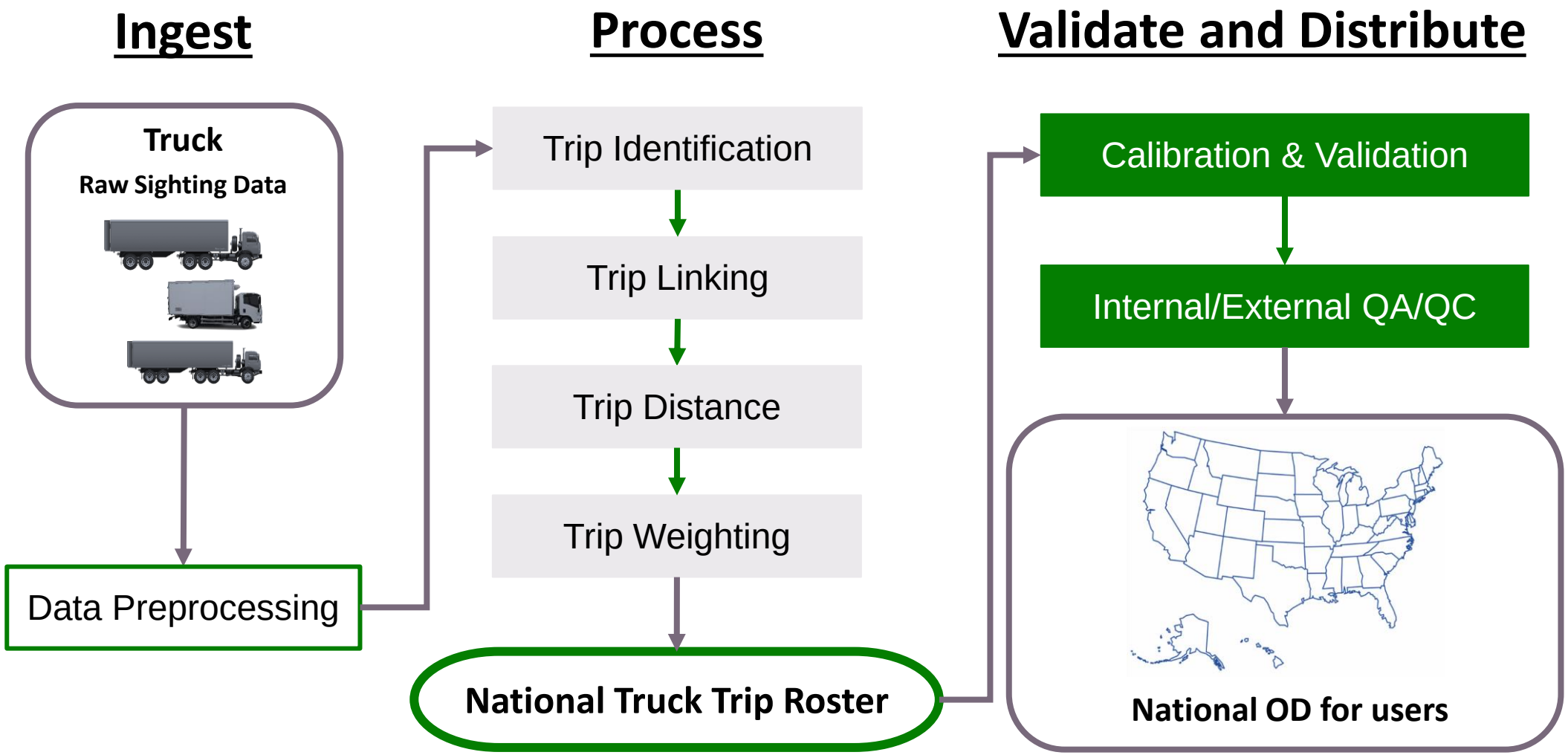

**State and Local OD for Pooled Fund Partners**

# Georgia Pooled Fund “add-on” zone structure

- Core area: 7,441 Census Block Groups (CBGs)
- Halo area: 37 “halo” counties
- Surrounding national partial zones: 12 zones
- National zones: 547 zones



# Truck O-D File Creation Methodology



# Caveats on Use

- No trip **path** information; therefore, external-external trips that cut through a separate study area cannot be presented/queried in this product
- Holiday trips are excluded
- The OD data product size could be an issue for some, but tools have been created to help with this.
- Tour is defined as a home-based tour departing from and arriving at the imputed home location. Therefore, the total number of tours is always zero for OD pairs with *different* origin and destination zones.

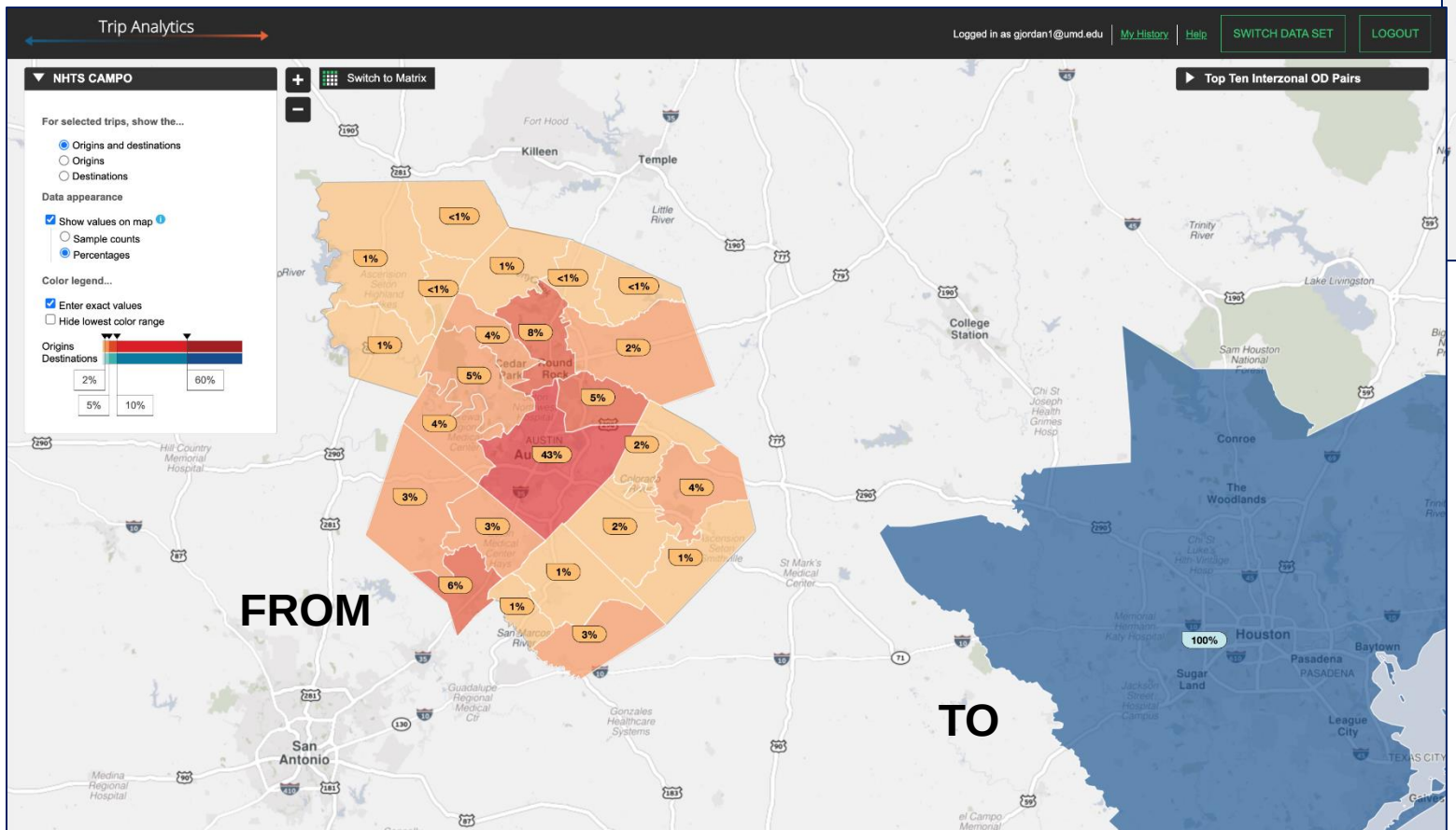
# More Data Caveats

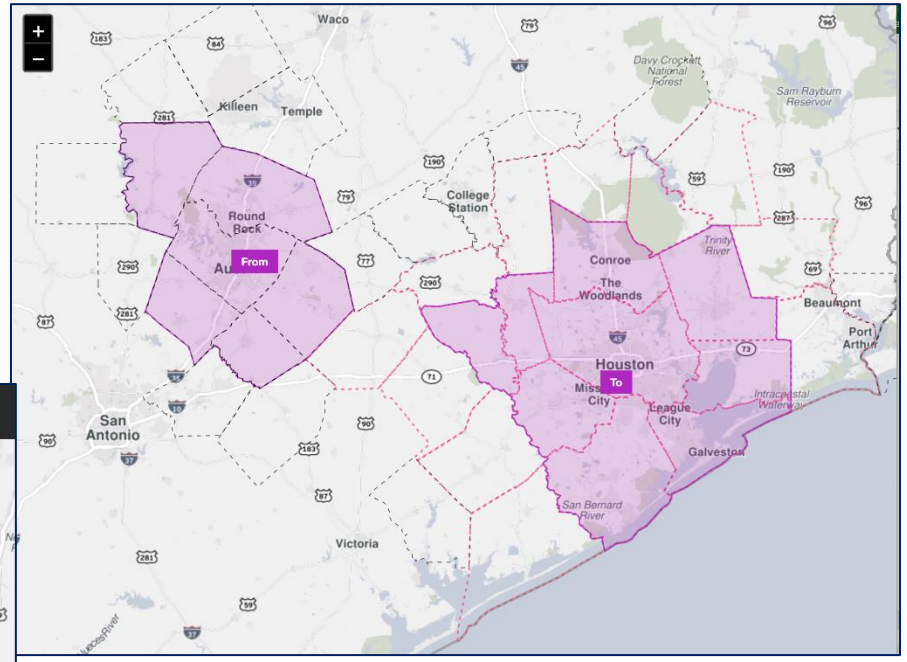
- Privacy protection of OD pairs with the number of either linked or unlinked trips greater than 0 and no more than 5.
- The 2020 national passenger OD data product includes a perfect balance or mirroring of the number (For further information regarding the OD balancing mechanism and the extent of unbalanced OD flows before OD balancing, please review Section 4.2 of the Passenger OD Data Methodology document.)
- The pooled fund OD data product can be calibrated and validated according to the available local ground truth data.

