



2016 Greater Triangle Household Travel Survey

NCMUG

Wednesday, November 16, 2016

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Presentation Outline



- Survey purpose
- Sampling
- Survey design
 - Web-Based/Self-Administered Survey
 - GPS Smartphone survey
- Lessons learned & comparisons to earlier surveys

Purpose and Sponsors



Purpose

To collect travel behavior data for updating the Triangle Regional Model

Sponsors

NCDOT

Durham Chapel Hill Carrboro MPO

Capital Area MPO

GoTriangle

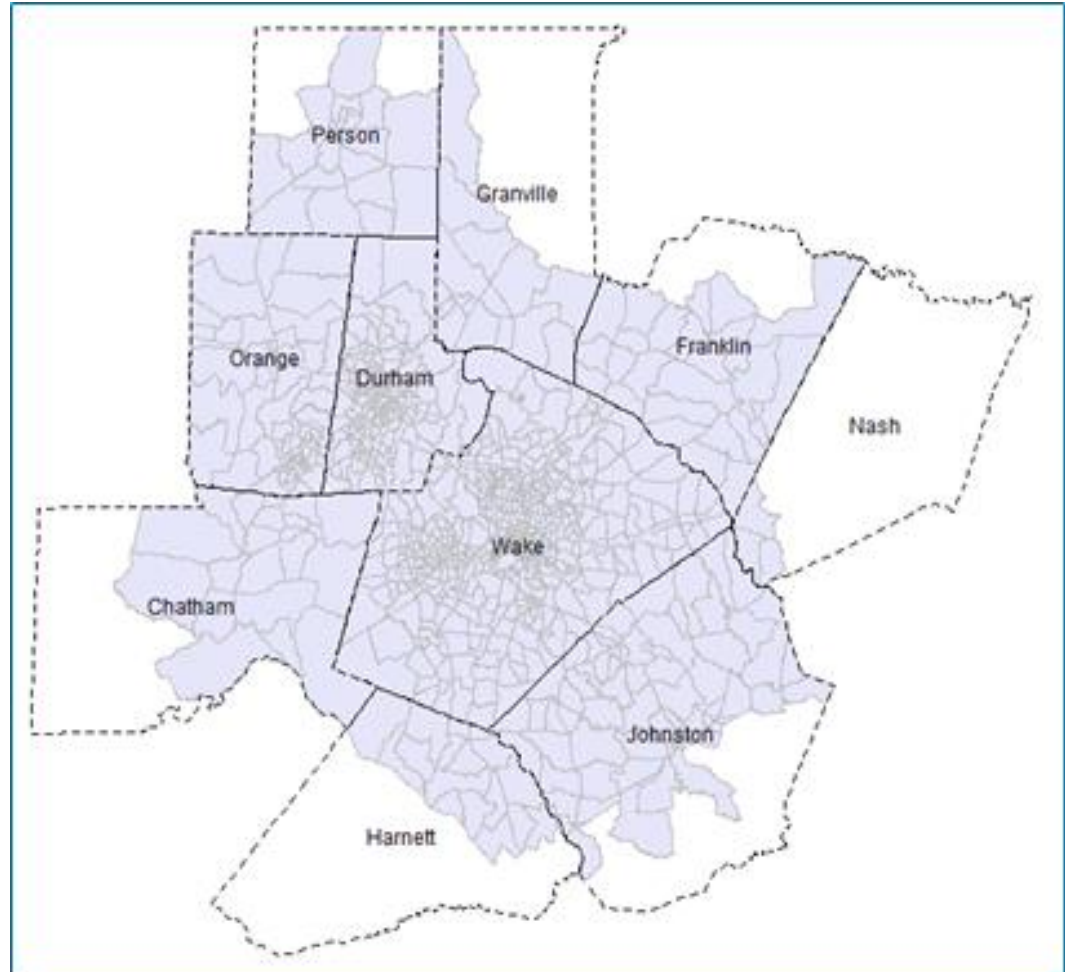
Sample Universe



Census Blockgroups in the TRM v6 study area

10 counties:

