



NextGen NHTS

Core and OD Program Update

Patrick Zhang, PhD, PE

Travel Monitoring and Surveys Division, Office of Highway Policy Information, FHWA

Stacey Bricka, PhD, MacroSys

David Lee, PhD, Tennessee DOT

April 21, 2023



Overview

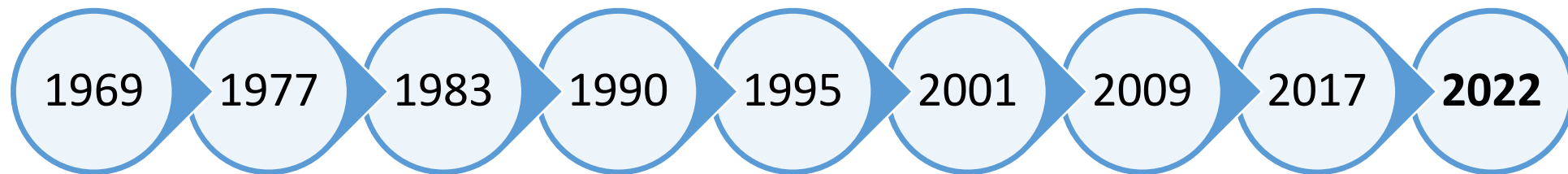
- NHTS/NextGen NHTS Program Overview
- OD Data Nationally and Add-on Opportunities
- Core Data Program Specifics
- TDOT Add-on to 2022 NextGen NHTS
- TDOT Add-on Data Plans
- Tools for OD and Survey Data
- Questions/Discussion

NHTS/NextGen NHTS Program Overview



NHTS Program Overview

The National Household Travel Survey (NHTS) is a periodic national survey providing travel behavior data to support transportation policy and planning efforts. The survey has been conducted every 5-8 years since 1969 – more than 50 years of data!





Information Derived

- ✓ Trip rates and trip distances for use in travel demand analysis including State DOT and MPO travel demand modeling work
- ✓ Travel behavior details for use in a wide range of policy issues and scenario-based analysis
- ✓ Insights into current topics for use in supporting legislative initiatives
- ✓ Trip summaries for use in various traffic data monitoring and estimation processes
- ✓ Vehicle Occupancy for PM3



Data Use Example— Wisconsin DOT

- ✓ Add-on participant in 2001, 2009, and 2017
- ✓ Primary use: update travel demand models at state/regional levels
 - ✓ Estimate of PM3 (occupancy factor)
 - ✓ Trend travel behavior overall and for specific traveler groups
 - ✓ Estimate impact of proposed gas tax increase
 - ✓ Support WisDOT Connect 2050 long range plan and US Bike Route Application
- ✓ Regional uses:
 - ✓ Support crash analysis
 - ✓ Fuse with local survey data to support planning and other reports
- ✓ Academic uses:
 - ✓ Forecast autonomous vehicles/mobility as a service impact in Madison
 - ✓ Estimate traffic exposure measures by demographics



Data Use Examples – Iowa MPOs

Iowa Northlands Regional COG

Bicycle and Pedestrian Trip Statistics in the MPO Area.

Bicycle and Pedestrian Trip Statistics	Bicycling	Walking
Commute to work (percent)*	0.5%	4.6%
All trips (percent)	1.2%	6.8%
Annual person trips (number)	1,774,000 trips	10,359,000 trips
Annual trip distance (miles)	5,370,000 mi	6,596,000 mi
Average trip distance (miles)	3.03 mi	0.64 mi
Average trip duration (minutes)	22.33 min	17.03 min
Mode use in past 7 days (number)	9,167 residents	66,290 residents

*U.S. Census American Community Survey data (2012–2016) for Black Hawk County, IA.
All other values are from the 2017 NHTS add-on for the MPO area.

Source: https://nhts.ornl.gov/assets/NextGen%20NHTS_Newsletter_Issue1_082820.pdf

Des Moines Area MPO

Example of How DMAMPO Leverages Survey Results to Inform Future Planning for Safe Routes to School.

Survey Question: Which of the following reasons would influence your decision to allow your child/children to walk/bike to school?	Number of Households	Percent of Respondents
Crossing guards present	119	9.2%
Presence of adult chaperones/supervision	114	8.8%
Sidewalk and crosswalks are located along the route	193	14.9%
School participates in a Safe Routes to Schools program	59	4.6%
Education and training is provided for children, parents, and others	13	1.0%
School is located within neighborhood	138	10.7%
Distance between home and school	231	17.9%
Don't know	2	0.2%
Refused to answer	3	0.2%

Data are from the 2017 NHTS add-on for the MPO area.



Motivations for Redesign

Release data
more frequently

Capture
emerging trends
and travel modes

Take advantage
of passive data
availability

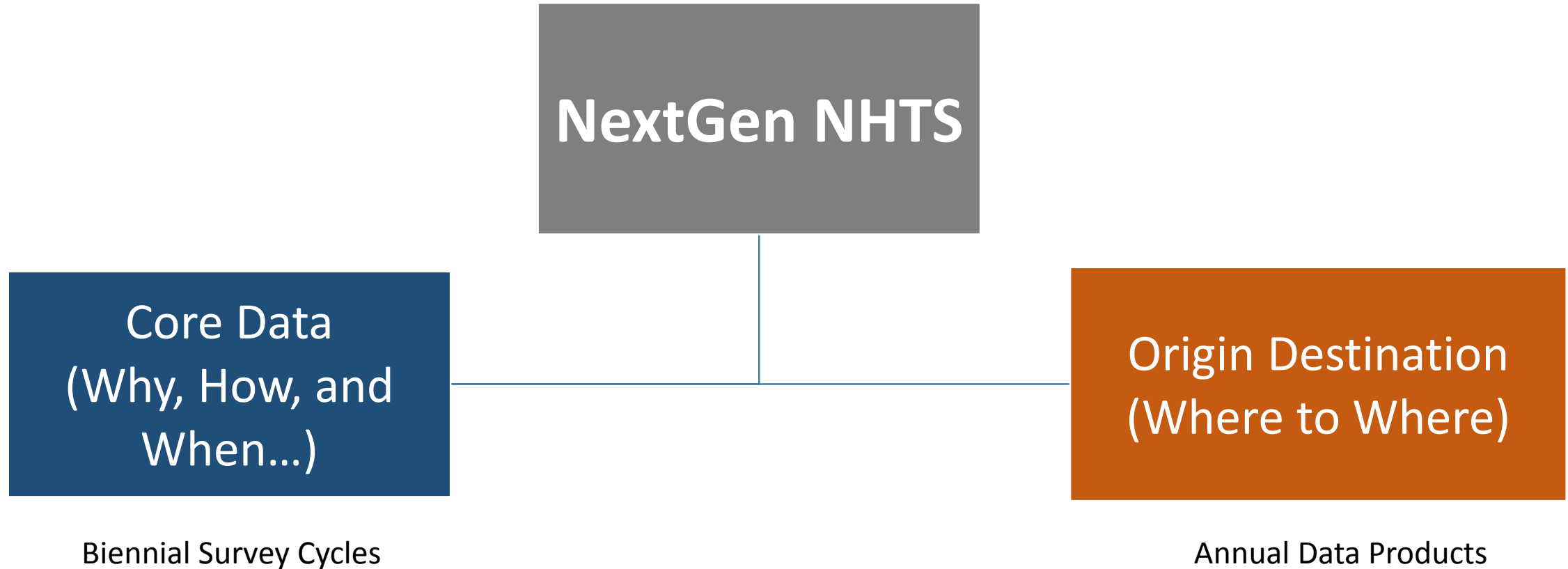
Provide local and
long-distance trip
information

