



2021 Fall NCMUG Meeting

NextGen NHTS Data Products and Opportunities for NC

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NextGen NHTS

The goal of the NextGen NHTS is to obtain timely and sustainable travel behavior data and information to provide effective technical support to Federal legislative actions by Congress, policy developments and program evaluations by U.S. DOT.

To the extent possible, the NextGen NHTS will continue its tradition to partner with State, local governments, and private entities to expand the data coverage.



Motivations for Redesign

Release data
more frequently

Capture
emerging trends
and travel modes

Take advantage
of passive data
availability

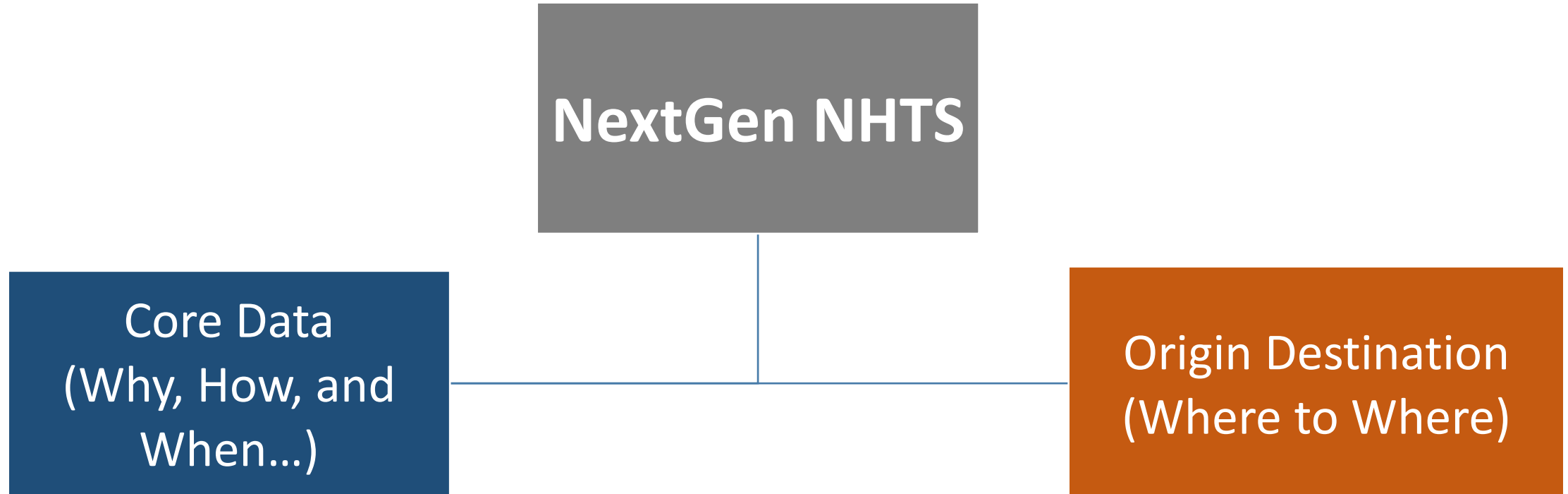
Provide local and
long-distance trip
information