- Chatham [part]
- Durham
- Franklin [part]
- Granville [part]
- Harnett [part]
- Johnson [part]
- Orange
- Person [part]
- Wake



Sampling Strategy



- **Stratified Random Sample**

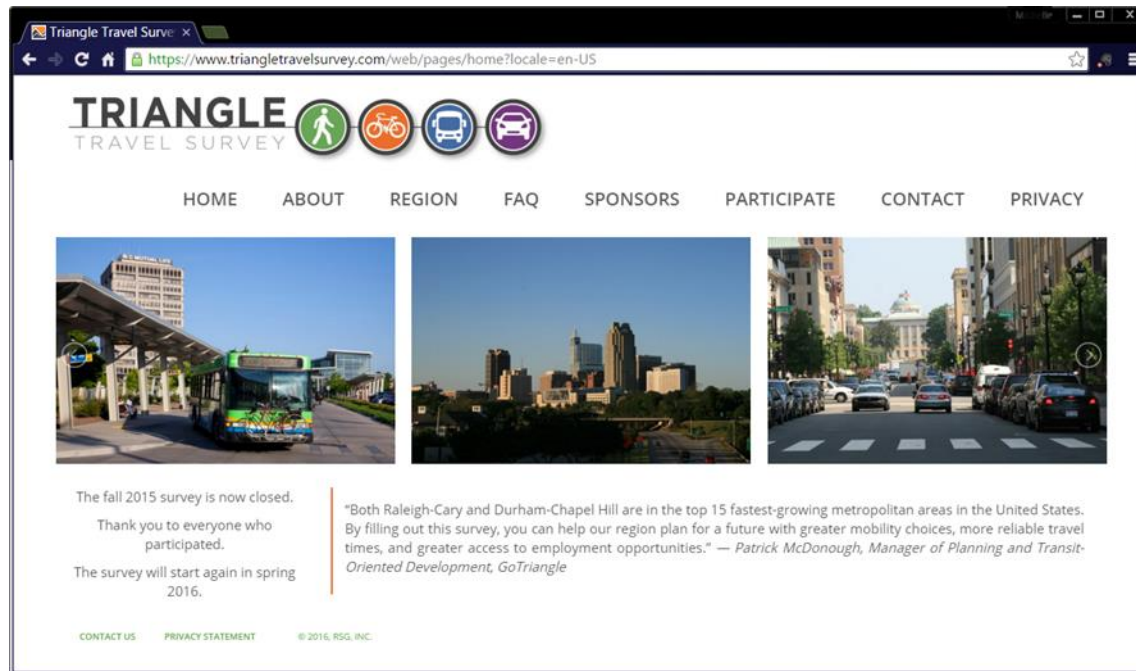
- Address based sample using USPS delivery addresses for block group geography
- Goal: 4,000 completed surveys

- **Hard to Reach Household Groups**

Block groups were identified for targeted sampling of 200 each with overlap:

- Low income households
- Zero vehicle households
- Transit using households
- Households with college or university students

Survey Webpage



Household Recruitment



- Mail out invitation to participate with link to web based recruitment and HH password, or could participate by telephone
- Web based recruitment collected information for all household members and vehicles, to be available later while retrieving travel data

Web-Based Household Recruitment



TRIANGLE TRAVEL SURVEY



Please tell us about yourself.

Viewing 1 of 2 member(s).

Initials or nickname

Gender

Please select...

Age

18

Primary type of employment

Employed part time (paid)

Number of jobs

Please select...

Currently a student?

Part-time student

Primary type of school

Please select...

Highest level of education completed

Please select...

Has a valid driver's license?

Yes, driver's license

Vehicle used most often

Please select...

How often typically travels on a toll road?

Please select...

« Previous

Next »

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Web-Based Activity Data Retrieval



- On assigned travel day, carry activity log
- After travel day, web retrieval is opened and all household members enter activities (adults to log activities for children <18), locations on a map, and travel information such as departure and arrival time, mode of travel, and parking/transit/toll cost
- Households had option to provide activity and travel information over the phone if desired (460 did so out of 4,184), similar to the conventional CATI

Web-Based Activity Retrieval



Please list, in order, all the places you went between 3 AM on Tuesday, May 24, 2016 and 3 AM on Wednesday, May 25, 2016.