Improve
response rates

Reduce survey
cost/respondent
burden



NextGen NHTS Components



OD Data Nationally & Add-on Opportunities



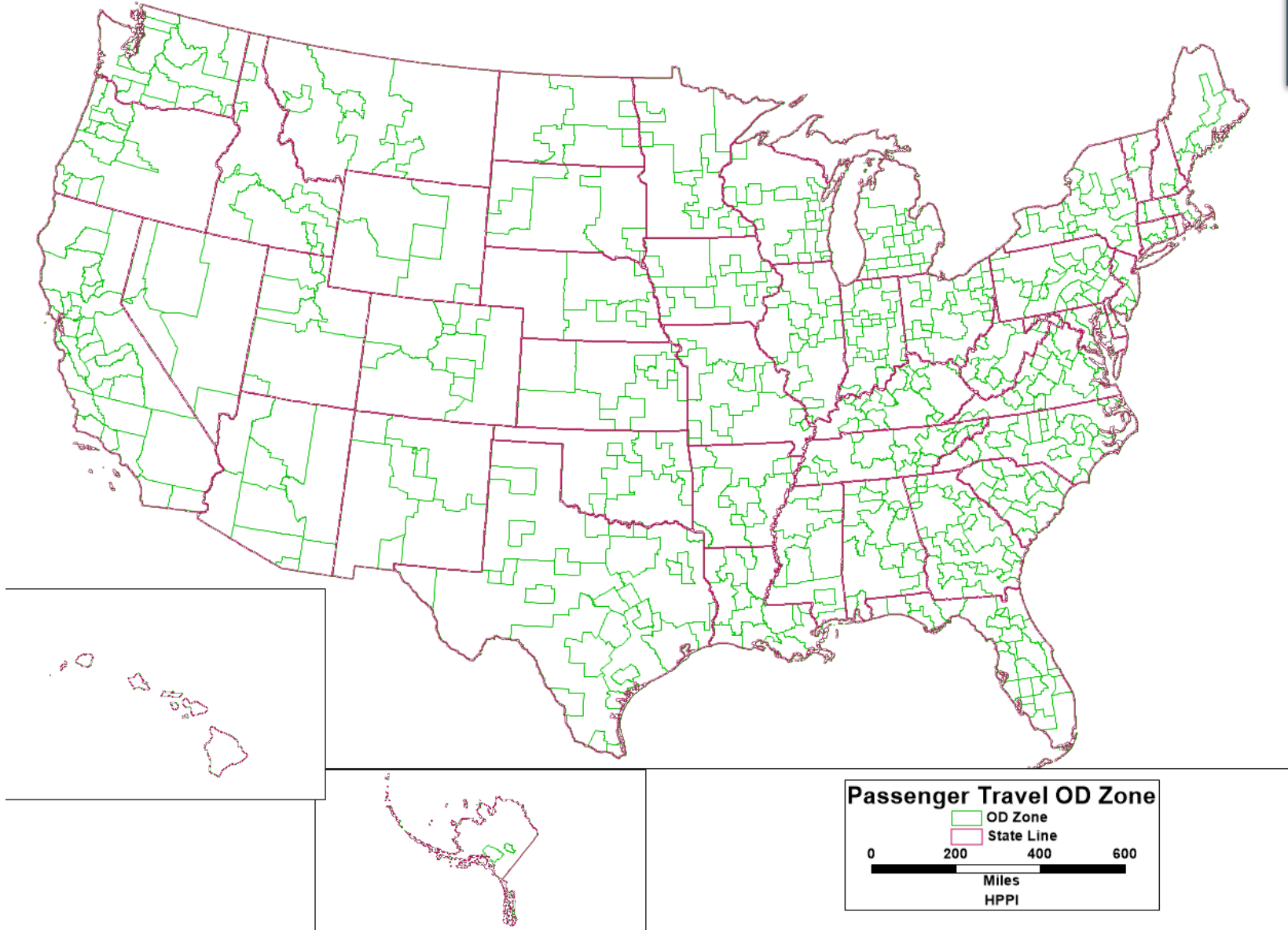
Passive OD Data Component

National and sub-national Origin Destination (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 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.

TN is divided into 12 zones: 10 MSA based zones and 2 rural/remainder of state zones.

<https://www.fhwa.dot.gov/policyinformation/analysisframework/04.cfm>; OD Products available at:
<https://nhts.ornl.gov/od/>



