

# Telecommute Behavior and Implications on Modeling

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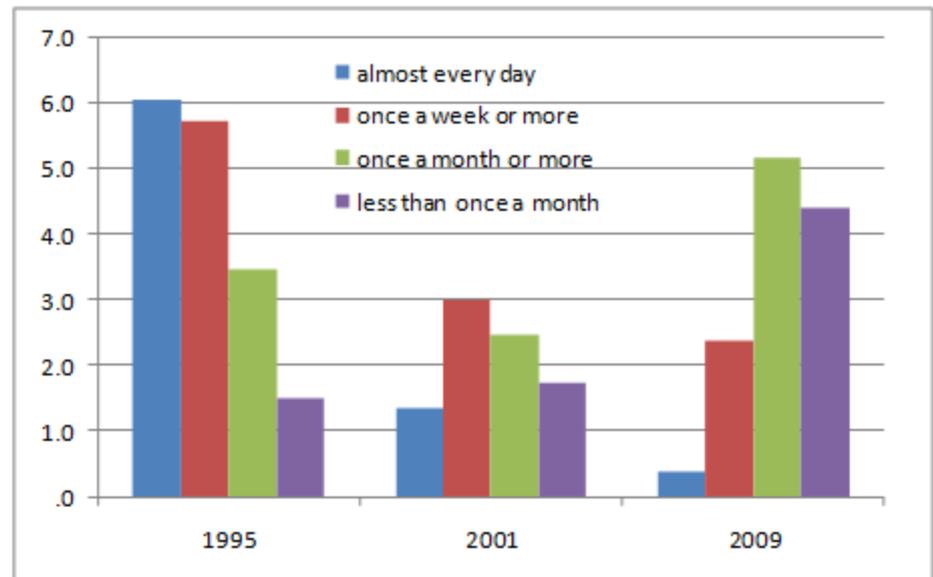
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- Background and Objectives
- Data
- Telecommuters
- Impacts on Daily Travel Activity
- Findings

# Outline

- Telecommute may involve the spatial and/or temporal displacement of HBW travel.
- Complications of self-employed, home-based business owners, multiple job workers, part-day home working, etc.

## Background



- Explore the approaches to defining and gauging telecommute behavior.
- Model the probability and frequency of telecommuting.
- Examine the implications of telecommuting on travelers' other daily travel activities.

## Objectives

- The Regional Household Travel Survey (RHTS) conducted in the New York metropolitan area in 2010-2011.

- 16,000 households
- 37,000 persons
- 124,000 trips
- 46,000 tours
- 18,744 workers
- 4,864 telecommuters
- 3,000 telecommute occasions
- 5,000 no travel
- 346 telecommute
- 4,500 other at-home

## Data

**PLACE 1**

**Begin recording your travel here**

For this diary, the day begins at 3 a.m. when most people are home asleep. If this is the case with you, check "My home," then record all the activities you did before leaving and the exact time you left for the first time.

**IF YOU RIDE THE BUS/TRAIN OR CARPOOL/VANPOOL:**  
Please record each bus stop, train station, or carpool/vanpool meeting place where you got on or off as a separate PLACE.

**A** WHERE were you at 3 a.m.?  My Home  My Second Job  My Primary Job  Transit stop  My School  Other place

Please tell us the NAME, TYPE, and ADDRESS of this PLACE:

Name of Other Place OR Transit stop \_\_\_\_\_ Type of Place (restaurant, bookstore, etc.) \_\_\_\_\_

Street address OR nearest cross-streets \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**B** What ACTIVITIES did you do there? (Write code(s) from LIST 1 on flap of the back cover)

Main activity (code): \_\_\_\_\_ Other activity (code): \_\_\_\_\_

**C** What TIME did you LEAVE? \_\_\_\_\_ : \_\_\_\_\_  am  pm → Next PLACE (Please record exact time)  Did not leave → CONTINUE BELOW

**D** What is the MAIN reason you didn't leave this place today?

I was sick  I am home-bound, elderly, or disabled  
 Vacation or personal day  Worked at home (for pay)  
 Child was sick  Not scheduled to work  
 Other household member was sick  Worked around home (not for pay)  
 Other: \_\_\_\_\_