Please give a short description for each unique/different place. The places where you started and ended the day **are already filled in**. When all your places are listed below, click "Next" to continue.

Click and drag a place to re-order the list. Click the **+** button next to a place to add a new place. Click the **-** button next to a place to remove it.

I started the day at:	HOME	+
Then went to:	WORK - PRIMARY	- +
I ended the day at:	HOME	

Example Travel Day

I **started** the day at: Home

Then went to: Wiley Elementary

Then went to: Work

Then went to: Chase Bank

Then went to: Work

Then went to: Panera Bread

Then went to: Work

Then went to: Wiley Elementary

Then went to: Dentist

Then went to: Home

Then went to: Park

I **ended** the day at: Home

« Previous Next »

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Web-Based Retrieval Locations



TRIANGLE

Please locate:

Locate by address/business name

To search by address or business name:

1. Enter a street address or business name in the box below
2. Click on the blue location pin
3. Click on the correct location from the list that appears
4. Once the location is selected, it will appear on the map.

Example: IBM, Raleigh, NC
Example: 200 Perry Street, Raleigh, NC
Example: Albany St. & Sunset Ave., Durham, NC

We'll now ask you to locate each place you went.

Click a place below to begin locating it on the map. Once you've located a place, its button will turn green. If you want to change the location of a place, please click on the place name again.

Once you have located all of the places in the list, click "Next" to continue.

HOME: Apex, NC 27523, USA

WORK - PRIMARY: 3008 Old Orchard Rd, Raleigh, NC 27607, USA

DINNER:

« Previous Next »

Grissom
Youngsville
Wake Forest
Rolesville
NORTH RALEIGH
Cary
Raleigh
Knightdale
Garner
Apex
Morrisville
Wilsonville

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CAMPO

Web-Based Retrieval Trip Data



TRIANGLE
TRAVEL SURVEY

Please tell us about your trip from **HOME** to **WORK - PRIMARY**.

Viewing trip 1 of 3 trip(s).

Time departed from **HOME**

6 AM ▾ 02 ▾

Time arrived at **WORK - PRIMARY**

6 AM ▾ 30 ▾

Household members who traveled on trip
(select all that apply):

☐ Person2
☒ Just me (no other household members)

Number of other people / non-household
members (e.g. friends, co-workers, etc.) who
specifically traveled with me on trip:

Nobody (0 people) ▾

Main activity at **WORK - PRIMARY**

2 - Working (for pay) at work or home ▾

Main way traveled on trip

Vehicle in household (or motorcycle/moped) ▾

Which household vehicle was used?

2015 BMW 3 series ▾

Did you travel on a toll road to get to **WORK -
PRIMARY**?

No ▾

Where was the vehicle parked at/near **WORK -
PRIMARY**?

Parking lot/garage at destination ▾

How did you pay for parking?

Please select... ▾

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Web-Based: Instrument Design



- Much effort designing, testing, checking to prevent logic errors and reduce respondent burden
- Featured a trip copying function to reduce burden for HH members sharing the same trip

Comparison: Web-Based vs. CATI



Web-Based	CATI
Respondent completes survey online	Respondent interviewed over telephone
Responses can be entered anytime	Responses recorded when called
Locations placed on map by respondent	Locations geocoded by interviewer (or batch)
Shared travel can be copied for person 2,3, etc.	Shared travel questions repeated for person 2
Self completed survey allows inconsistent interpretations of activity categories	Interviewers can provide clarifications for respondents for consistency
Key costs are: printing/mailing/programming/testing	Key cost is interviewer time
\$177 (including GPS smartphone)	\$164 (2006 survey in 2015 estimated \$)

GPS Smartphone Survey



Purpose:

Provide a basis for adjusting web-based survey for unreported trips by age & purpose