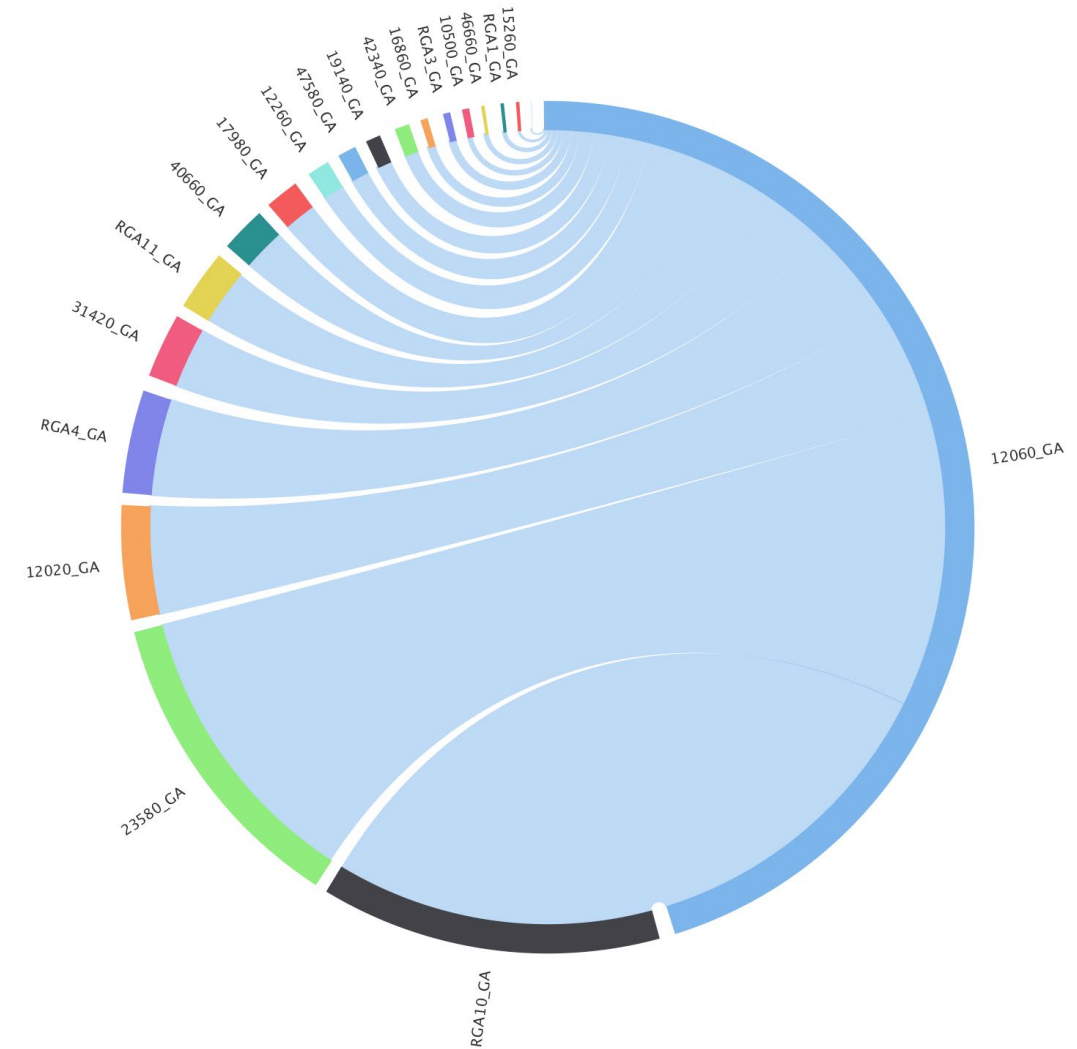
NextGen NHTS OD Product Summary

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 Truck and Passenger Products

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





OD Component: Product Status

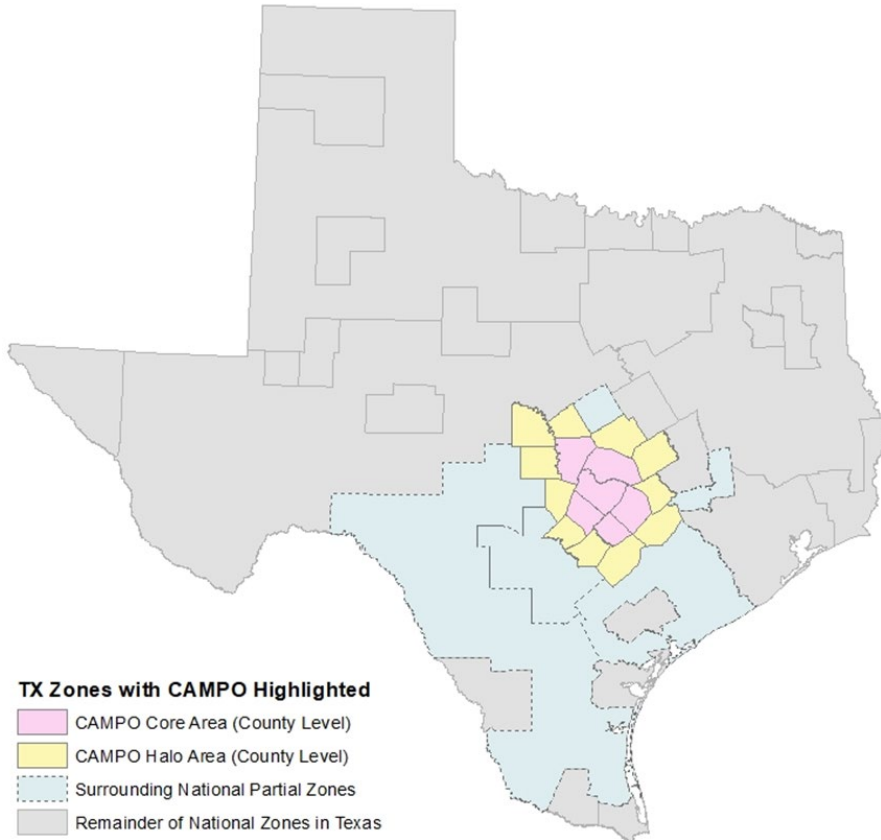
- 2020 National OD data products released June 2022
 - Online tool available for all users
- 2021 National OD data product development released April 2023
 - National and monthly files
- 2022 National OD data product development underway
 - Draft file for review anticipated early fall 2023



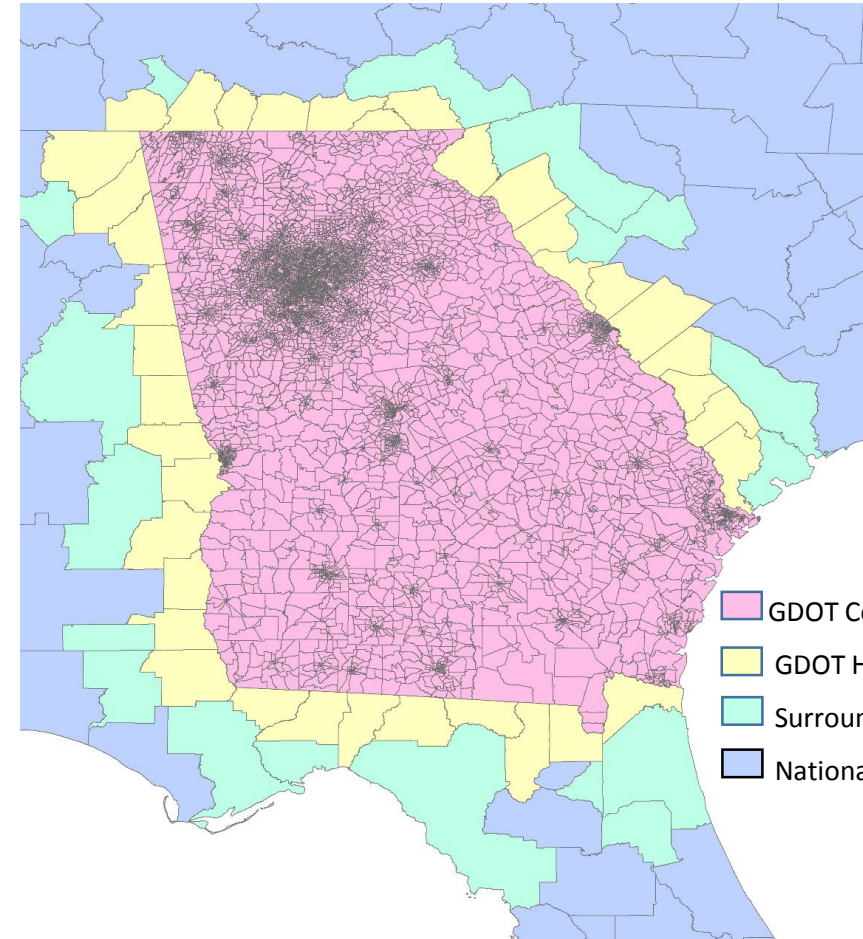
Add-on OD Component Status

Austin TX (CAMPO) - delivered

Texas NextGen 2020 Passenger OD Geography (CAMPO highlight)