**IF YOU DIDN'T LEAVE THIS PLACE TODAY:**  
You are done. Thank you.

**PLACE 2**

**A** WHAT is this PLACE?  My Home  My Second Job  My Primary Job  Transit Stop  My School  Other Place

Please tell us the NAME, TYPE, and ADDRESS of this PLACE:

Name of Other Place OR Transit stop \_\_\_\_\_ Type of Place (restaurant, bookstore, etc.) \_\_\_\_\_

Street address OR nearest cross-streets \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

**B** What TIME did you ARRIVE? (Exact time) \_\_\_\_\_ : \_\_\_\_\_  am  pm

**C** HOW did you TRAVEL there? (Write code from LIST 2 on flap) Code: \_\_\_\_\_

**D** How many people traveled with you? (DON'T include yourself) \_\_\_\_\_

**E** Of those, how many were household members? \_\_\_\_\_

**F** If traveled by PRIVATE VEHICLE: **OR** If traveled by PUBLIC TRANSIT:

Which household vehicle did you use? Year/Make/Model: \_\_\_\_\_  
 Did not use a household vehicle

Did you get out of your vehicle?  
 Yes  No (drive-thru, drop off/pick up)

If you parked at this destination, where did you park?  
 Did not park  Parking lot  
 Parking garage  Street  
 Residential garage  Driveway  
 Other: \_\_\_\_\_

What are the nearest cross-streets to this parking location?  
 \_\_\_\_\_

How much did you pay to park? \$ \_\_\_\_\_ per \_\_\_\_\_  Did not pay

If you paid a toll, how did you pay?  
 Cash  Did not use a toll  
 EZPass  Other: \_\_\_\_\_

How much did the toll cost? \$ \_\_\_\_\_

What was the Route/Line?  
 NYC Transit (Subway/Bus)  
 Long Island Rail Road  
 Metro-North Railroad  
 Staten Island Railway  
 Long Island Bus  
 Westchester Bee-Line  
 New Jersey Transit  
 PATH Train  
 Amtrak  
 Hudson-Bergen LRT  
 Newark LRT  
 River Line LRT  
 Roosevelt Island Tram  
 Air Train  
 Other: \_\_\_\_\_

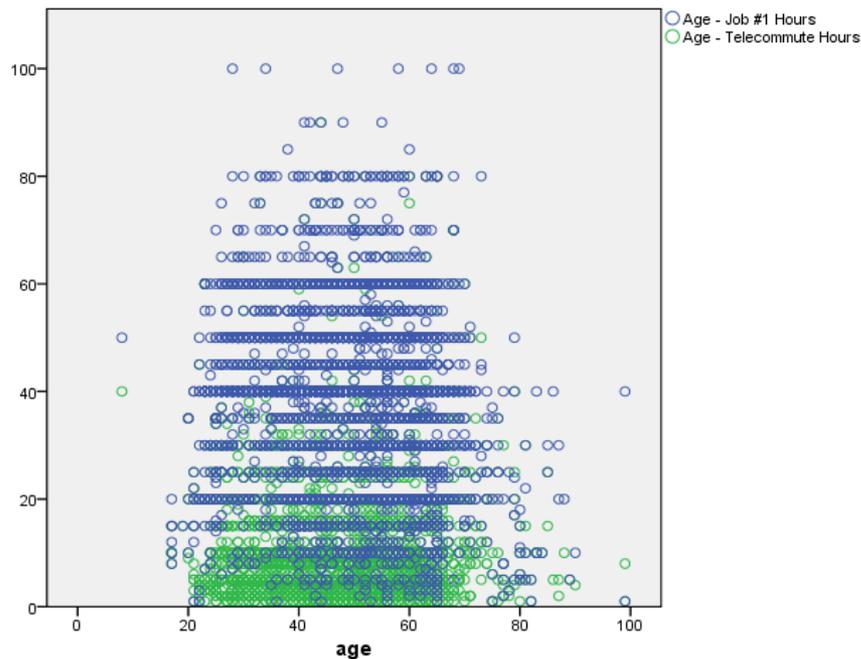
How did you pay for this trip?  
 Cash: \$ \_\_\_\_\_  
 Pass: Type: \_\_\_\_\_