# Accessing Data

- ORNL
- Integrated into other tools

Example: CAMPO (Austin) NHTS dataset (‘20) in RITIS Trip Analytics




(Above) Setting up to compare other OD data sources against a Nextgen NHTS OD dataset in Texas

# For additional information, please contact:

**Michael L. Pack**
Director
240.676.4060
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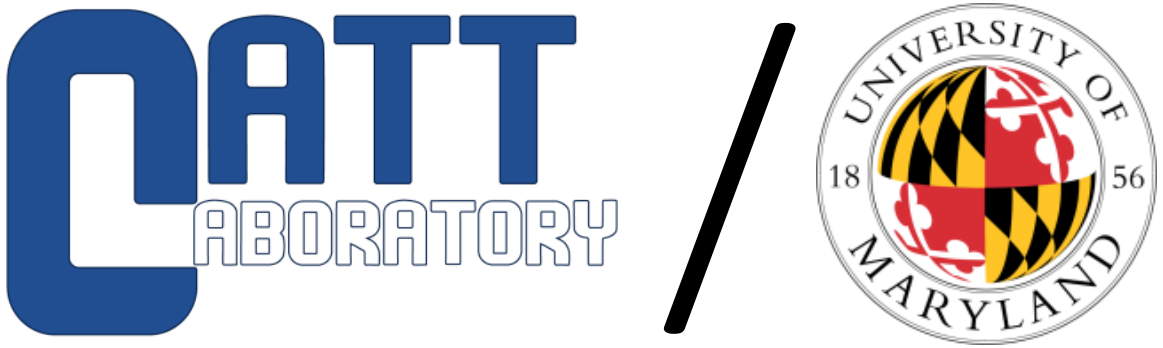

# NextGen NHTS OD Data Product Tools and Resources

**Ross Wang**
R&D Associate
Oak Ridge National Laboratory

OAK RIDGE National Laboratory

# NextGen NHTS OD Data Product Tools and Resources

**Chieh (Ross) Wang, Ph.D.**
Project Manager
R&D Associate
Oak Ridge National Laboratory (ORNL)
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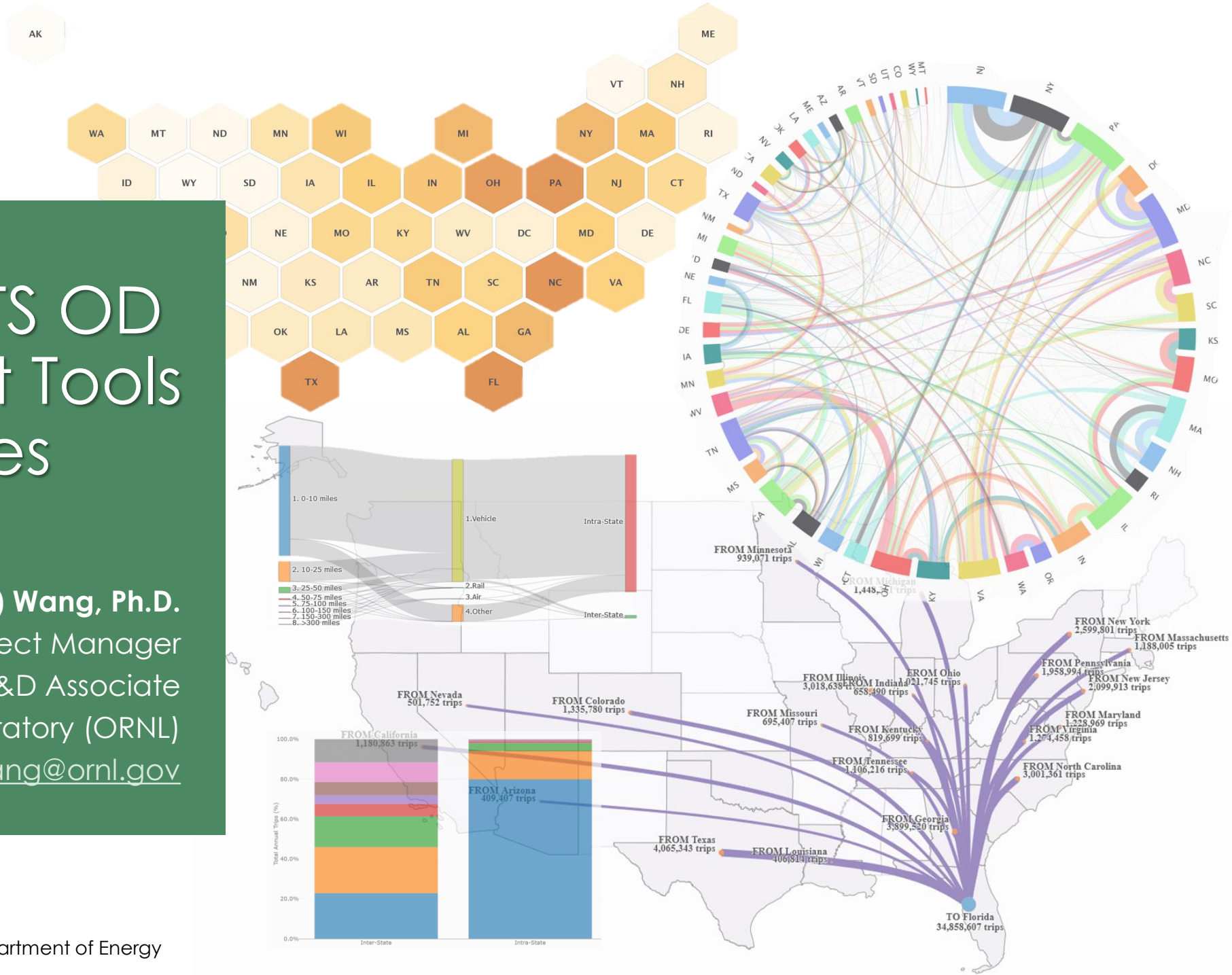


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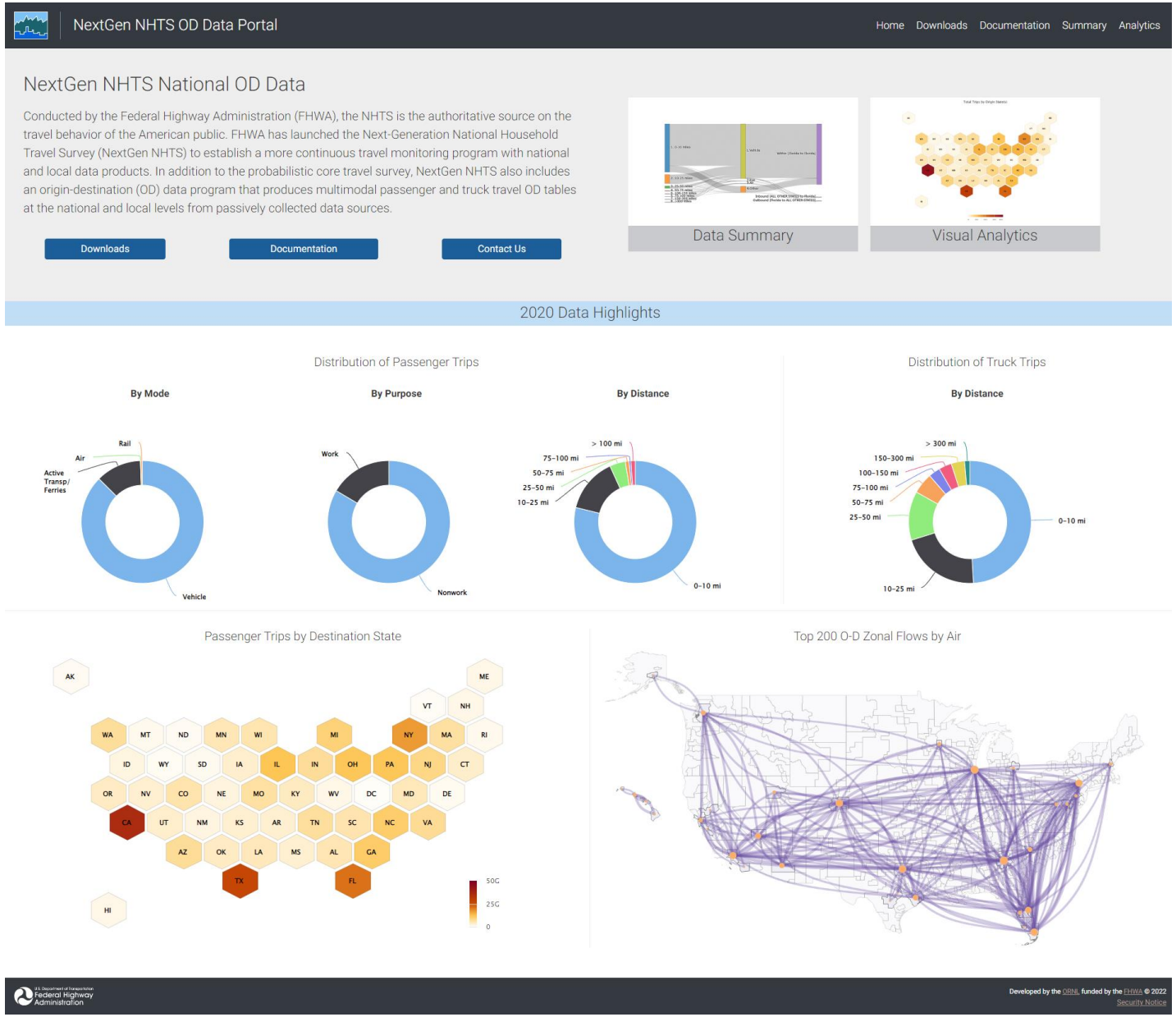
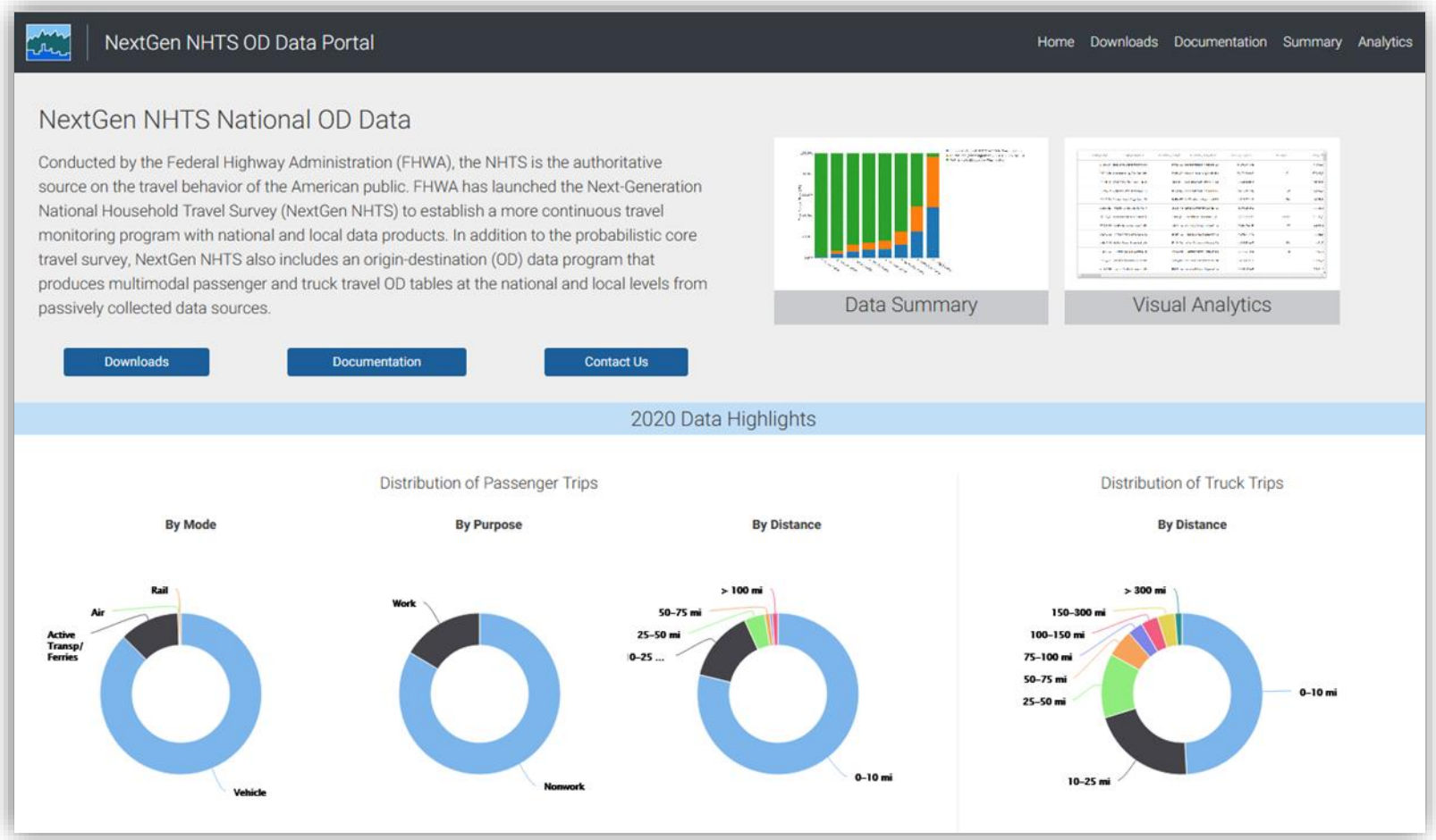
# 2020 NextGen NHTS National OD Data Products