Georgia (GDOT/ARC) - delivered



- GDOT Core Area (CBG Level)
- GDOT Halo Area (County Level)
- Surrounding National Partial Zones
- National Zones



Add-on OD Component Status

Second Round (Pending)

- Caltrans
- Oahu HI (OMPO)
- Champaign County, IL (CCRPC)



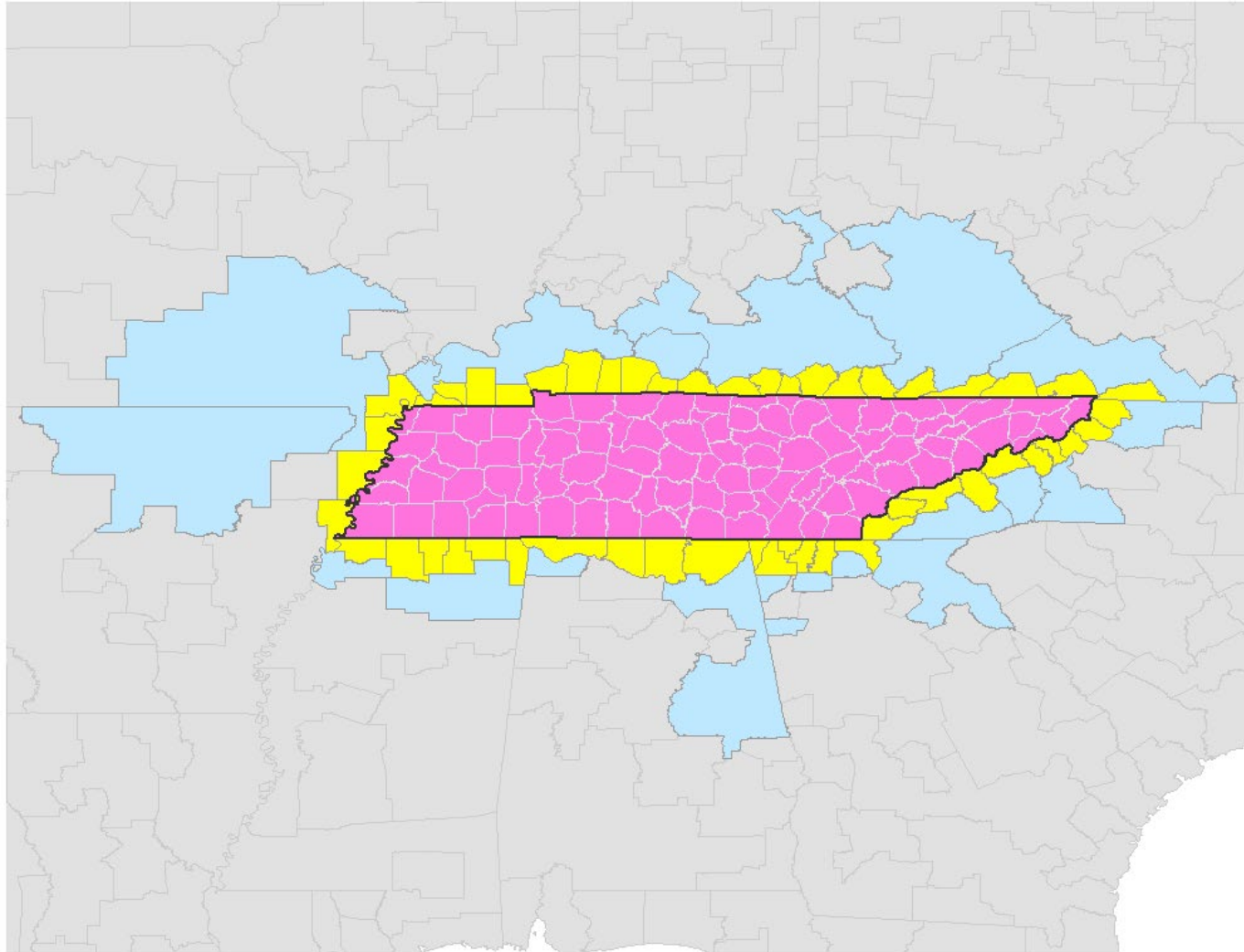
CHAMPAIGN COUNTY
REGIONAL PLANNING
COMMISSION

Customization Options

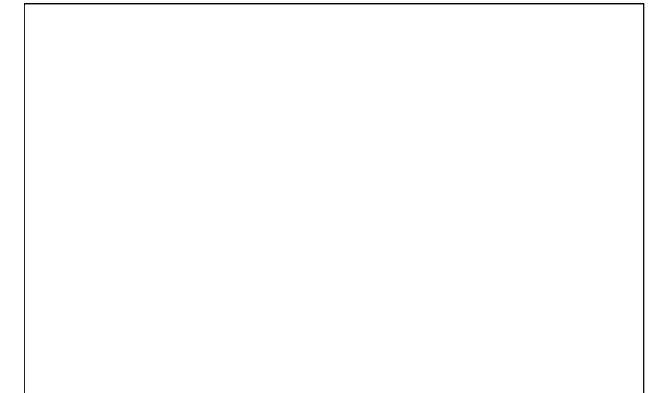
- Year of Product (2019-2024)
- Geography
 - County
 - Census Tract
 - Custom (TAZ, Census Block Group, etc.)
- Time of Day
 - 1-hour increments across 24-hours
 - Custom time groupings
- Distance
 - First distance category 0-10 miles
 - First distance category disaggregated into 0-<1, 1->2.5, 2.5-<5, 5-<10 mi



Example: Tennessee Add-on Product Geography



Estimated cost for 2022
Passenger Add-on OD
Product for TN ranges from
\$120k to \$220k



<https://data.census.gov/table?g=040XX00US47&y=2021&tid=ACST1Y2021.S0101>

Core Data Program Specifics



National Survey Core Data Component

- ✓ National survey data collected on a biennial basis starting in 2022
- ✓ Probability-based sampling approaches
- ✓ Independent surveys every other year
- ✓ Smaller but more frequent data collection effort than previous NHTSs



Current Status

- ✓ 2022 data collection complete (collected January 2022-January 2023)
- ✓ Data processing and weighting underway
- ✓ Add-on surveys for Tennessee DOT, Virginia DOT, and Oahu MPO completed and datasets in-process
- ✓ Final weighted datasets and documentation to be reviewed then released.