Address low response rates for young respondents

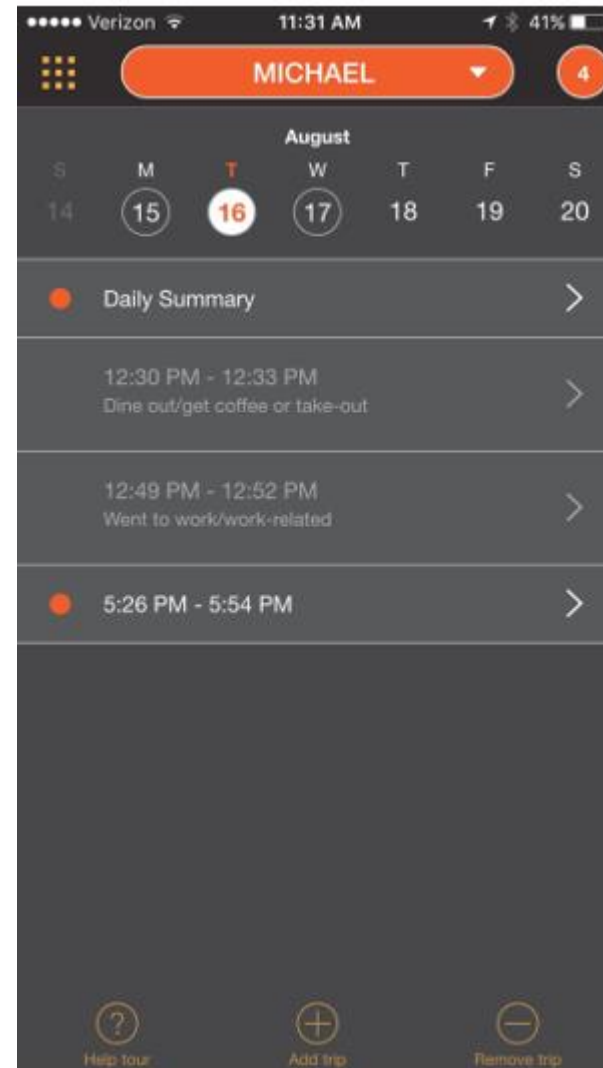
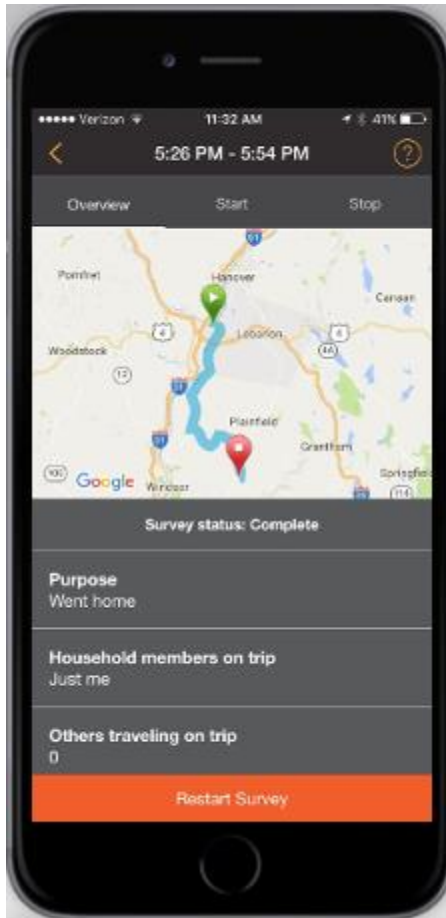
Provide rich data set for future research