# LANDING PAGE SCREEN

- Downloads
- Documentation
- Data Summary
- Visual Analytics
- Data Highlights



# USING OUR TOOL

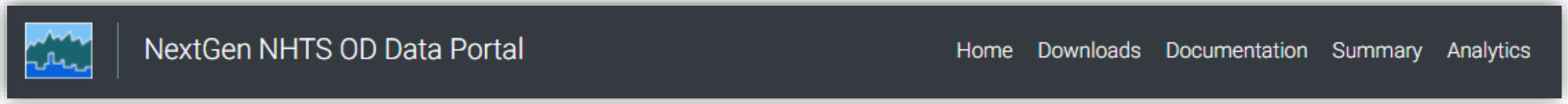
## Recommended System Settings

- Browsers: Chrome, Firefox, and Edge
- Display Settings:
  - Resolution: 1920p x 1080p.
  - Orientation: Landscape; Scale: 100%

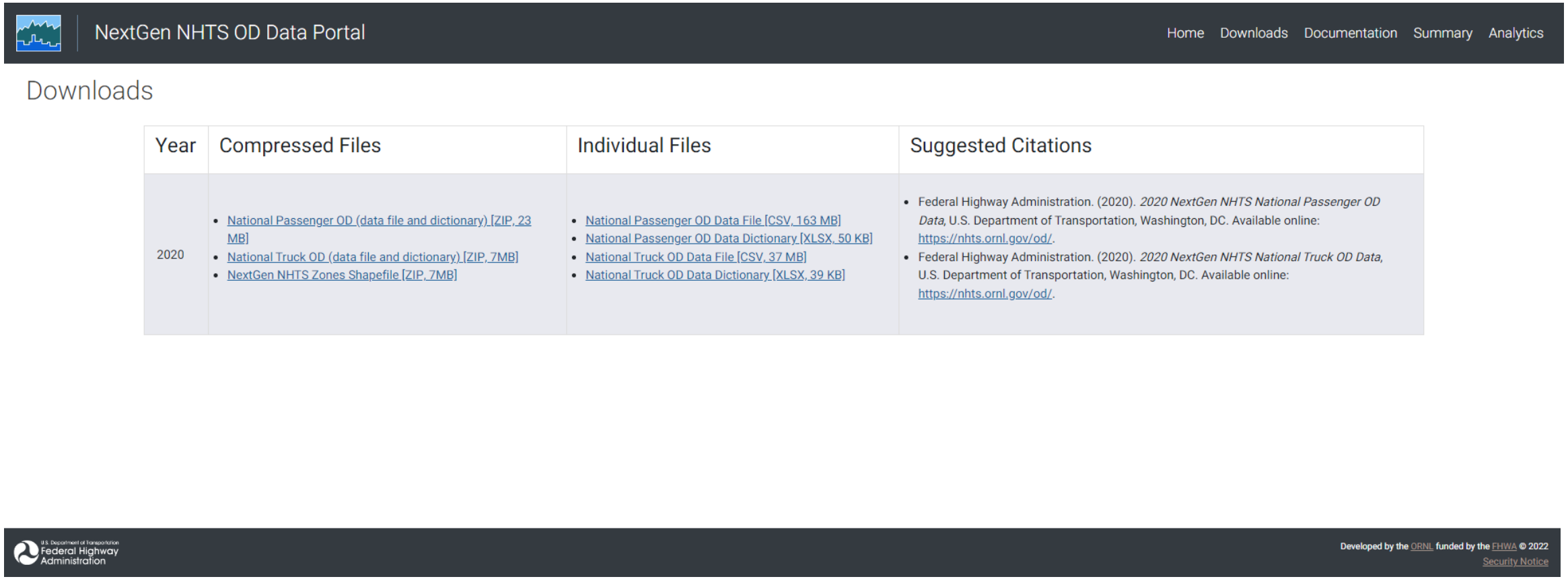
## Export/Saving

- Charts (e.g., bar, area, pie, Sankey) and OD maps are exported as PNG image files.
- Data are exported in CSV files.

## Navigation Bar



# DOWNLOADS SCREEN



# DOCUMENTATION SCREEN

NextGen NHTS OD Data Portal

Home Downloads Documentation Summary Analytics

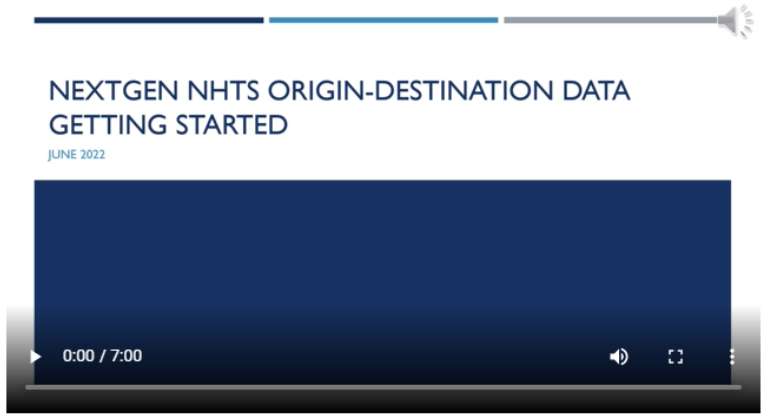
## Documentation

### 2020 NextGen NHTS National OD Data

- Quick Start Guide (pdf) (updated 6/21/2022)
- Passenger OD Technical Release Note (pdf) (updated 6/15/2022)
- Passenger OD Data Methodology (pdf) (updated 6/15/2022)
- Truck OD Technical Release Note (pdf) (updated 2/15/2022)
- Truck OD Data Methodology (pdf) (updated 2/15/2022)

### Frequently Asked Questions

- What are the FHWA zones and how are they defined?
- What is in the national truck OD data product?
- How are truck trips estimated?
- How is the distance of a truck trip calculated?
- What is in the national passenger OD data product?
- How are passenger trips derived?
- How is the distance of a passenger trip estimated?
- What is the preferred citation for this data?




Overview of NextGen NHTS National OD Data Tools

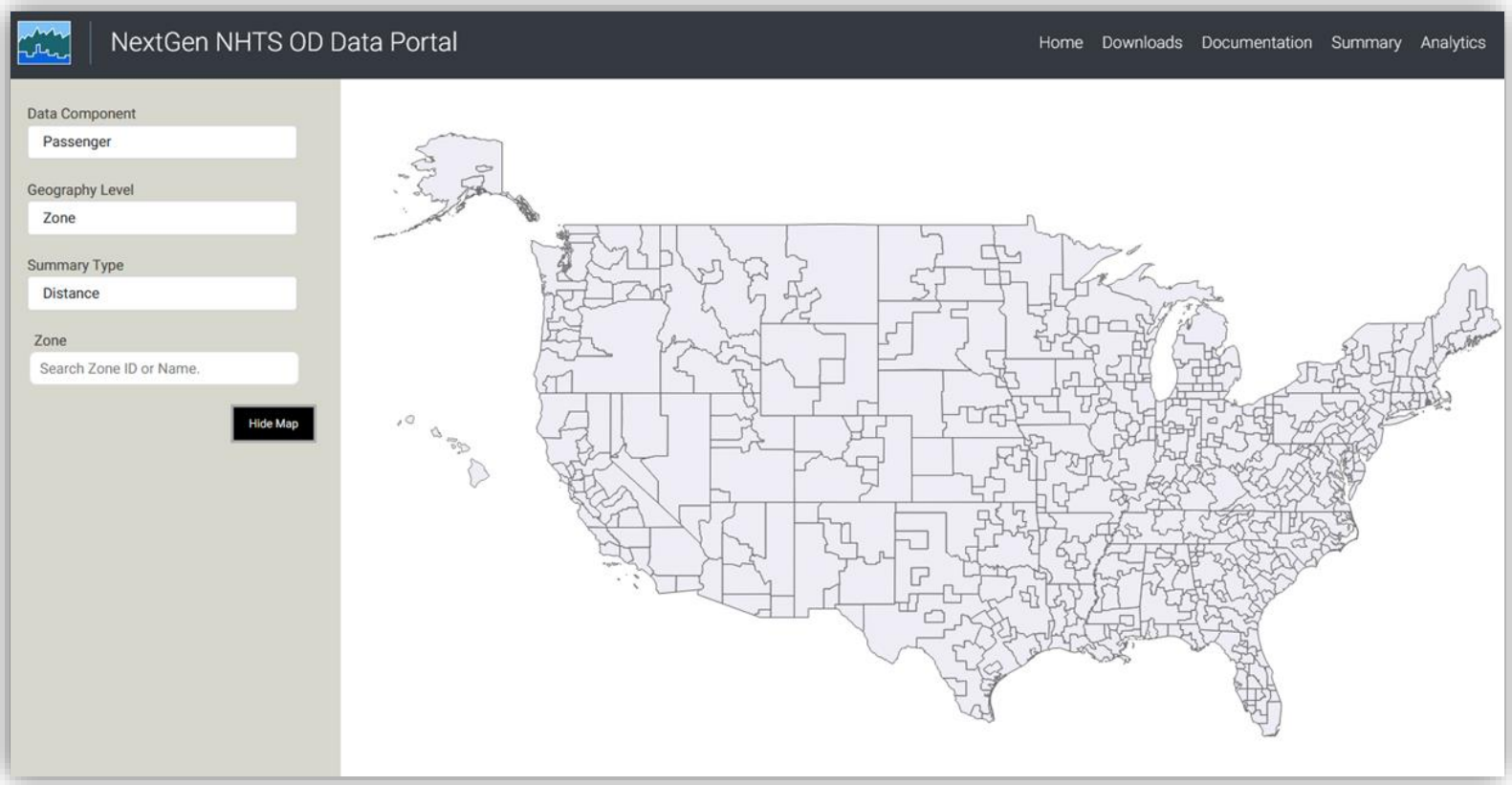
U.S. Department of Transportation Federal Highway Administration

Developed by the ORNL funded by the FHWA © 2022
Security Notice

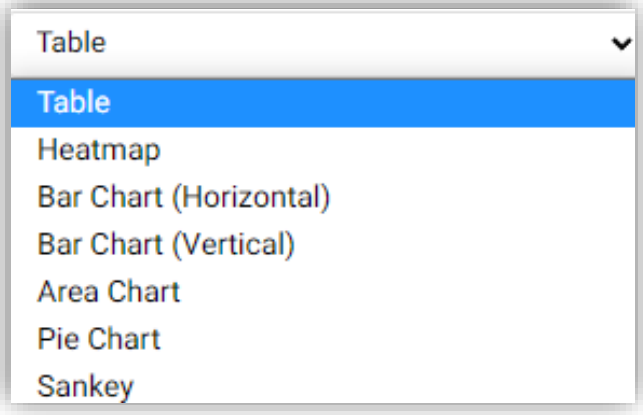
# DATA SUMMARY SCREEN

- Data Component – Passenger (default) or Truck
- Origin Geography Level – Zone (default), State or National
- Summary Type (Passenger) – Distance; Mode; Purpose; Distance & Mode; Distance & Purpose or O-D/O/D Flow
- Summary Type (Truck) – Distance or O-D/O/D Flow

Note: All three types of flow maps are not available at National level.