Data Collection Summary

National ABS

- ✓ 72,822 invitations
- ✓ 8,210 Completed Households
 - ✓ 74% Urban/26% Rural
 - ✓ 72% Weekday/28% Weekend

National PFS

- ✓ 17,624 invitations
- ✓ 7,500 Completed Households
 - ✓ 83% Urban/17% Rural
 - ✓ 72% Weekday/28% Weekend

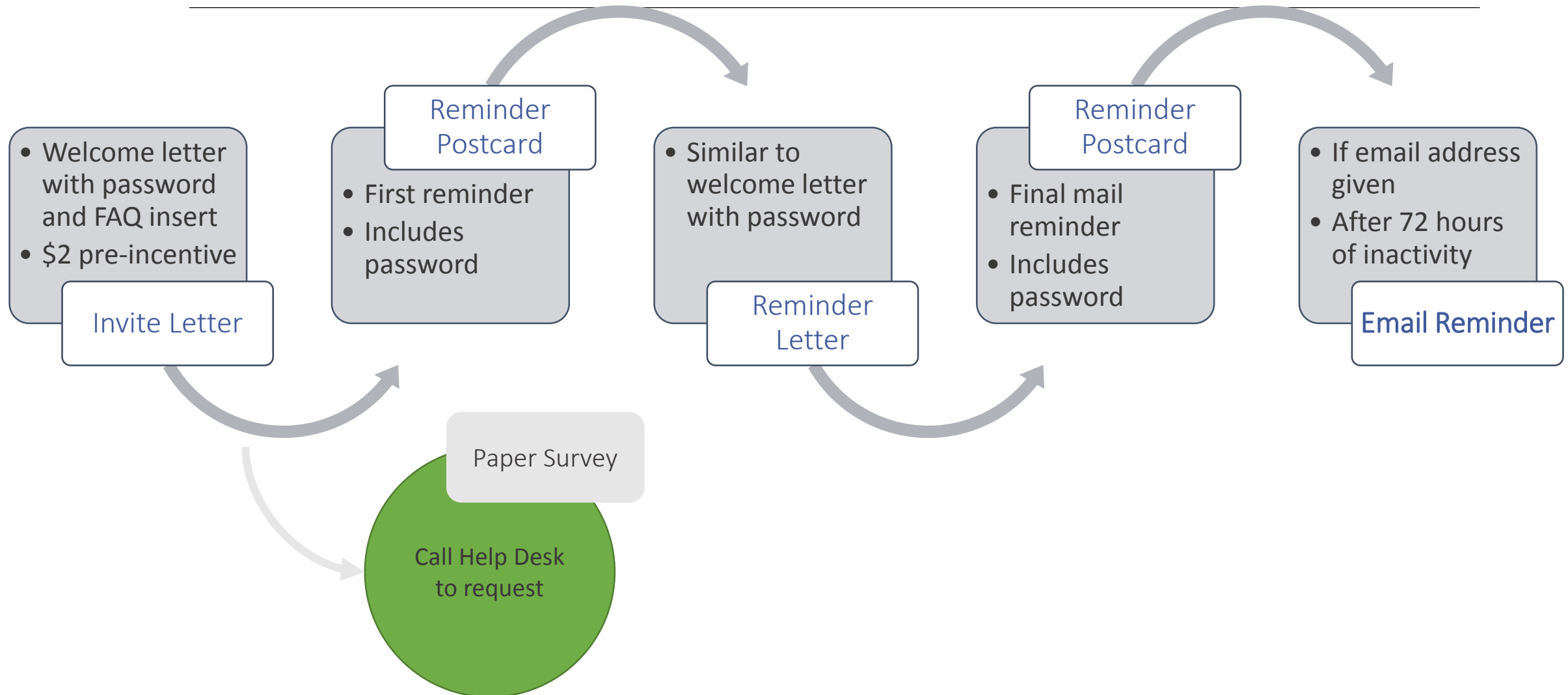


Current Status

- ✓ Independent evaluation to begin spring 2023
 - ✓ Assess differences in fielding and travel behavior
 - ✓ Results anticipated to inform design of future NextGen NHTS core data programs
- ✓ Public release anticipated for summer 2023
- ✓ Procurement work for 2024 core data underway



2022 NextGen NHTS ABS Communications





Core Data Collection – Mail Materials



U.S. Department of Transportation
Federal Highway Administration

U.S. DEPARTMENT OF TRANSPORTATION, c/o IPS
PO BOX 5030
CHICAGO IL 60680-9935



U.S. Department of Transportation
Federal Highway Administration

Official Research Invitation

111111112 2101968501 2089 7111
CURRENT RESIDENT
1001 W WASHINGTON AVE
CHICAGO, IL 60610-4535

Dear Chicago Resident,

You are invited to complete a survey about your transportation needs and experiences. This study is sponsored by the U.S. Department of Transportation and conducted by Ipsos Research.

You will **receive \$10** if you complete a 5-minute survey. Depending on your responses, we may ask you to complete some additional questions, for which there will be an additional compensation.

To participate, please go to the following website:

Website: www.NextGenNHTS.com

Password: [ZZZZZZ](#)

First-Class Mail

Why should I participate?

Now is the chance to have your voice heard! Your participation is **essential** to help us understand the transportation needs and experiences of Americans.

What will I need to do?

If you are **18 years of age or older**, please go to the website above and use the password to complete the online survey. If you want to complete a paper survey, please call 1-888-521-2520 and we will send you one.

Is it confidential?

Yes. Any information you provide will be kept confidential as required by law. All collected data will be used for research purposes only.

How do I find out more about the study?

Please go to the study website — www.NextGenNHTS.com/FAQ — for answers to frequently asked questions or call Ipsos Research toll-free at 1-888-521-2520.

Thank you for your participation in this important nationwide study!

Sincerely,

Daniel Jenkins P.E.
National Travel Behavior Data Program Manager
U.S. DOT Federal Highway Administration



Department of
Transportation



U.S. Department of Transportation
Federal Highway Administration

U.S. DEPARTMENT OF TRANSPORTATION, c/o IPSOS
PO BOX 5030
CHICAGO IL 60680-9935



U.S. Department of Transportation
Federal Highway Administration

Official Research Invitation

PRIMARY ADDRESS
SECONDARY ADDRESS
CITY, STATE ZIP+4

Dear [City] Resident,

You are invited to complete a survey about your transportation needs and experiences. This study is sponsored by the Tennessee Department of Transportation and the U.S. Department of Transportation and conducted by Ipsos Research.