Improve
response rates

Reduce survey
cost/respondent
burden

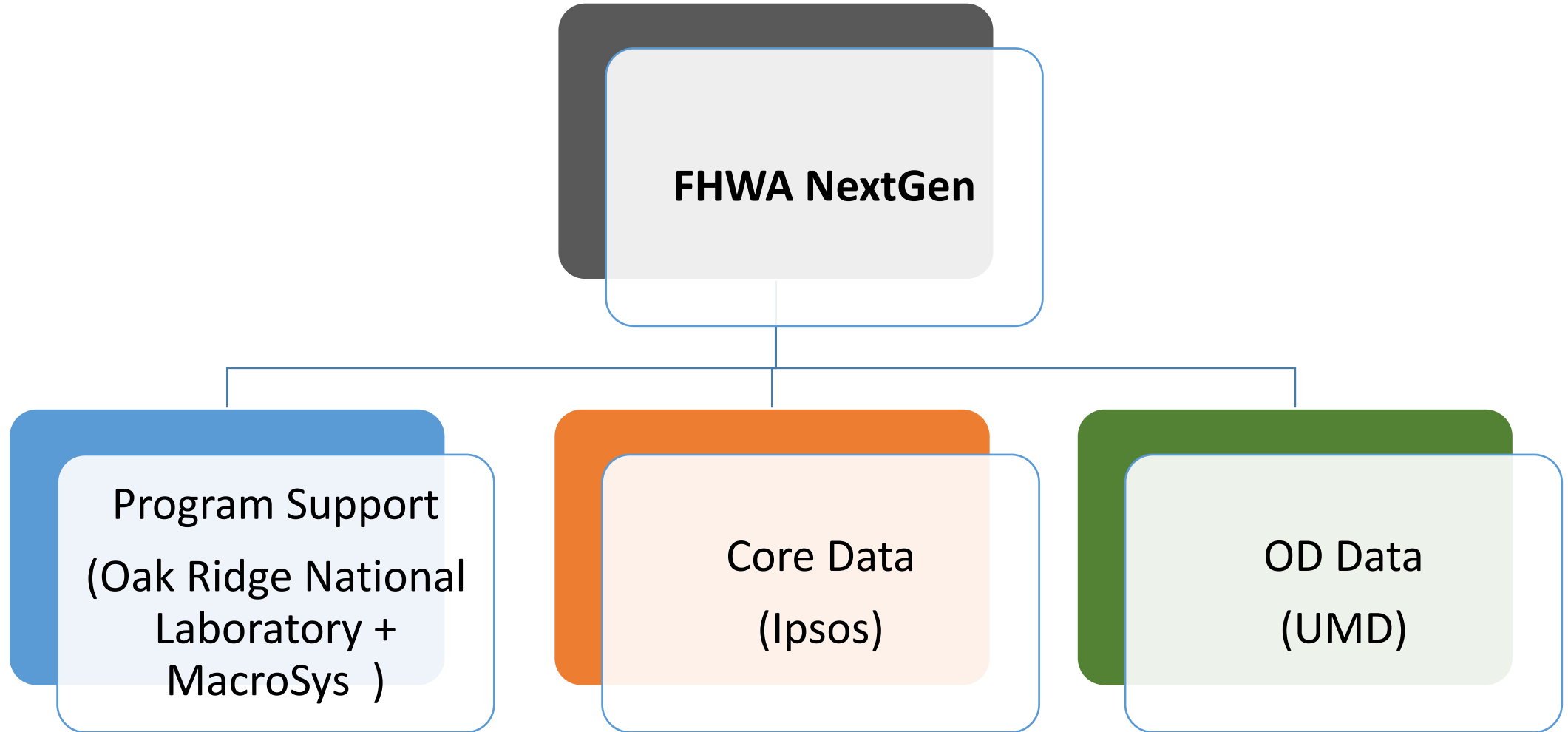


NextGen NHTS Components





NextGen NHTS Project Team





National Survey Core Data

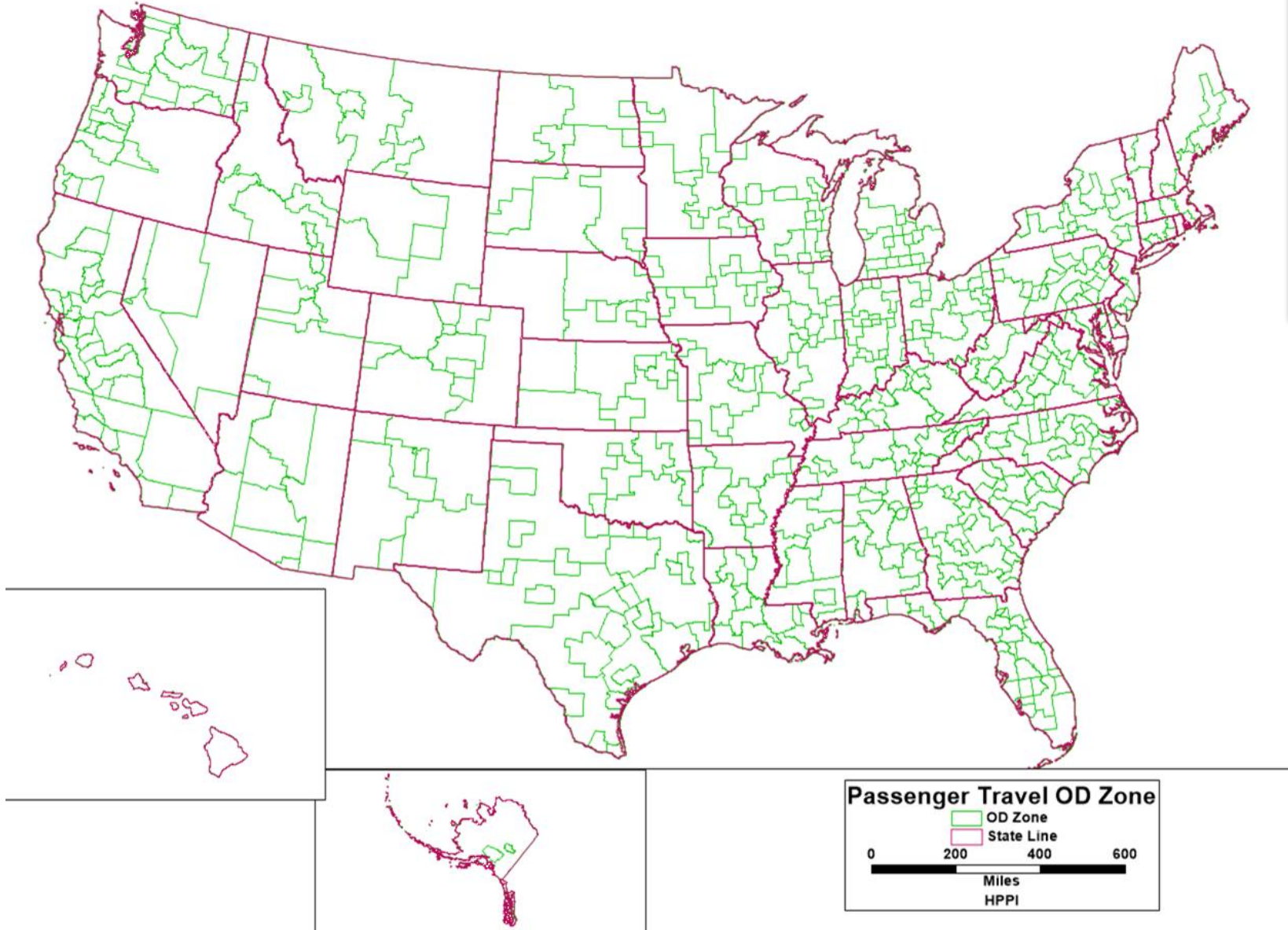
- ✓ Probability-based sampling approach
- ✓ Independent surveys every other year
- ✓ Smaller data collection effort
 - Fewer national samples (approx. 7,500)
 - Fewer, but more targeted questions
- ✓ Similar products/summaries to previous NHTSs
 - Data files, technical and supporting documents
 - Interactive analytics & visualizations
- ✓ Testing viability of probability-based panel sample



National OD Flow Passive Data Products

- ✓ Annual data product summarizing national OD flows
- ✓ Truck and Passenger products
- ✓ Available for 2020-2024, each year an independent product.
- ✓ Similar products/summaries to previous NHTSs
 - Data files, technical and supporting documents
 - Interactive analytics & visualizations
- ✓ Technical support

National OD Product Zone Structure



There are
583 zones
specified by FHWA

These zones include:

- 446 MSA based zones divided into state specific MSAs for these multistate MSA zones, and
- 137 new zones created from counties of remainder of States.

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



2020 National Passenger OD Flow Data

- Annual count of total passenger trips (intra- and inter-zonal)
- Count of passenger trips by distance (same categories as truck data)
- Imputed characteristics
 - Mode (air, rail, vehicle, other)
 - Trip purpose (work, non-work)
- Data Sources: Passively collected mobile device location data from multiple providers