# DATA SUMMARY– CHART OPTIONS



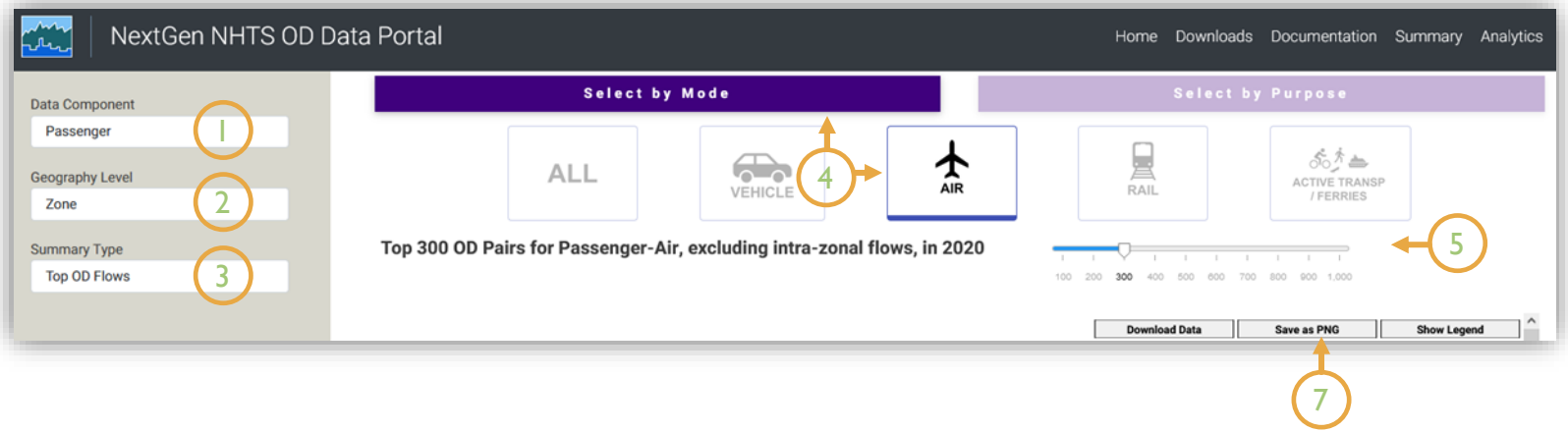

- Visual Graphics
  - Bar Charts (Horizontal & Vertical)
  - Area Chart
  - Pie Chart
  - Sankey

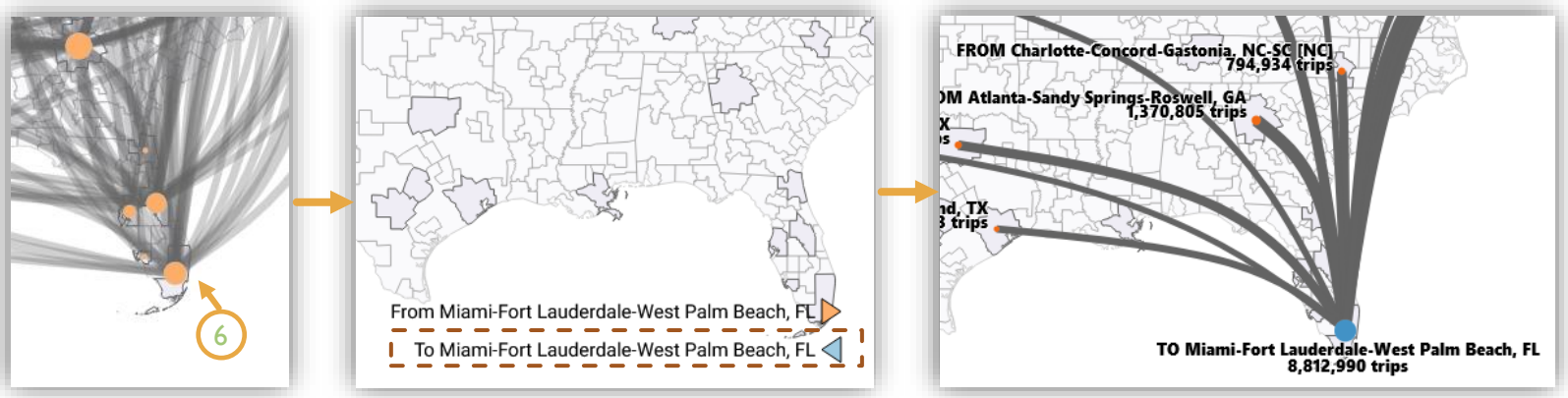
| Option | Description |
|---|---|
| **Table** | This option shows the results in table format. |
| **Heatmap** | This option shows the results in table format with value color coded with larger values being darker red. |
| **Bar Chart (Horizontal & Vertical)** | This options shows the results in a chart or graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. The bars can be plotted vertically or horizontally |
| **Area Chart** | This option shows the results in an extension of a line graph, where the area under the line is filled in. The "lines" are actually a series of points, connected by line segments. While a line graph measures change between points, an area chart emphasizes the data's volume |
| **Pie Chart** | This options shows the results in a graph in which a circle is divided into sectors that each represent a proportion of the whole |
| **Sankey** | This option shows the results in a type of flow diagram in which the width of the arrows is proportional to the flow rate |

# EXAMPLE
## DATA SUMMARY


An O-D flow map showing the passenger air trips (among the top 300 O-D pairs, excluding intra-zonal flows) that come to Miami zone in Florida. Export the map as a picture.

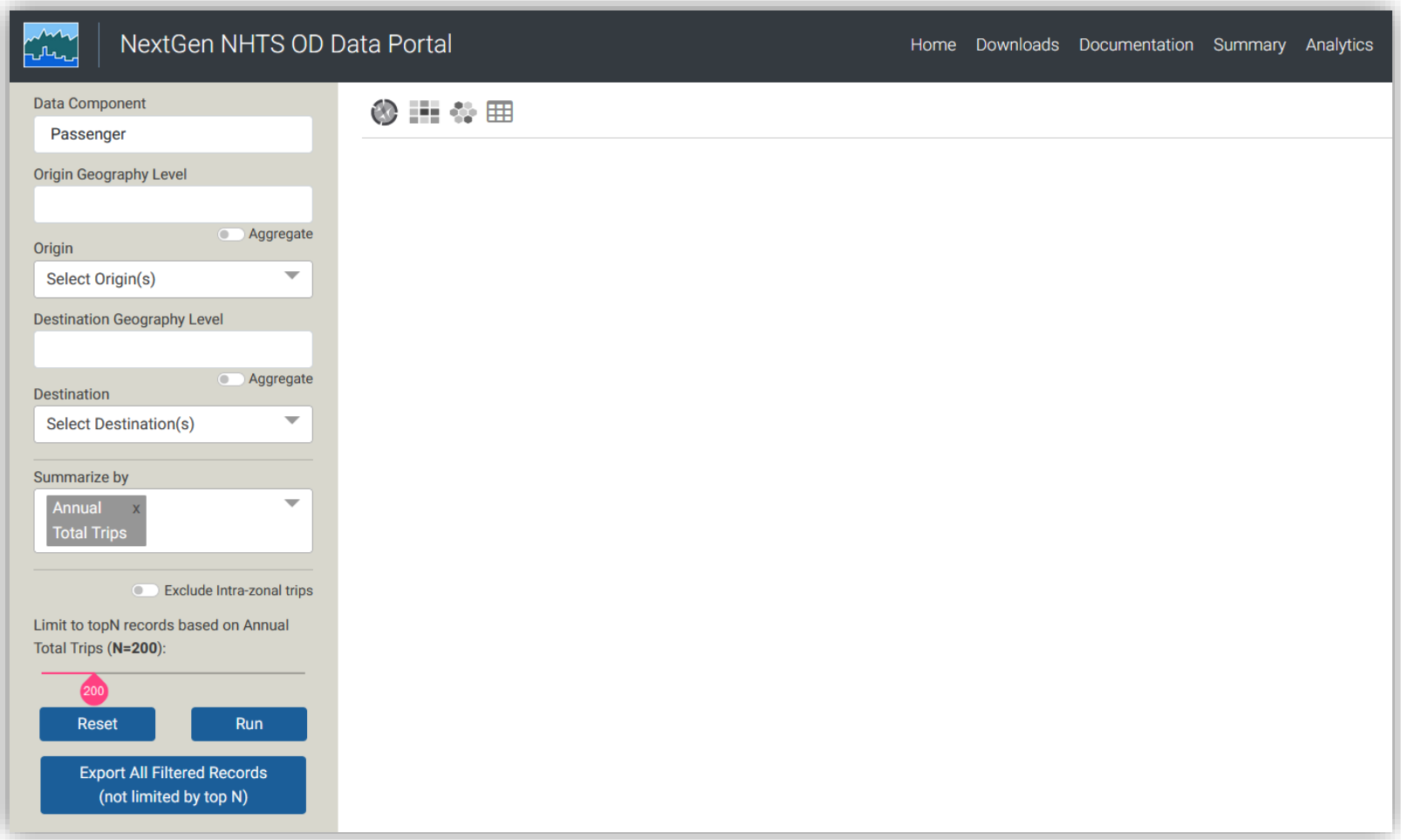
Step 1: Select the "Passenger" as the Data Component in the panel to the left.
Step 2: Select "Zone" as the Geography Level.
Step 3: Select "Top O-D Flow" as Summary Type.
Step 4: Select "Select by Mode" and then click "Air" button.
Step 5: Set value to "300" in the range slider bar.
Step 6: In the map, click the orange circle in southeast corner of Florida; then select "To Miami-Fort Lauderdale-West Palm Beach, FL.".
Step 7: Click button "Save as PNG" to download the map



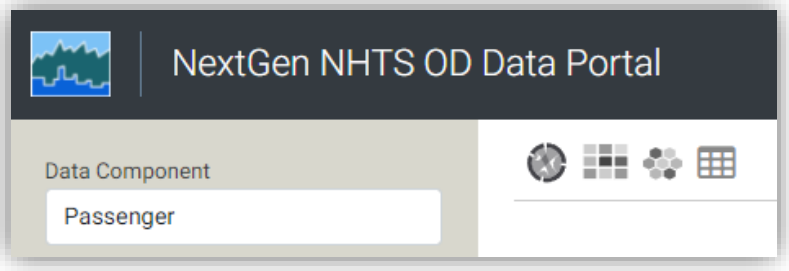



# VISUAL ANALYTICS SCREEN

- Data Component – Passenger (default) or Truck
- Origin Geography Level – Zone, State or National
- Origin – Select one or multiple origins
- Destination Geography Level –Zone, State or National
- Destination – Select one or multiple destinations
- Summarize by – Select summary type from all available topics in the drop-down list



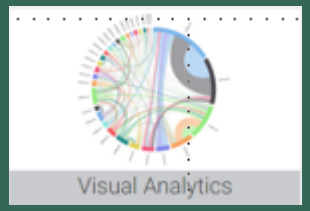
# VISUAL ANALYTICS – CHART OPTIONS




- Visual Graphics
  - Chord Diagram
  - OD Matrix
  - State Hexagon Tile Map

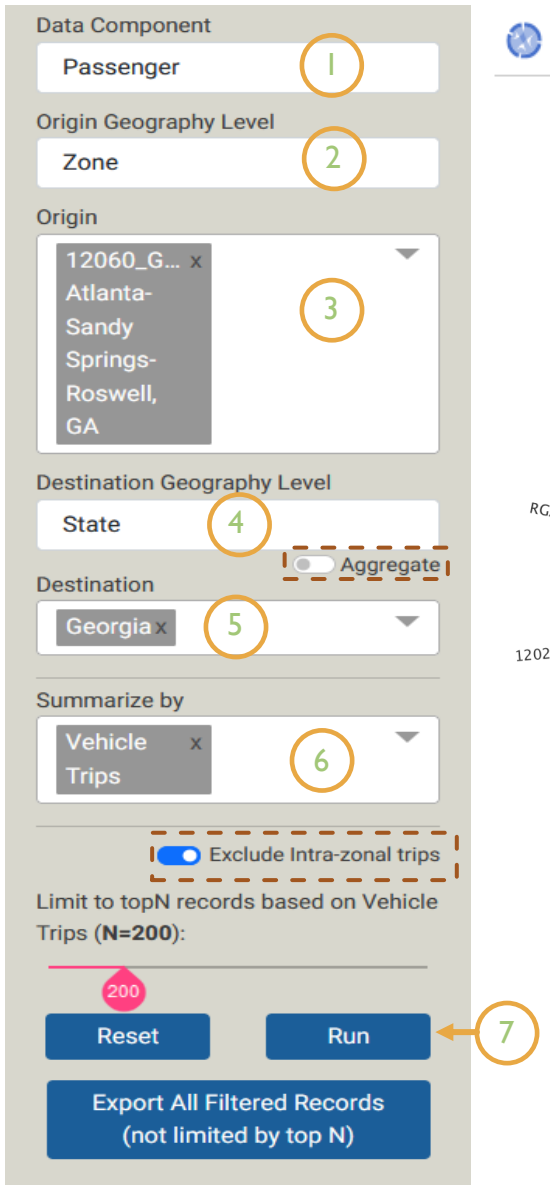
| Option | Description |
|---|---|
| Chord Diagram | This option generates a chord diagram that shows (1) the total of trips start/end within each of the selected origin/destination area using the arcs that form the outer circle; and (2) the trips of individual origin-destination pairs using the bands that connects different arcs. The widths of the arcs and the thickness of the bands are proportional to the number of trips they represent. This option only uses the Annual Total Trips to visualize results. Trip Characteristics selections do not have an effect on this option. |
| OD Matrix | This option generates a 2D OD matrix (x axis – origins; y axis – destinations). Each cell represents the total trips of that specific origin-destination combination. The darker the fill color of a cell is the more trips that OD pair has. This option only uses the Annual Total Trips to visualize results. Trip Characteristics selections do not have an effect on this option. |
| State Hexagon Tile Map | This option is used to generate a state level tile map that is ideal to visualize all national trips from/to all states. This option only uses the Annual Total Trips to visualize results. Trip Characteristics selections do not have an effect on this option. |
| Table | This option shows the query results in table format. It generates, at the minimum, a column that shows the Annual Total Trips. It shows additional columns with trips filtered by the trip characteristics selected by the user. It also allows the user to view corresponding Zone names based on Zone ID (if Origin/Destination selection results in having Zones as the O/D areas). |