You will **receive \$10** if you complete a 5-minute survey. Depending on your responses, we may ask you to complete some additional questions, for which there will be an additional compensation.

To participate, please complete the survey any time between Tuesday and Saturday by going to the following website:

Website: www.NextGenNHTS.com

Password: [\[CODE WIDELY SPACED, TNR, BLUE\]](#)

First-Class Mail

Why should I participate?

Now is the chance to have your voice heard! Your participation is **essential** to help us understand the transportation needs and experiences of residents in Tennessee.

What will I need to do?

If you are **18 years of age or older**, please go to the website above any time between **Tuesday** and **Saturday** and use the password to complete the online survey. If you want to complete a paper survey, please call 1-888-521-2520 and we will send you one.

Is it confidential?

Yes. Any information you provide will be kept confidential as required by law. All collected data will be used for research purposes only.

How do I find out more about the study?

Please go to the study website — www.NextGenNHTS.com/FAQ — for answers to frequently asked questions or call Ipsos Research toll-free at 1-888-521-2520.

Thank you for your participation in this important statewide study!

Sincerely,


David Lee
Study Director
Tennessee Department of Transportation

Daniel Jenkins P.E.
National Travel Behavior Data Program Manager
U.S. DOT Federal Highway Administration



Core Data Collection – Web Program

Introduction Screen

 U.S. Department of Transportation

Thank you for being part of the National Household Travel Survey. The US Department of Transportation is conducting this study to understand the daily travel needs of Americans and how well the road, highway, bus and rail systems are working and to help us plan for the future.


Your responses are important to help us understand the issues you and people in your household may face. Our initial shared section of the survey should take you about 5 to 10 minutes and as our thank you for completing this section, you will receive **2000 points**.

Participating is voluntary and your responses will be kept confidential. If you have comments or suggestions about your participation or this survey, please contact **Michael Howell, Information Collection Clearance Officer, Federal Highway Administration, 202-366-5707, Michael.Howell@dot.gov, 1200 New Jersey Avenue, SE, Washington, DC 20590**. Please refer to OMB Control Number **2125-0545**, expiration date **July 31st, 2024**.

Please click the 'START' button below to proceed to the survey.

CLICK HERE TO START THE SURVEY


Diary Day Example and Travel Day Starting Location

 U.S. Department of Transportation

Diary Day: Wednesday, January 26

Next, we would like to ask **you** about where **you** went on **Wednesday, January 26** from 4 am that day to 4 am the next day **Thursday, January 27**. This is a full 24-hour period that we'd like for you to report on.

Example Travel Day:



Trip 1: 8:00 am – 8:25 am
Left home to drop off child at school

Trip 2: 8:30 am – 8:45 am
Drove from school to work

Trip 3: 11:45 am – 11:55 am
Walked from work to pick up lunch

Trip 4: 12:10 pm – 12:20 pm
Returned to work

Trip 5: 5:05 pm – 5:30 pm
Drove to sports field to pick up child

Trip 6: 5:55 pm – 6:15 pm
Drove back home with child

Trip 7: 7:00 pm – 7:30 pm
Stole bikes around the neighborhood

Were you home at 4:00am on **Wednesday, January 26**?

Yes

No

Next →

TDOT 2022 NextGen NHTS Add-on Study



TDOT Add-on Sample Overview

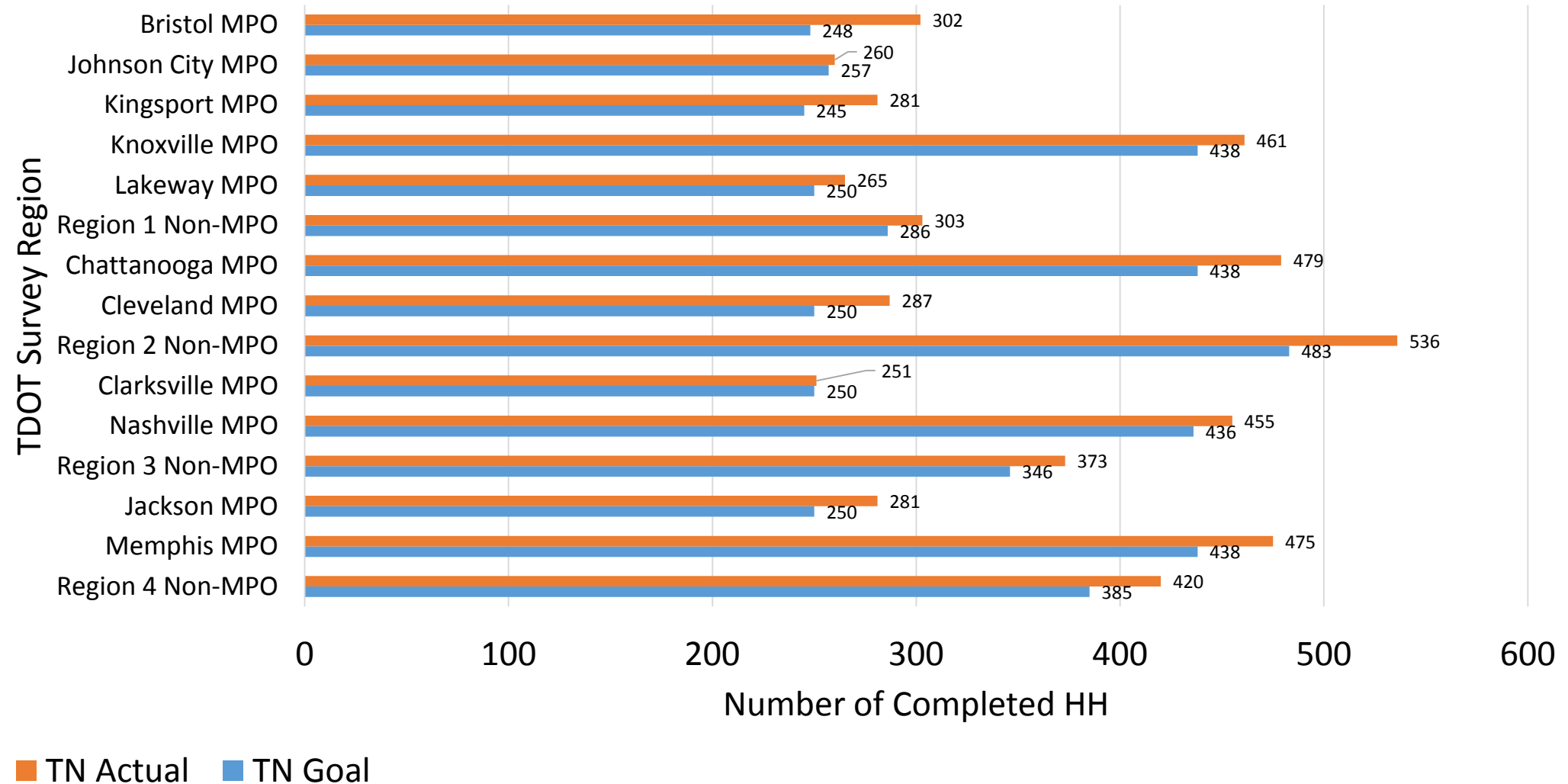
- 5000 HH add-on purchase
- Data collected across 365 days
- Day of week balance: 85% weekday/15% weekend
- Add-on questions:
 - Transportation investment priorities
 - Reasons why not walk/bike more often
 - Factors influencing transit as mode to work/school
 - Willingness to Pay (simple static stated choice design)
 - Maximum willing to pay in tolls to save x minutes of work/school commute
 - Maximum willing to pay in tolls to save x minutes traveling to shop or for entertainment
 - Agree to participate in future surveys