2020 National Truck OD Flow Data

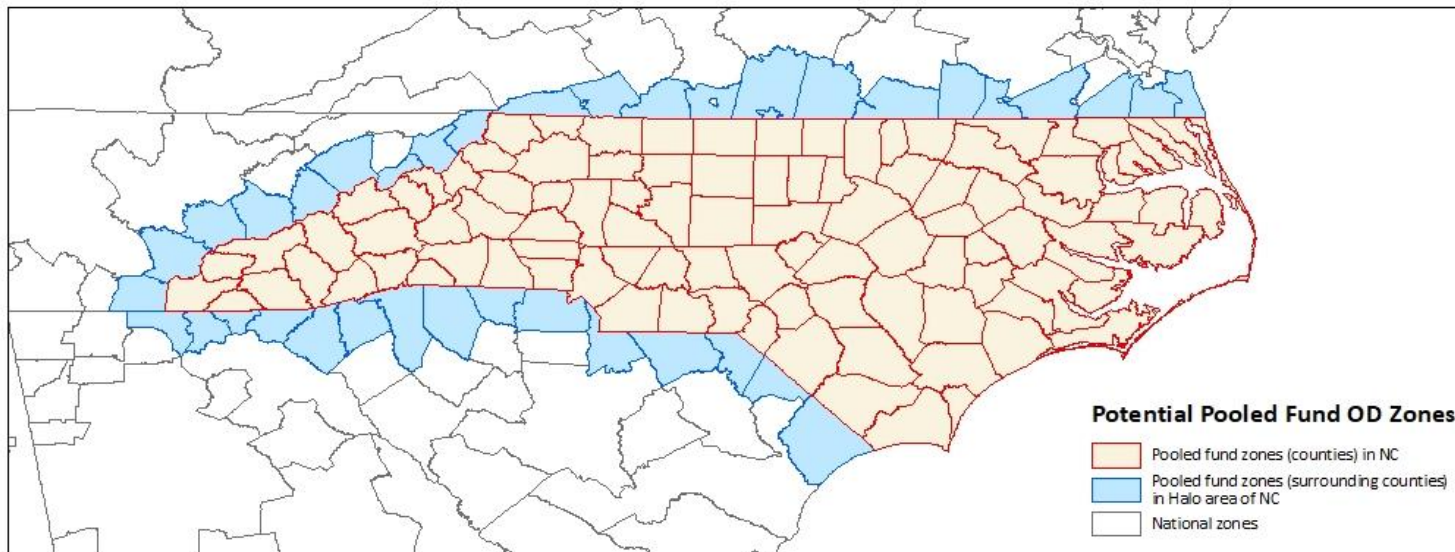
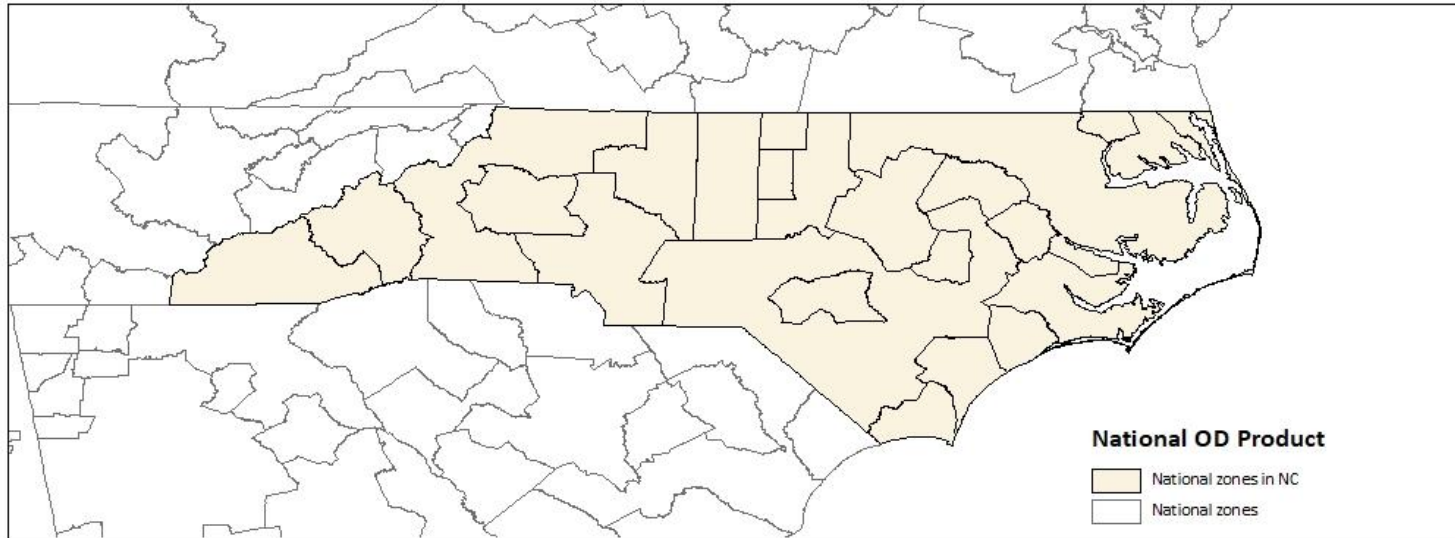
- Annual count of total truck trips (intra- and inter-zonal)
- Count of truck trips by 8 distance categories
- Data Sources: INRIX and ATRI