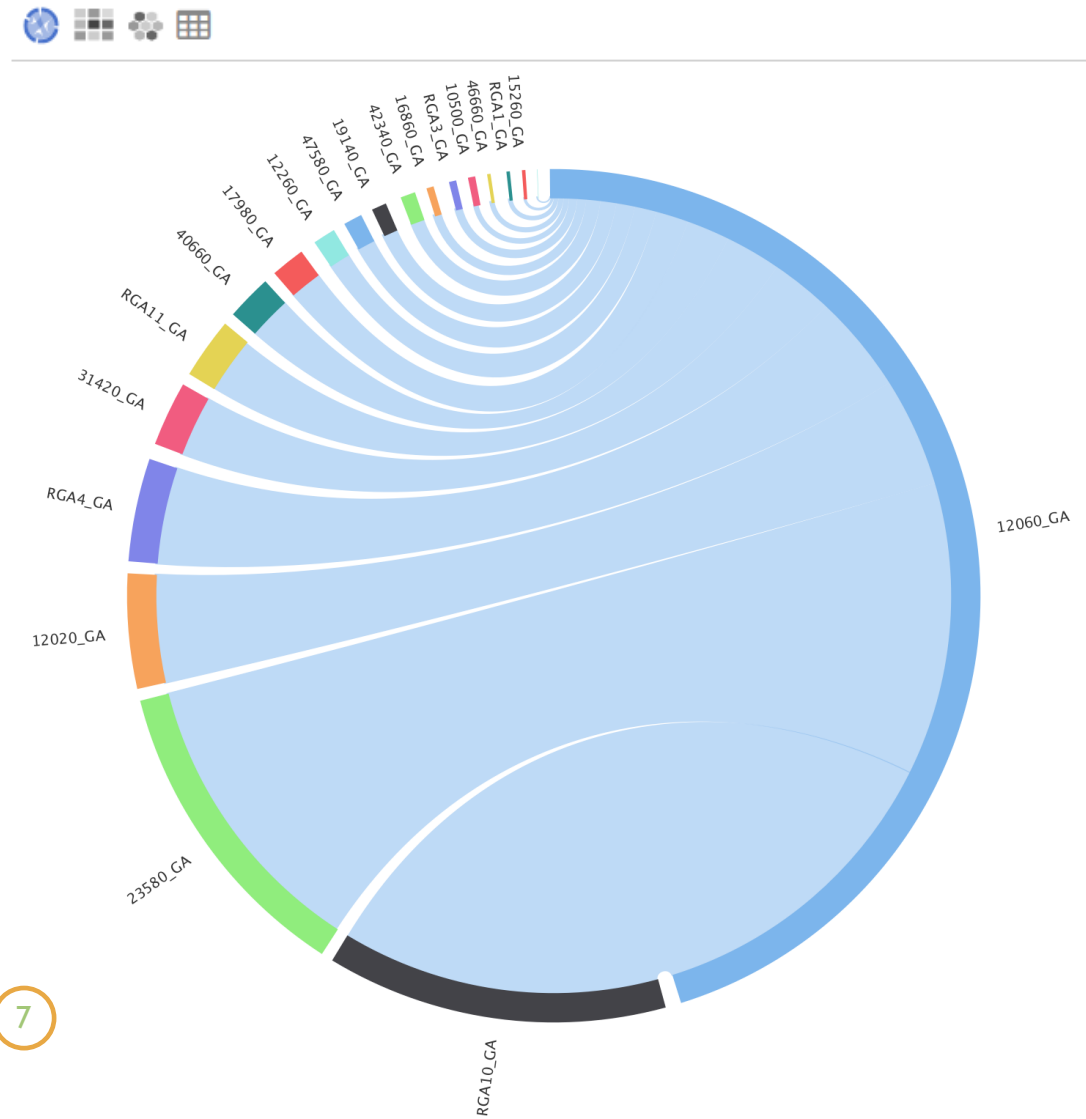
# EXAMPLE
## VISUAL ANALYTICS




A chord diagram for all passenger vehicle trips from Atlanta zone to other zones within Georgia, excluding intrazonal trips.

Step 1: Select the "Passenger" as the Data Component.
Step 2: Select "Zone" as the Origin Geography Level.
Step 3: Enter "Atlanta" in the box of the Origin drop down list and select "12060_GA:: Atlanta-Sandy Springs-Roswell, GA (GA)" .
Step 4: Select "State" as the Destination Geography Level.
Step 5: Select "Georgia" as the Destination
Step 6: Select "Vehicle Trips" for Summarize by and turn on the "Exclude intra-zonal trips" toggle switch.
Step 7: Click "Run" to generate the chord diagram.



# MORE INFORMATION

For more information, visit our site at https://nhts.ornl.gov/od or contact Patrick Zhang, FHWA NextGen NHTS OD Product Manager at patrick.zhang@dot.gov

Additional Documentation is available at https://nhts.ornl.gov/od/documentation including:

- Quick Start Guide
- Passenger and Truck OD Technical Release Notes
- Passenger and Truck OD Data Methodology
- Frequently Asked Questions

FHWA 583 Zones Info: https://www.fhwa.dot.gov/policyinformation/analysisframework/04.cfm

# NextGen NHTS FHWA Contacts

**Overall NextGen NHTS Program/Core Survey Data Manager**

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Daniel.Jenkins@dot.gov

**NextGen NHTS OD Data Manager**

Patrick Zhang, PE
202-366-1941
Patrick.Zhang@dot.gov

**Other Contacts**

https://nhts.ornl.gov/contact-us

# Purchase and Use of Origin-Destination Data: Add-On Product

**Habte Kassa**
Assistant State Transportation Planning Administrator
Georgia DOT

**Guy Rousseau**
Transportation Model Development & Applications Manager
Atlanta Regional Commission

# NextGen NHTS OD Data
## GDOT + ARC Joint Presentation
## Georgia + Atlanta Use Case

**Habte Kassa, Georgia DOT**
**Guy Rousseau, Atlanta Regional Commission (ARC)**

# GDOT is a long-time partner of NHTS program

**2009**

GDOT purchased a 7,000-household NHTS add-on data

**2017**

GDOT purchased a 8,000-household NHTS add-on data

**2019**

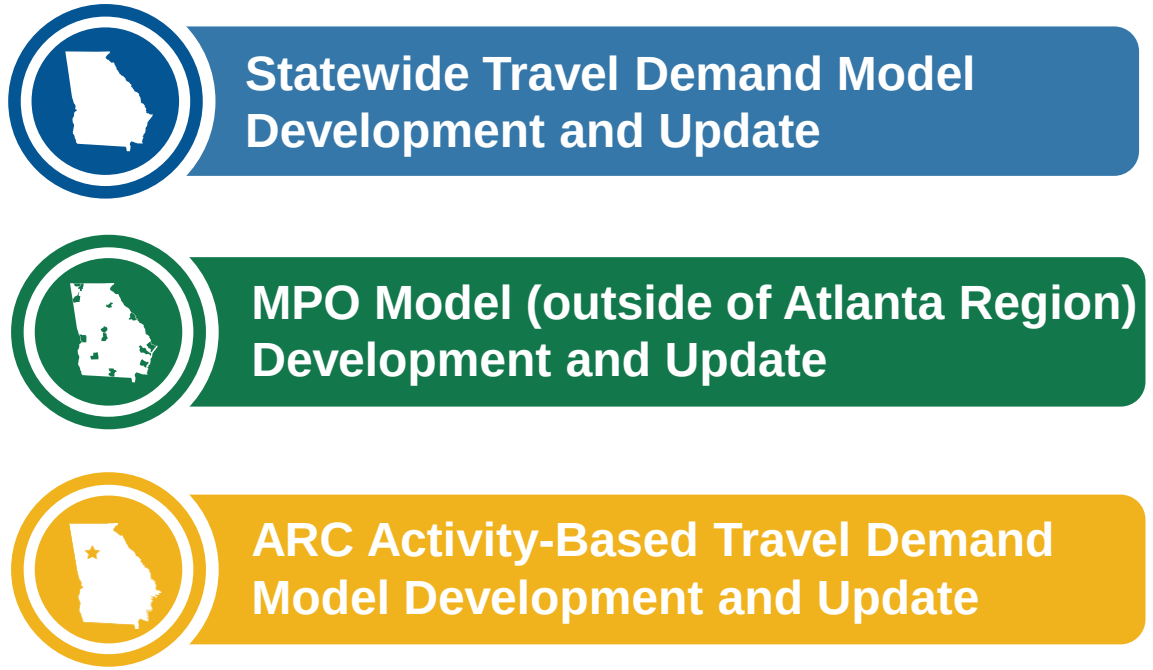
GDOT and ARC purchased a passenger Origin-Destination data product add-on