GPS Smartphone Survey

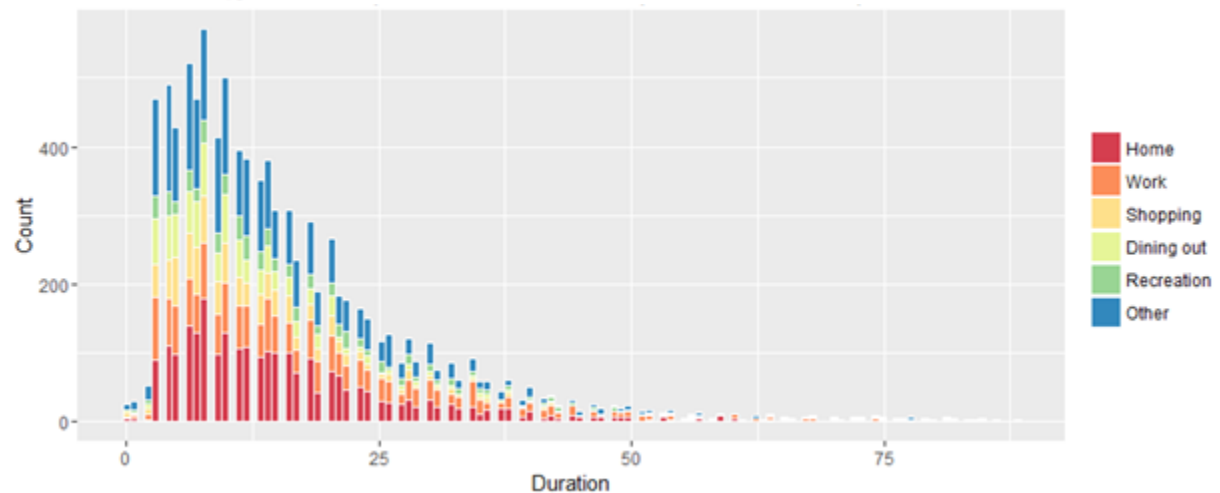
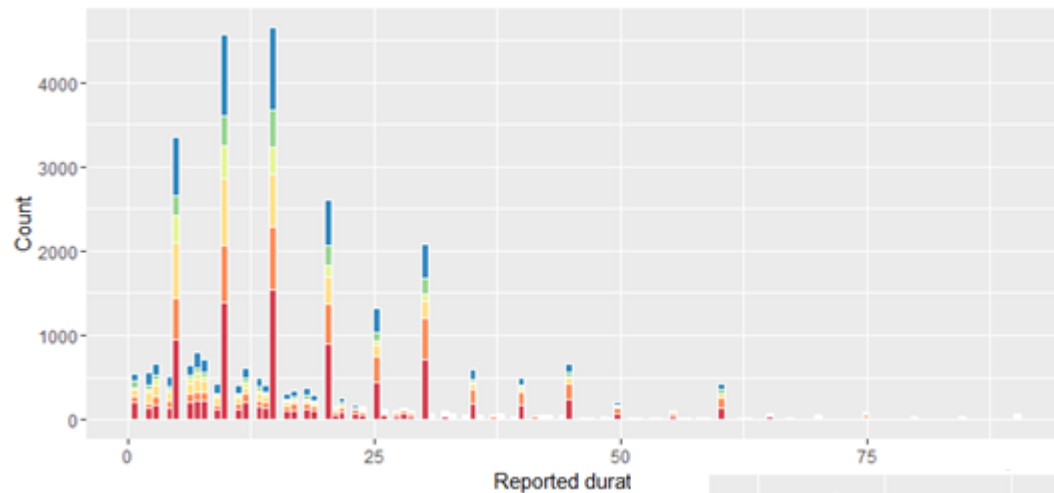


- Households that completed the main survey and indicated they had an eligible (iPhone or Android) smartphone were contacted and asked to participate in the smartphone survey by downloading the app
- All recruit information already entered
- Participating households surveyed for 3 days
- When phone detects a stop (based on GPS and accelerometer) has been made, it provides a survey screen to fill in how the trip was made, and purpose

GPS Smartphone Survey



Reported Activity Duration



GPS Smartphone Survey



- Issues with GPS smartphones different from web-based survey
 - GPS smartphone solves some issues with web-based surveys like time and location of origins and destinations – people do not remember trips and times
 - Phones lose GPS signal and miss stops/trips
 - Survey is simplified for smartphone App to be easy to use

Questions and Answers