Preliminary Results (subject to change)

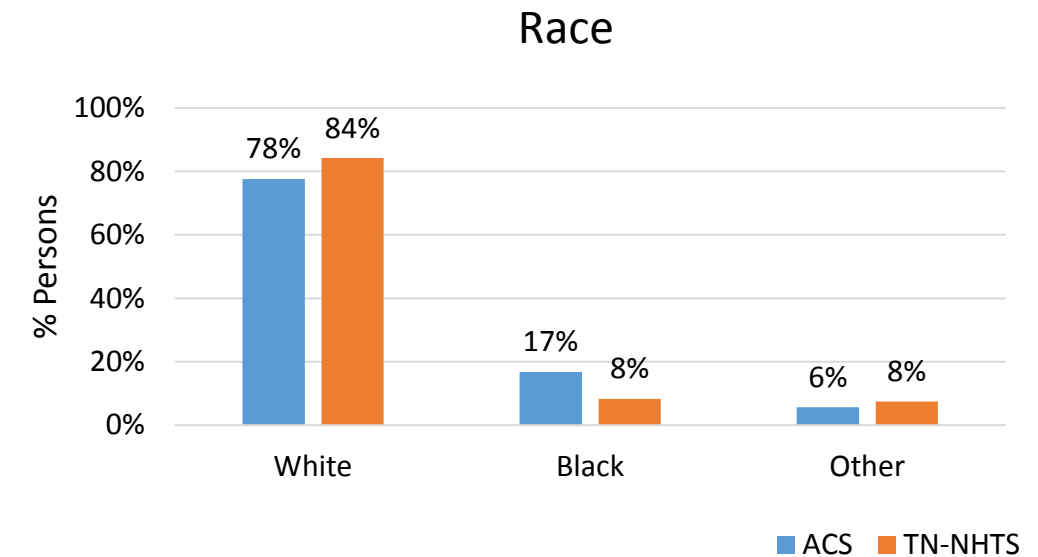
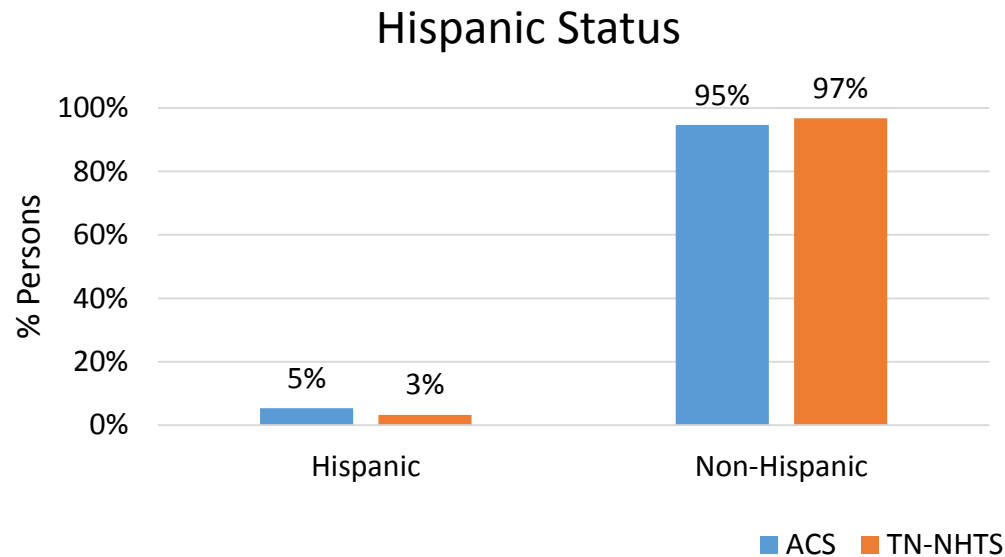
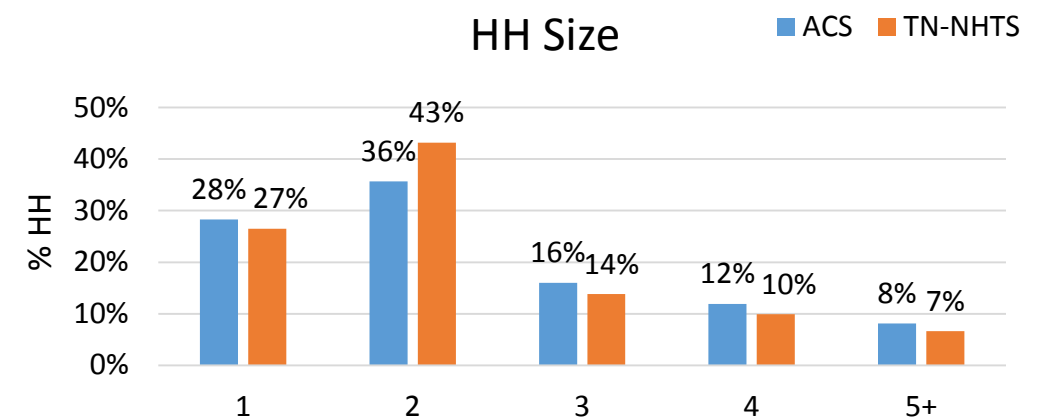
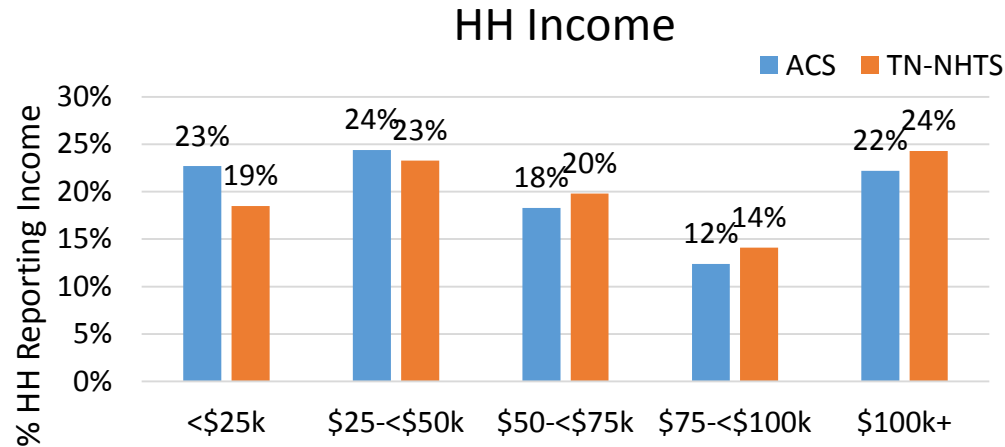
TDOT Goals vs. Actual: 5000 vs. 5429* HH