**2024**

GDOT and ARC together plan to purchase an add-on sample to the core survey data

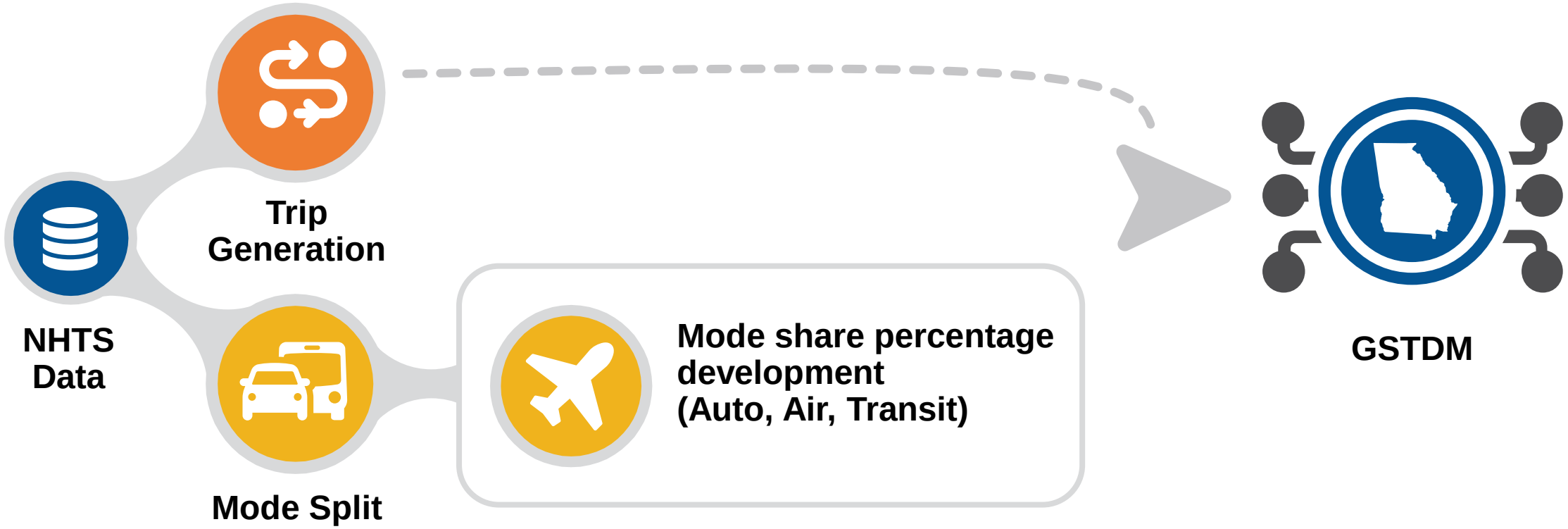
# Data Applications Overview

**2020 NextGen NHTS National Passenger Origin–Destination Data**



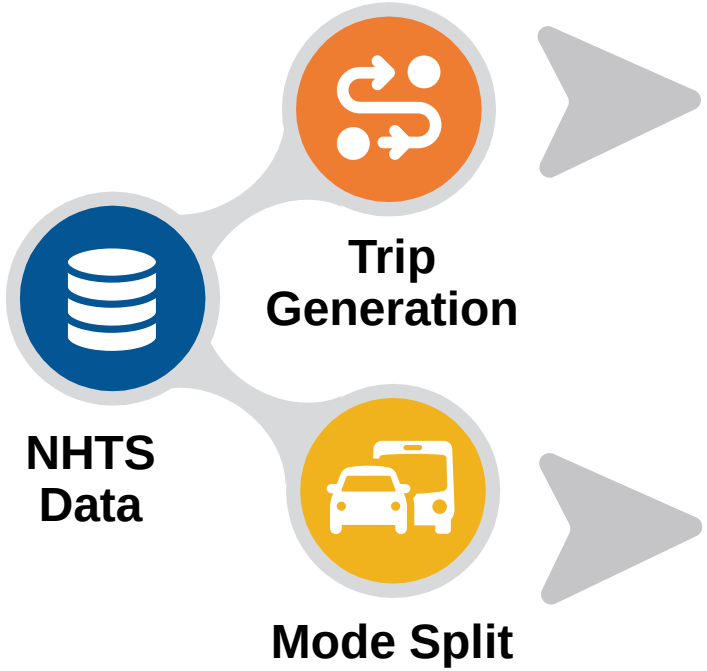
# Georgia Statewide Travel Demand Model (GSTDM) Input Data Development

# Georgia Statewide Travel Demand Model (GSTDM) Input Data Development



# GSTDM Calibration and Validation

**Target: Match Model Outputs to NHTS O-D**




**Modeled Trip Distribution Validation**

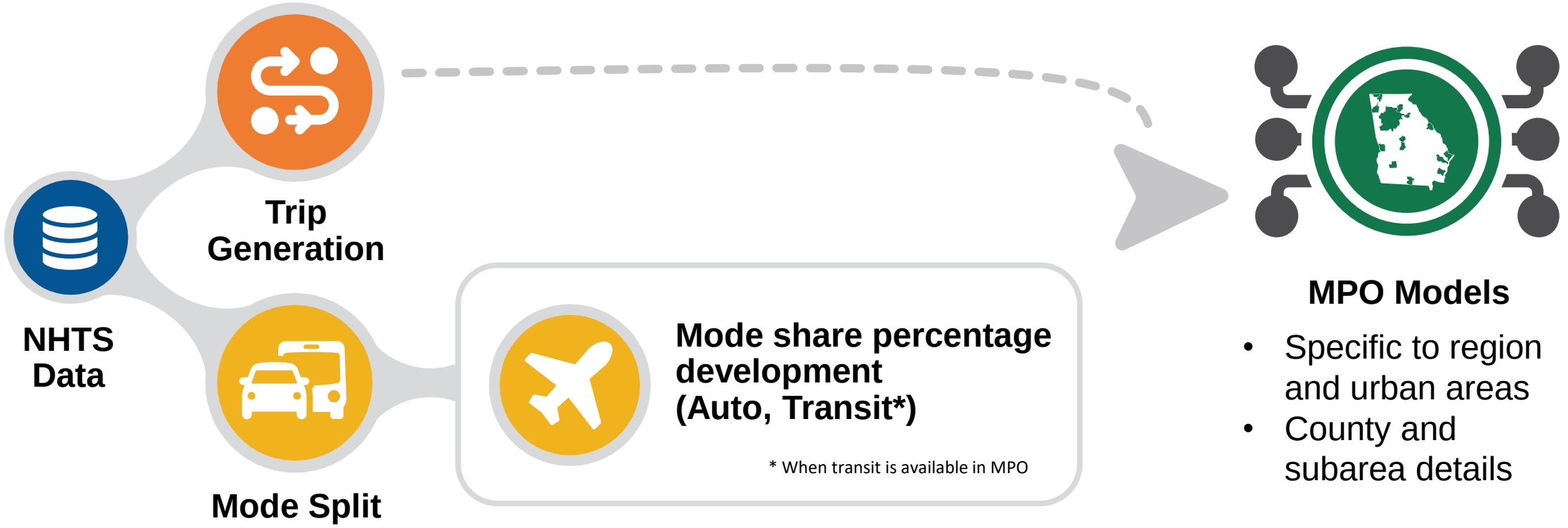
- Total number of trips
- Trip purpose percent share
- Trip flows at regional/county level
- Short vs. long trip distance trip percentages
- Internal vs. external trip percentages
- Frequencies of different types of trips

**Mode Split Validation**

- Share of auto, transit and air trips

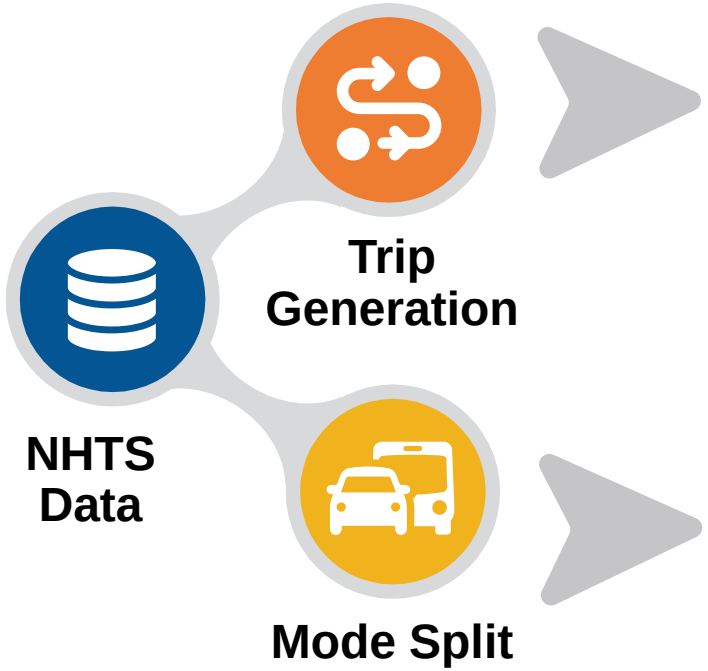
# Georgia MPO Model Input Data Development

# Georgia MPO Model Input Data Development



# Georgia MPO Model Calibration and Validation

**Target: Match Model Outputs to NHTS OD**




**Modeled Trip Distribution Validation**

- Total number of trips
- Trip purpose percent share
- Trip flows at regional/county level
- Internal vs. external trip percentages
- Frequencies of different types of trips

**Mode Split Validation**

- Share of auto and transit trips*

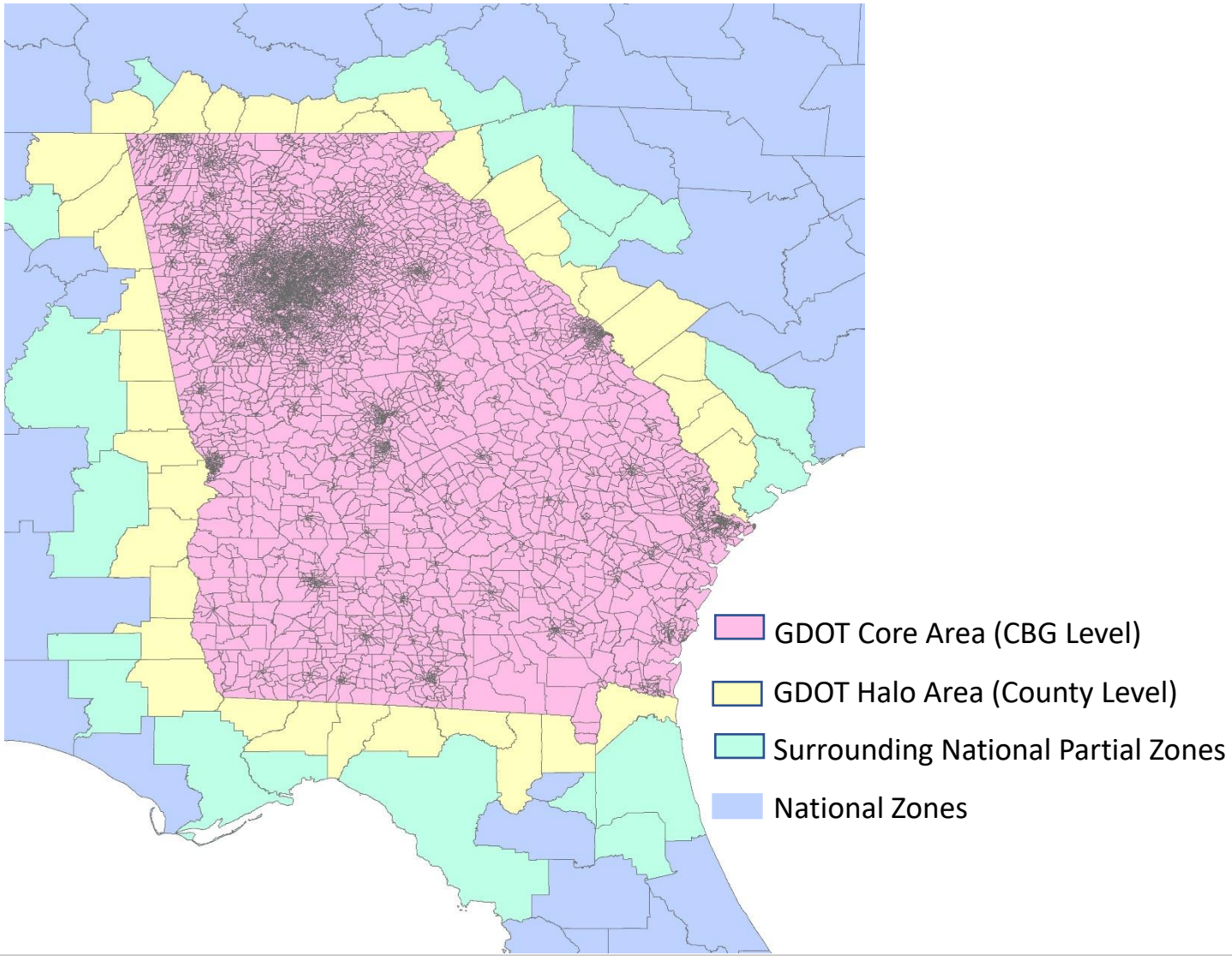
* When transit is available in MPO

# GDOT + ARC OD Early Results: Geographic Features

- Core Area: State of Georgia at the Block Group level
- Halo Area: Immediately Adjacent Counties along Georgia
- National Zones: For the rest of the U.S.
- Residual Zones: National Zones minus Halo Area Counties