2020 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 582 Zones	FHWA's 582 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



Illustration of 2020 Add-on Passenger OD Flow Data

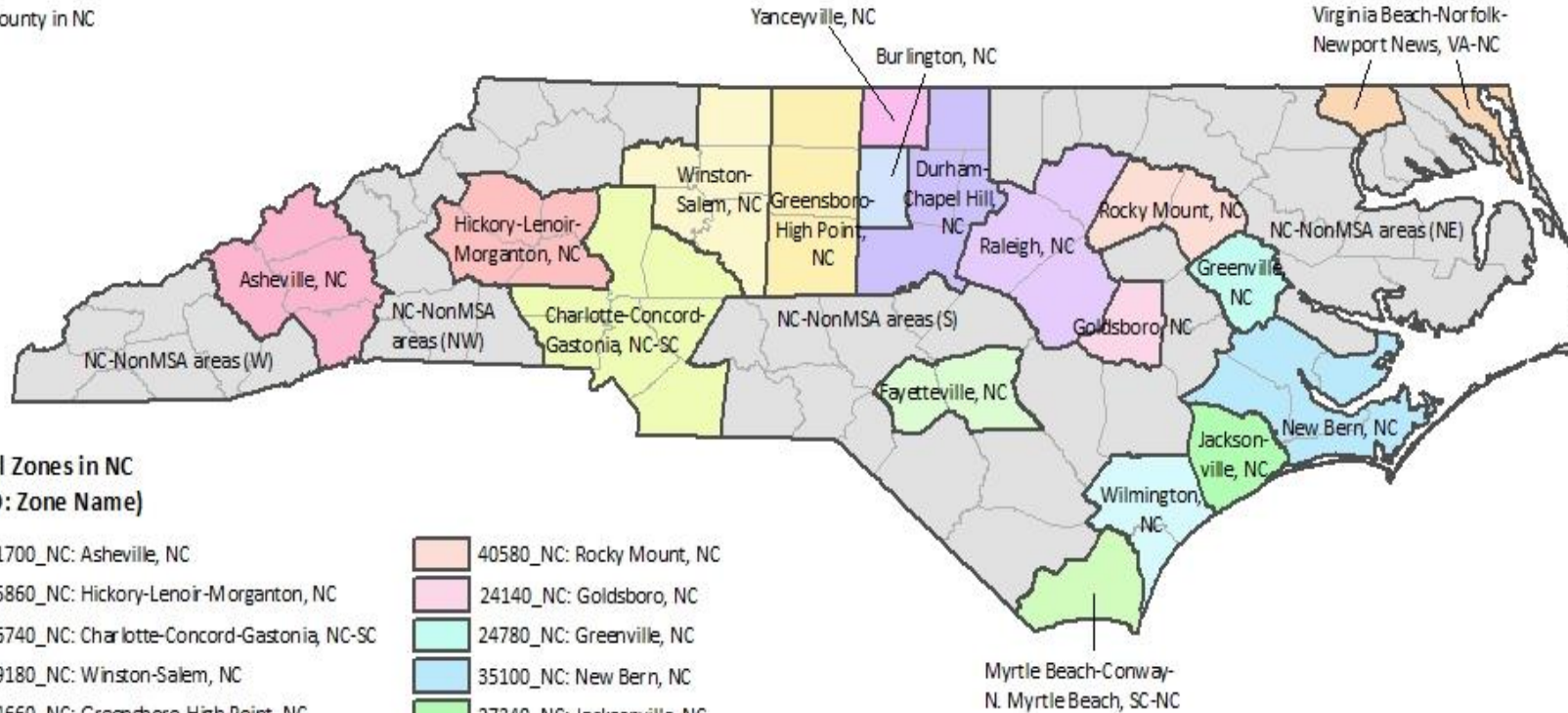


- > Add-on Products have a 3-tier geography:
 - > Agency defined zone structure
 - > Halo area
 - > Remainder of US in FHWA zone structure
- > Halo area is defined as the immediately adjacent counties (blue areas shown in the map).




















