2016 Greater Triangle Household Travel Survey

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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

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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

http://www.itre.ncsu.edu
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
- Age: 18
- Primary type of employment: Employed part time (paid)
- Number of jobs
- Currently a student: Part-time student
- Primary type of school
- Highest level of education completed
- Has a valid driver’s license: Yes, driver’s license
- Vehicle used most often
- How often typically travels on a toll road

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CAMPO

DCHC

GO Triangle

ITRE

http://www.itre.ncsu.edu
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.

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

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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**
Web-Based Retrieval Trip Data

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:
- 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...

My Travel Day

Trip #1: HOME to WORK - PRIMARY

Trip #2: WORK - PRIMARY to DINNER

Trip #3: DINNER to HOME
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

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

http://www.itre.ncsu.edu
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