# Georgia Pooled Fund “add-on” Zone Structure

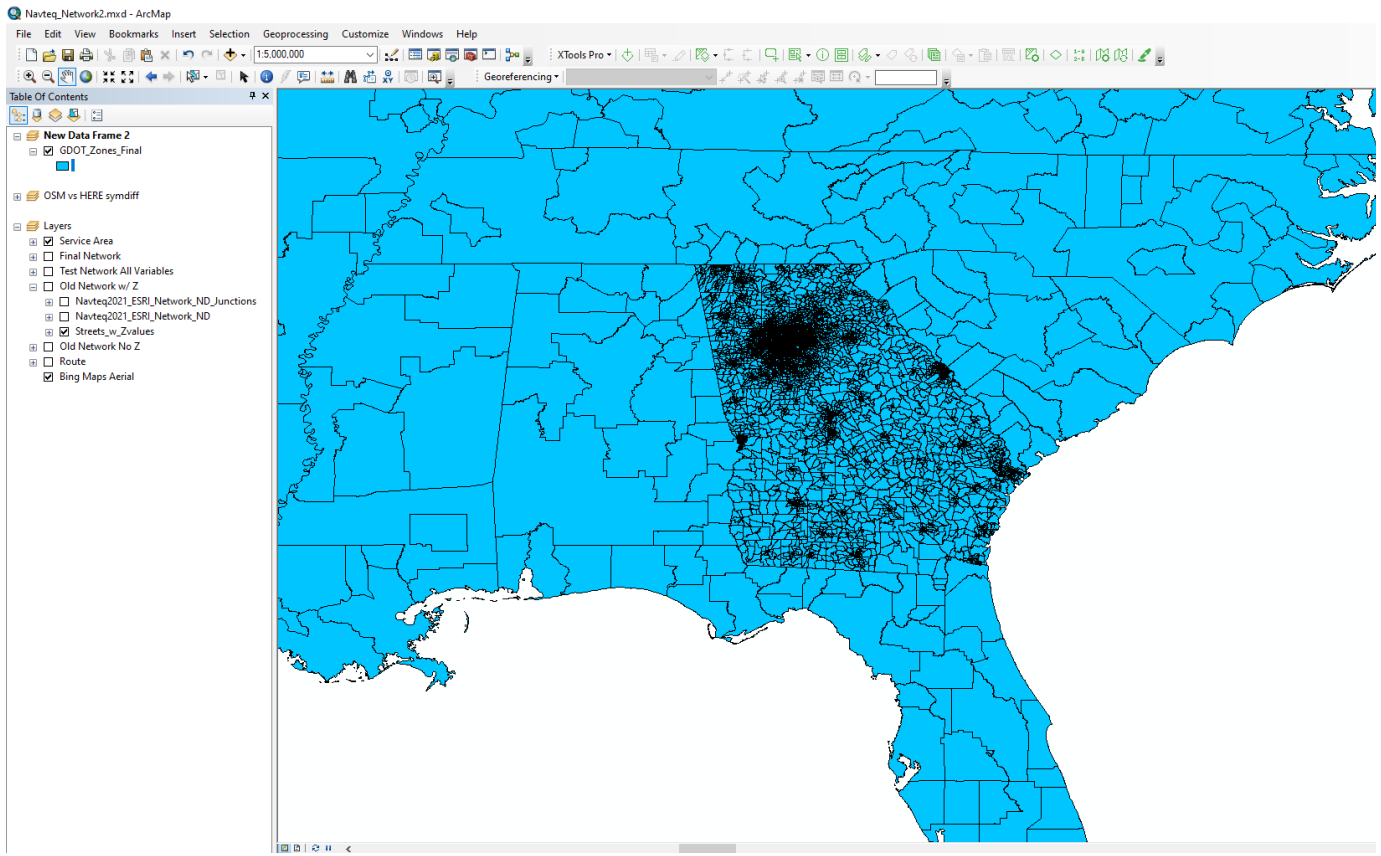
- **Core area: 7,441 Census Block Groups (CBGs)**
- **Halo area: 37 “halo” counties**
- **Surrounding national partial zones: 12 zones**
- **National zones: 547 zones**