National OD Zones (NC)

NextGen Passive OD Data: National Zones in NC

-  National zones in NC
-  County in NC



National Zones in NC (Zone ID: Zone Name)

- | | |
|--|---|
|  11700_NC: Asheville, NC |  40580_NC: Rocky Mount, NC |
|  25860_NC: Hickory-Lenoir-Morganton, NC |  24140_NC: Goldsboro, NC |
|  16740_NC: Charlotte-Concord-Gastonia, NC-SC |  24780_NC: Greenville, NC |
|  49180_NC: Winston-Salem, NC |  35100_NC: New Bern, NC |
|  24660_NC: Greensboro-High Point, NC |  27340_NC: Jacksonville, NC |
|  20590_NC: Yanceyville, NC |  48900_NC: Wilmington, NC |
|  15500_NC: Burlington, NC |  34820_NC: Myrtle Beach-Conway-North Myrtle Beach, SC-NC |
|  20500_NC: Durham-Chapel Hill, NC |  47260_NC: Virginia Beach-Norfolk-Newport News, VA-NC |
|  22180_NC: Fayetteville, NC |  NC-NonMSA areas |
|  39580_NC: Raleigh, NC | RNC1_NC: NE; RNC3_NC: NW; |
| | RNC4_NC: W; RNC10_NC: S. |

- ✓ 18 MSA-based area zones
- ✓ 4 nonMSA zones
- ✓ For any add-on product, agency specifies geography (lowest is census block group)

2020 data: # trips originated in NC
10.4 billion pax trips

- ✓ 10.2 billion intrastate trips
- ✓ 9.4 billion intrazonal trips

506 million truck trips



- ✓ 460 million intrastate trips
- ✓ 351 million intrazonal trips

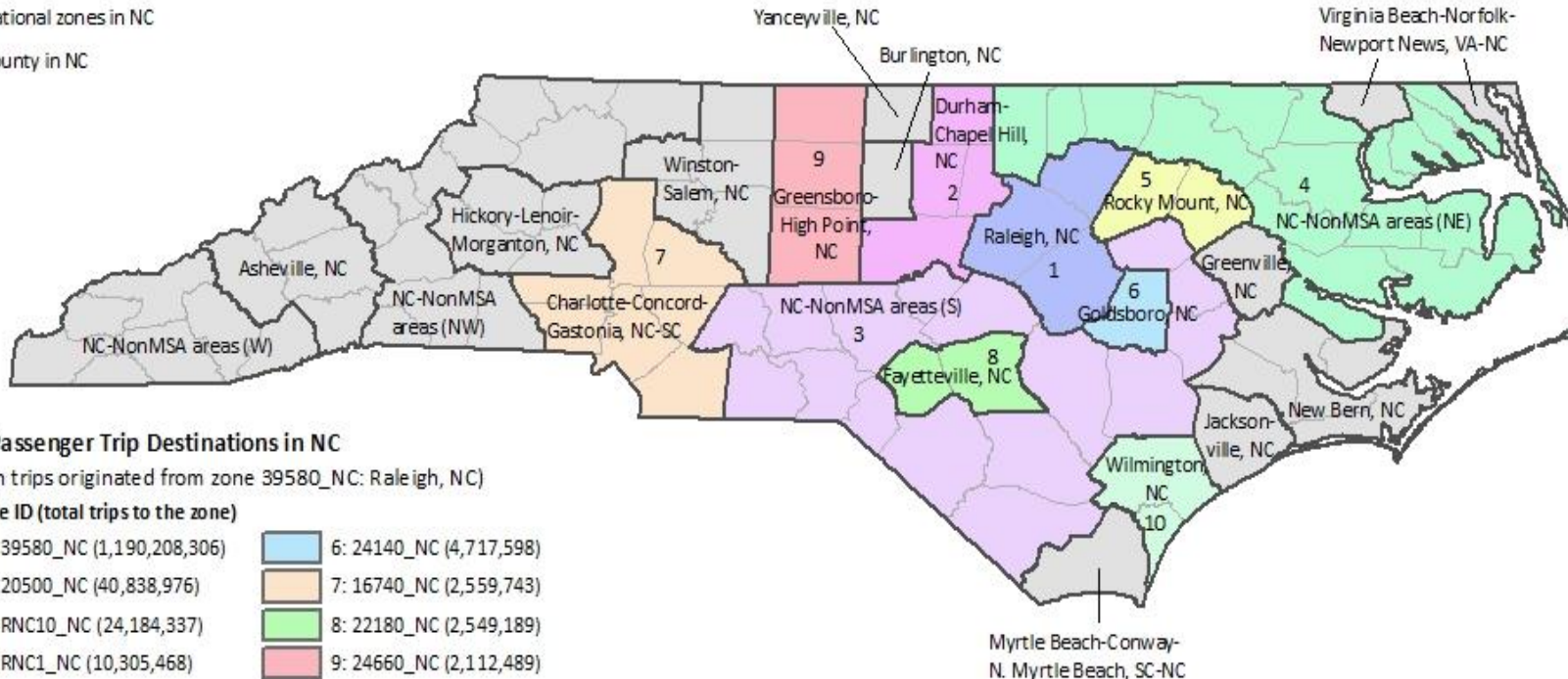
Preliminary results (subject to change)