Preliminary Results (subject to change)

TDOT Demographics (unweighted)





Schedule

- Data collection ended January 19,2023
- Dataset complete.
- Final dataset undergoing QC
 - Ipsos: zero trip persons, verify completes, final file QC
 - FHWA QC: structural and behavioral (receive 4/28)
 - TDOT receives unweighted base file: May*
- Weighting underway
 - FHWA receives draft weights to review: end of May
 - TDOT receives final weighted file: June/July (pending May review)

*assumes 4/28 file is complete

TDOT Add-on Data Plans

Tools for OD and Core Survey Data (Live Demonstrations)

<https://nhts.ornl.gov/od/> and <https://nhts.ornl.gov/>



OD Data Online Tools

NextGen NHTS OD Data Portal

Home Downloads Documentation Summary Analytics

NextGen NHTS National OD Data

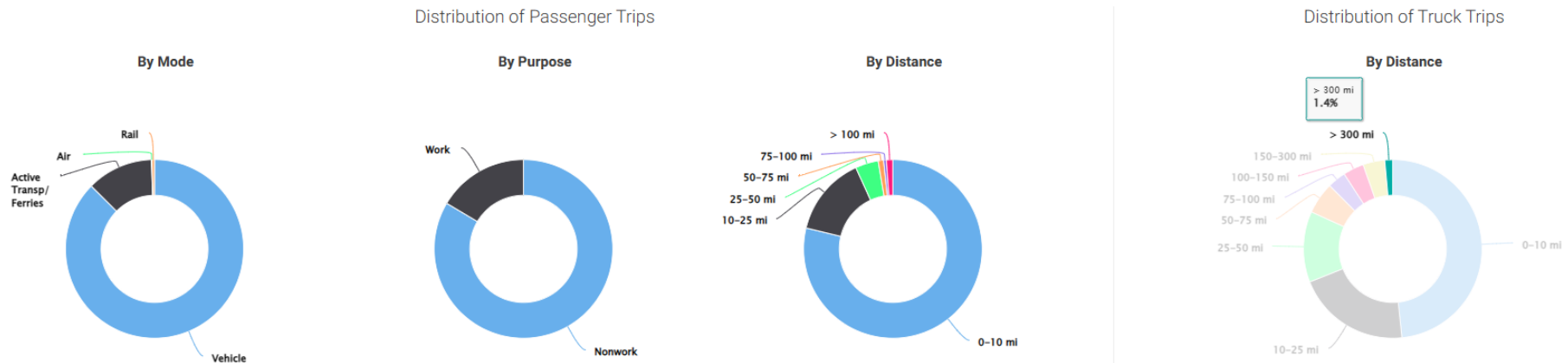
Conducted by the Federal Highway Administration (FHWA), the NHTS is the authoritative source on the travel behavior of the American public. FHWA has launched the Next-Generation National Household Travel Survey (NextGen NHTS) to establish a more continuous travel monitoring program with national and local data products. In addition to the probabilistic core travel survey, NextGen NHTS also includes an origin-destination (OD) data program that produces multimodal passenger and truck travel OD tables at the national and local levels from passively collected data sources.

[Downloads](#) [Documentation](#) [Contact Us](#)

Announcements

- NEW** The updated [2021 OD data](#) have been released. See [the methodology addendum](#) for details.
- NEW** The updated [2020 passenger OD data component \(v2\)](#) have been released. See [the updated methodology](#) for details.
- The updated [2020 truck OD data component \(v2\)](#) have been released. See [the release note](#) for details.

2020 Data Highlights





NHTS website: <https://nhts.ornl.gov/>

Explore NHTS Data - 2017 Table Designer or Use the [Classic View](#)
Check Out the [Online Codebook Browser](#)

Email Address
We'll never share your email with anyone else.

Analysis Variable ← Step 1

Statistics
Step 5

- ☒ Sample Size
- ☒ Sum
- ☐ Cell percent
- ☐ Row percent
- ☐ Column percent
- ☒ Exclude Missing (e.g., appropriate skip)
- ☐ Margin of Error (95% confidence interval)

Report Title ← Step 4
Alpha-numeric characters only (a-z, 0-9)

Row Variable Select Category

Column Variable Select Category

Page Variable Select Category

Step 2

Step 6

Submit Reset

Step 3

Steps to Generate Table:
Transit Trips by Household
Respondent Race by Household
Income

Step 1. Select Analysis Variable
Step 2. Select Tabulation Variables
Step 3. Select Data Subsets (in this
example, transit trips only)
Step 4. Enter Report Title
Step 5. Select Statistics
Step 6. Click Submit button

User's Manual:
https://nhts.ornl.gov/assets/DE_public.pdf



2017 NHTS Transferability Variables

Size of Region

- CDIVMSAR: Grouping of household by combination of census division, MSA status, and presence of a subway system when population greater than 1 million
- MSACAT: Metropolitan Statistical Area (MSA) category for the household's home address
- MSASIZE: Population size category of the Metropolitan Statistical Area (MSA)

Claritas Variables

- HTEEMPDN: Category of workers per square mile in the census tract of the household's home location
- HTHTNRNT, HBHTNRNT: Category of the percent of renter-occupied housing in the census tract/block group of the household's home location
- HTPPOPDN, HBPPOPDN: Category of population density (persons per square mile) in the census tract/block group of the household's home location
- HTRES DN, HBRES DN: Category of housing units per square mile in the census block group of the household's home location
- HBHUR: Definition for Urbanicity:
https://nhts.ornl.gov/assets/Assessing_the_Role_of_Urbanicity.pdf
- Similar variables available to describe the trip origin and destination

Questions and Discussion