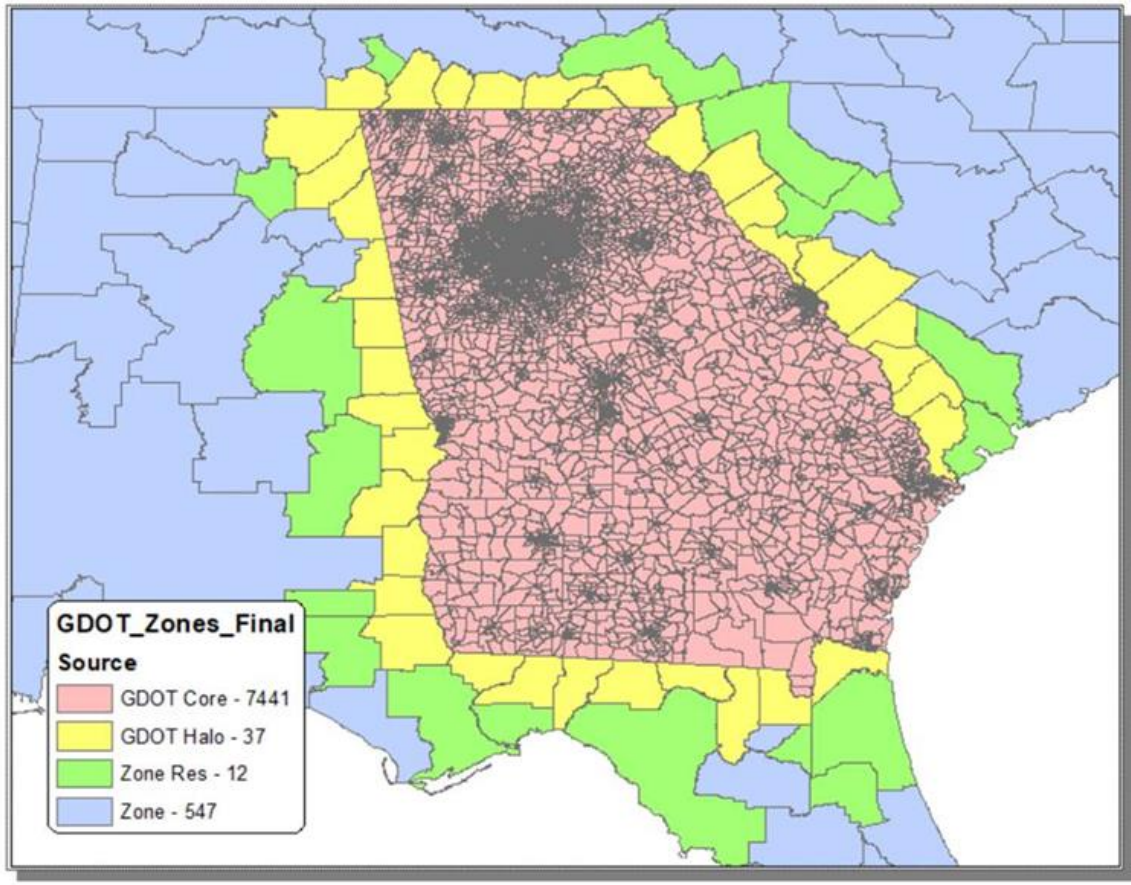



ARC GDOT Georgia Department of Transportation

# GIS MXD & Geo-Database for Exploring Zones

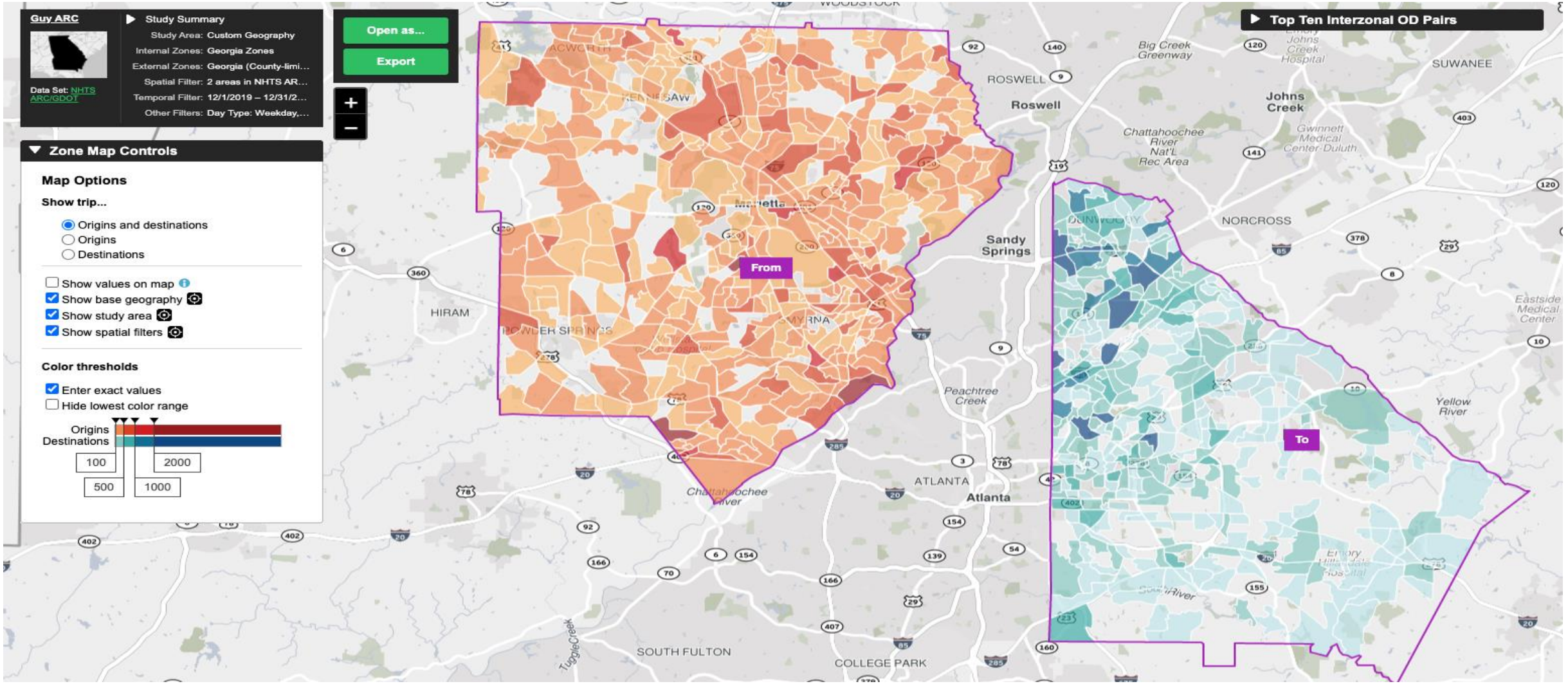
## MXD = Map Exchange Document



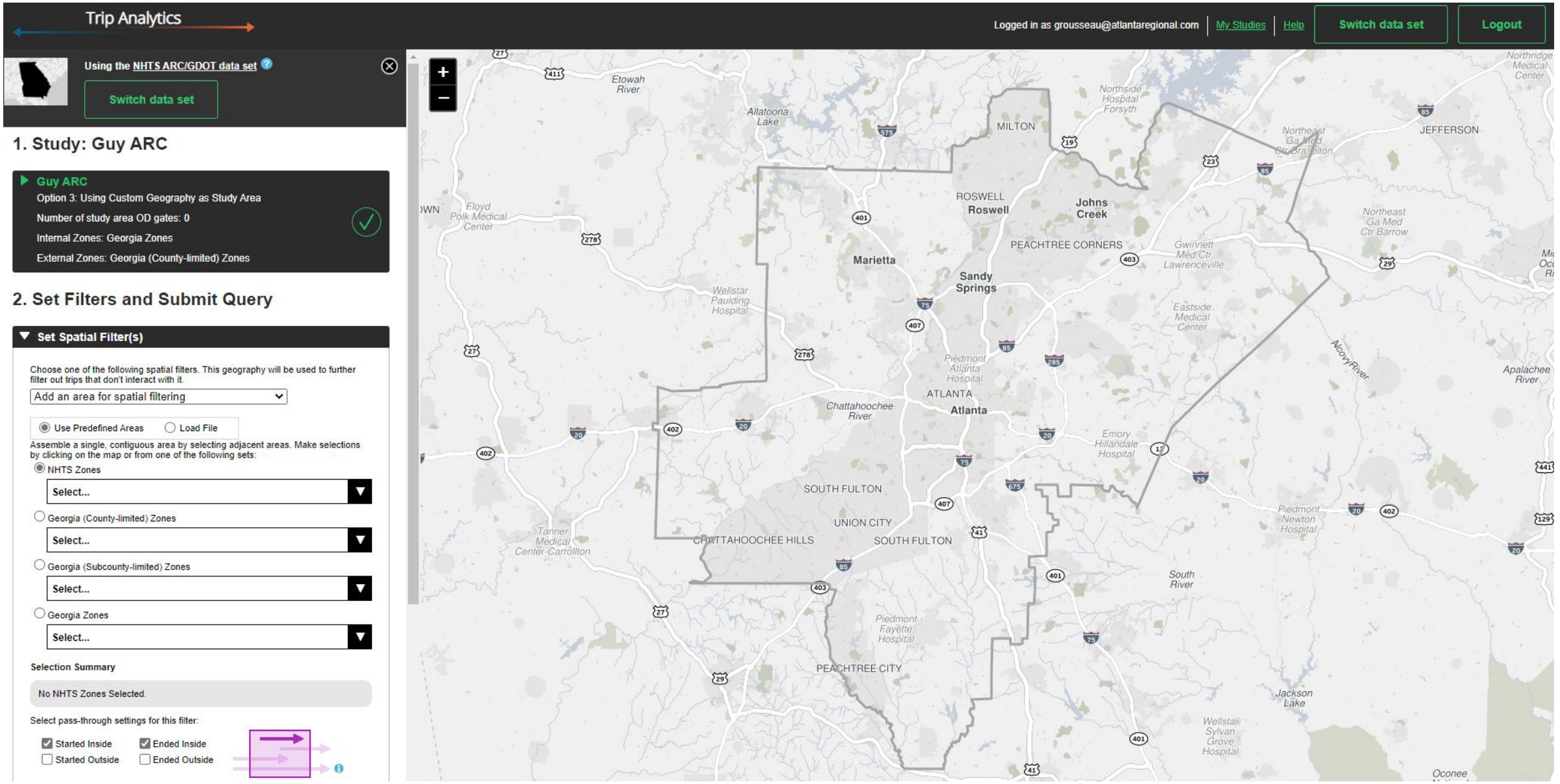




Georgia Department of Transportation

# RITIS NextGen Trip Analytics (in progress)



# Cobb County to DeKalb County OD Data Application Example


Trip Analytics
Logged in as grousseau@atlantaregional.com
My Studies
Help
Switch data set
Logout
Using the NHTS ARC/GDOT data set
Switch data set
1. Study: Guy ARC
Guy ARC
Option 3: Using Custom Geography as Study Area
Number of study area OD gates: 0
Internal Zones: Georgia Zones
External Zones: Georgia (County-limited) Zones
2. Set Filters and Submit Query
Set Spatial Filter(s)
Choose one of the following spatial filters. This geography will be used to further filter out trips that don't interact with it.
Add an area for spatial filtering
Use Predefined Areas
Load File
Assemble a single, contiguous area by selecting adjacent areas. Make selections by clicking on the map or from one of the following sets:
NHTS Zones
Select...
Georgia (County-limited) Zones
Select...
Georgia (Subcounty-limited) Zones
Select...
Georgia Zones
Select...
Selection Summary
No NHTS Zones Selected.
Select pass-through settings for this filter:
Started Inside
Ended Inside
Started Outside
Ended Outside
Etowah River
Allatoona Lake
MILTON
Northside Hospital Forsyth
JEFFERSON
Northeast Ga Med Ctr Braselton
ROSWELL
Roswell
Johns Creek
Floyd Polk Medical Center
Marietta
PEACHTREE CORNERS
Gwinnett Med Ctr Lawrenceville
Northeast Ga Med Ctr Barrow
Sandy Springs
Wellstar Paulding Hospital
Eastside Medical Center
Piedmont Atlanta Hospital
ATLANTA
Atlanta
Chattahoochee River
Emory Hillandale Hospital
Apalachee River
SOUTH FULTON
UNION CITY
CHATTAHOOCHEE HILLS
SOUTH FULTON
Tanner Medical Center-Carrollton
Piedmont Newton Hospital
South River
Piedmont Fayette Hospital
PEACHTREE CITY
Jackson Lake
Wellstar Sylvan Grove Hospital
Oconee

# Preliminary & Draft Data Analytics

- One annual data file and 12 monthly data files (months 1-6 and months 7-12)
- State of Georgia file size: about 10GB table and 35GB of unzipped data, or about 15M records
- Linked trips across origin-destination pairs: 8% (1M records) marked with a privacy protection flag (OD pairs featuring total annual or monthly number of trips < 5, redacted as -9, so need to filter out -9 values when summarizing trips)
- Value of -9 = minimum level of OD flow, zero value = no travel, allows to identify Personally Identifiable Information filter

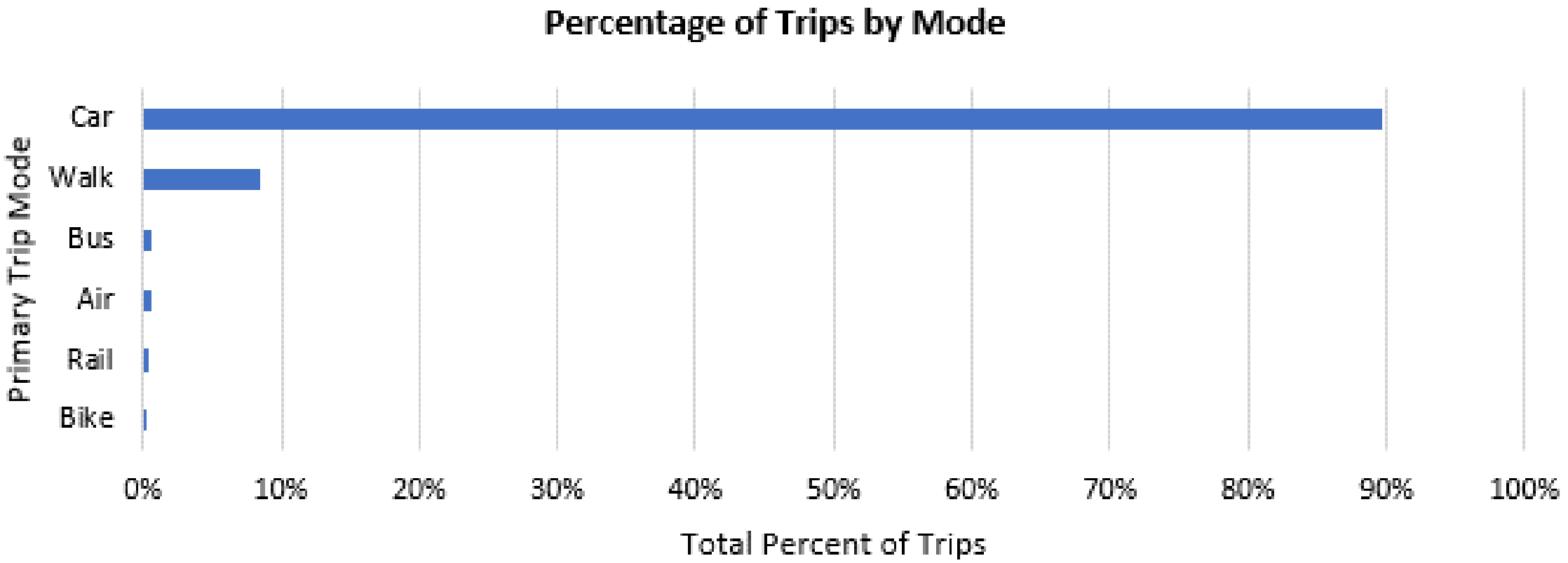
# Number of Counties with Zero Intra-State Trips for Specific Modes

| Travel Mode | County as Origin | County as Destination |
|---|---|---|
| Air | 132 | 131 |
| Rail | 85 | 92 |
| Bus | 29 | 32 |
| Bike | 135 | 141 |

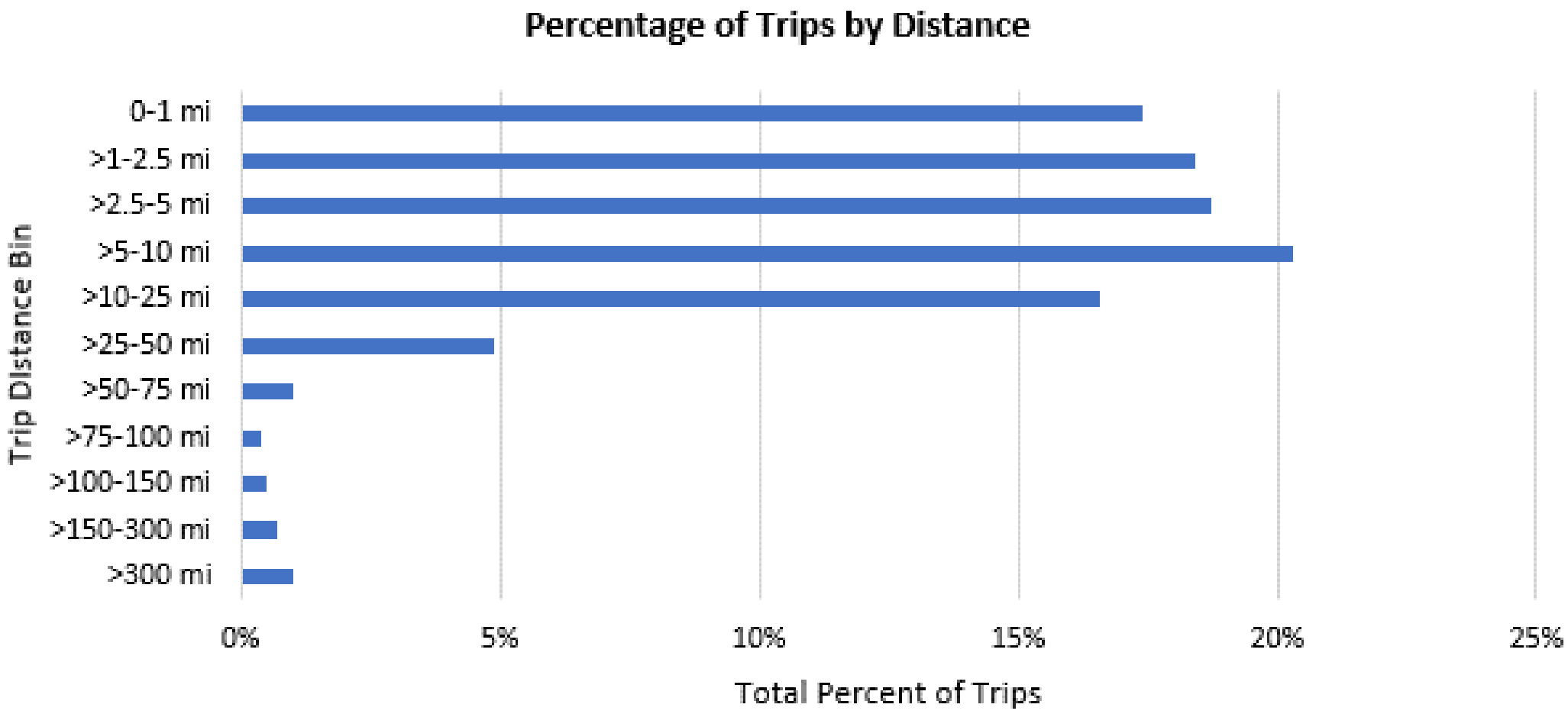
Counties with zero air, rail and bus trips observed in the data: The absence of these trips by county is logical, as these are rarer travel modes (if available in those block groups) when considering statewide travel.

Note: 159 Counties in Georgia

# Trips by Imputed Travel Mode



# Trips by Distance for Trip Length Frequency Distribution



# Other Empirical Observations & Conclusions

- The “Count_” field, before the first summed variable, usefully tells us how many of the 15M records in the annual table had that zone as an origin or destination
- The zone containing Hartsfield-Jackson Atlanta International Airport is, rightfully, the most commonly listed destination zone, followed by Birmingham AL (which “funnels” most trips in the dataset heading West out of Georgia)
- The NextGen NHTS add-on passive Origin-Destination dataset is a very rich and large set of databases encompassing most OD data necessary for travel demand model calibration & validation, especially when leveraged in combination with the local add-on traditional household travel survey (to take place in Georgia and throughout metro Atlanta in 2024)
- R-Studio is the best tool to handle large OD datasets in CSV format, and once joined and spatially attached in GIS, a geo-database is another way to map the data.
- A pooled funding effort, as a collaboration between a State DOT and an MPO, is the best way to leverage limited funding and resources for NextGen NHTS data procurement

# Q&A and Discussion

**Stanley Young**
Chief Data Officer
The Eastern Transportation Coalition

THE EASTERN TRANSPORTATION COALITION

CONNECTING FOR SOLUTIONS

# THANK YOU

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**Stan Young**

Chief Data Officer, seyoung@tetcoalition.org