2020 NC Pax OD Example

NextGen Passive OD Data: National Zones in NC

Top 10 Passenger Trip Destinations in NC (Raleigh as Origin Zone)











-  National zones in NC
-  County in NC




Top 10 Passenger Trip Destinations in NC

(Based on trips originated from zone 39580_NC: Raleigh, NC)

Rank Zone ID (total trips to the zone)

 1: 39580_NC (1,190,208,306)	 6: 24140_NC (4,717,598)
 2: 20500_NC (40,838,976)	 7: 16740_NC (2,559,743)
 3: RNC10_NC (24,184,337)	 8: 22180_NC (2,549,189)
 4: RNC1_NC (10,305,468)	 9: 24660_NC (2,112,489)
 5: 40580_NC (5,032,005)	 10: 48900_NC (1,843,244)

 National zones not in top 10 destinations

Origin = Raleigh

1.3 billion pax trips originated in Raleigh in 2020.

- ✓ 92% intrazonal
- ✓ 8% interzonal

Top interzonal destinations

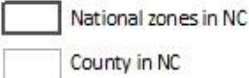
- Durham-Chapel Hill
- NonMSA areas to south
- NonMSA areas to east

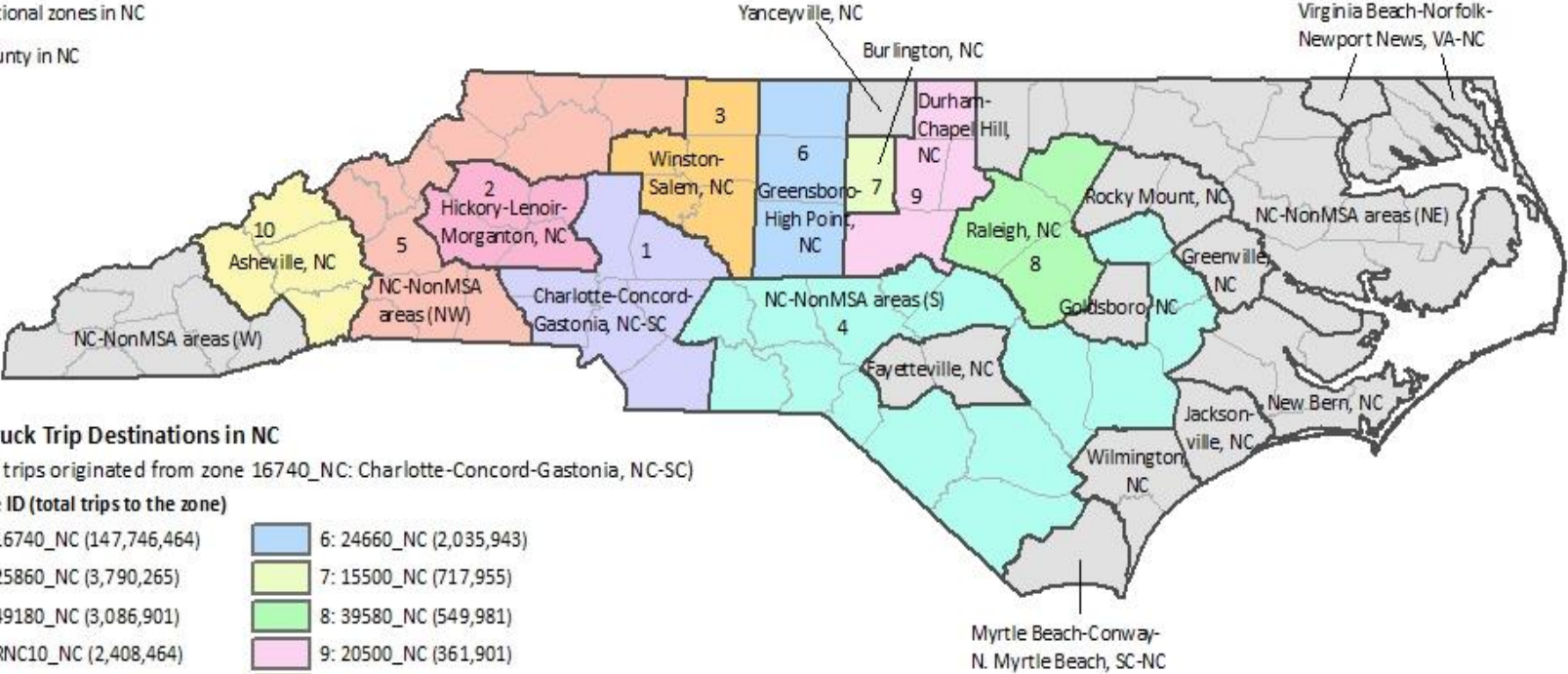
Preliminary results (subject to change)

2020 NC Truck OD Example

NextGen Passive OD Data: National Zones in NC

Top 10 Truck Trip Destinations in NC (Charlotte as Origin Zone)


 National zones in NC
 County in NC

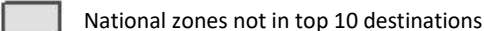


Top 10 Truck Trip Destinations in NC

(Based on trips originated from zone 16740_NC: Charlotte-Concord-Gastonia, NC-SC)

Rank: Zone ID (total trips to the zone)

1: 16740_NC (147,746,464)	6: 24660_NC (2,035,943)
2: 25860_NC (3,790,265)	7: 15500_NC (717,955)
3: 49180_NC (3,086,901)	8: 39580_NC (549,981)
4: RNC10_NC (2,408,464)	9: 20500_NC (361,901)
5: RNC3_NC (2,158,092)	10: 11700_NC (350,026)


 National zones not in top 10 destinations

Origin = Charlotte (NC portion)

180 million truck trips originated in Charlotte (NC) in 2020.

- ✓ 82% intrazonal
- ✓ 18% interzonal

Top interzonal destinations

Hickory-Lenoir-Morganton
Winston Salem

NonMSA areas east/south of MSA

Preliminary results (subject to change)



FHWA Commitment on OD Flow Data Product Quality

- Complete and transparent technical documentation
 - Data sources
 - Data assembly processes
 - Algorithms released as open source
- Technical Advisory Committee involvement in product development
- Independent quality control task



FHWA OD Flow Data Product Quality Control

Quality checks for reasonableness of results

- Results consistent with known geographic characteristics and logical reasonableness
 - Proportion of elderly travelers in Arizona and Florida
 - Appropriate travel modes between mainland and Hawaii/Alaska
- Results trend in same direction and magnitude as similar data sources
 - NextGen NHTS results
 - HPMS VMT trends
 - National Transit Database (NTD)
 - DB1B/T100 airline data



Pooled Fund Project TPF-5(398)

1. Participation without data purchase (\$5K/year)

- Join the Working Group (annual in-person meeting)
- Access the latest national data and information
- Gain centralized technical and peer support in data applications

2. Participation with data purchase

- Purchase additional household survey data and/or OD data for any data year(s) between 2020-2024
- Lower the data cost (economies of scale)
- Gain nationally consistent data so that data controls and comparisons can be efficiently enabled
- Having no or minimum contracting or oversight hassles

For more info, <https://www.pooledfund.org/Details/Study/651>



NextGen NHTS Pooled Fund Opportunities

Core Data (Survey)

- Biennial
- National: 7,500 HH
- Add-on:
 - Up to 40,000 HH across all agencies
 - Specify up to 6 questions
 - Specify goals by geography
- \$260-\$275 per HH

Passive Data

- Annual
- National: Passenger and Truck OD Data
- Add-on:
 - Passenger Travel
 - Additional imputed variables
 - Custom zonal geography
- Population-based cost

Tech Advisory Committee

- Design Input and Priorities
- Shared Research
- Travel for one person to attend one meeting per data cycle
- \$5000 per FY
- **NCDOT is a member**



NextGen FHWA Contacts

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