How much did the pass cost? \$ \_\_\_\_\_ per \_\_\_\_\_

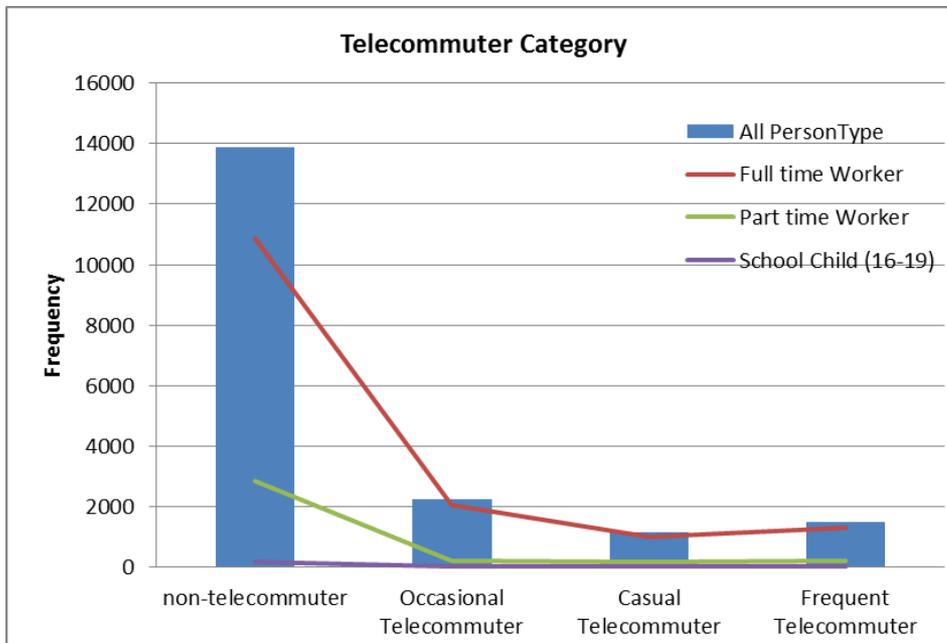
**G** What ACTIVITIES did you do there? (Write code(s) from LIST 1 on flap)

Main activity (code): \_\_\_\_\_ Other activity (code): \_\_\_\_\_

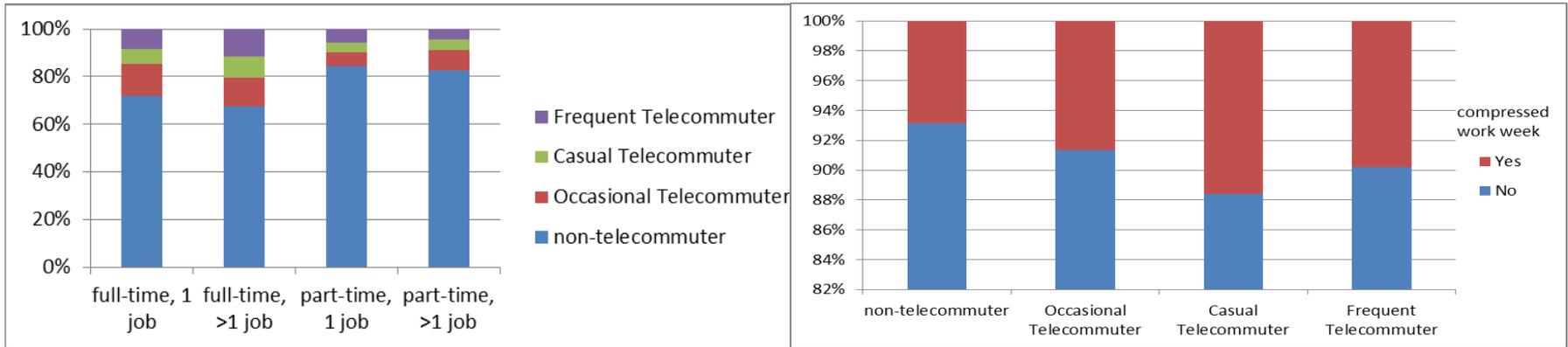
**H** What TIME did you LEAVE? \_\_\_\_\_ : \_\_\_\_\_  am  pm → Next PLACE (Please record exact time)  Did not leave → DONE



- $TCshare = TChrs/jobhrs$
- Cluster Analysis
  - Occasional  $0 < TCshare \leq .31$
  - Casual  $.31 < TCshare \leq .71$
  - Frequent  $.71 < TCshare \leq 1$



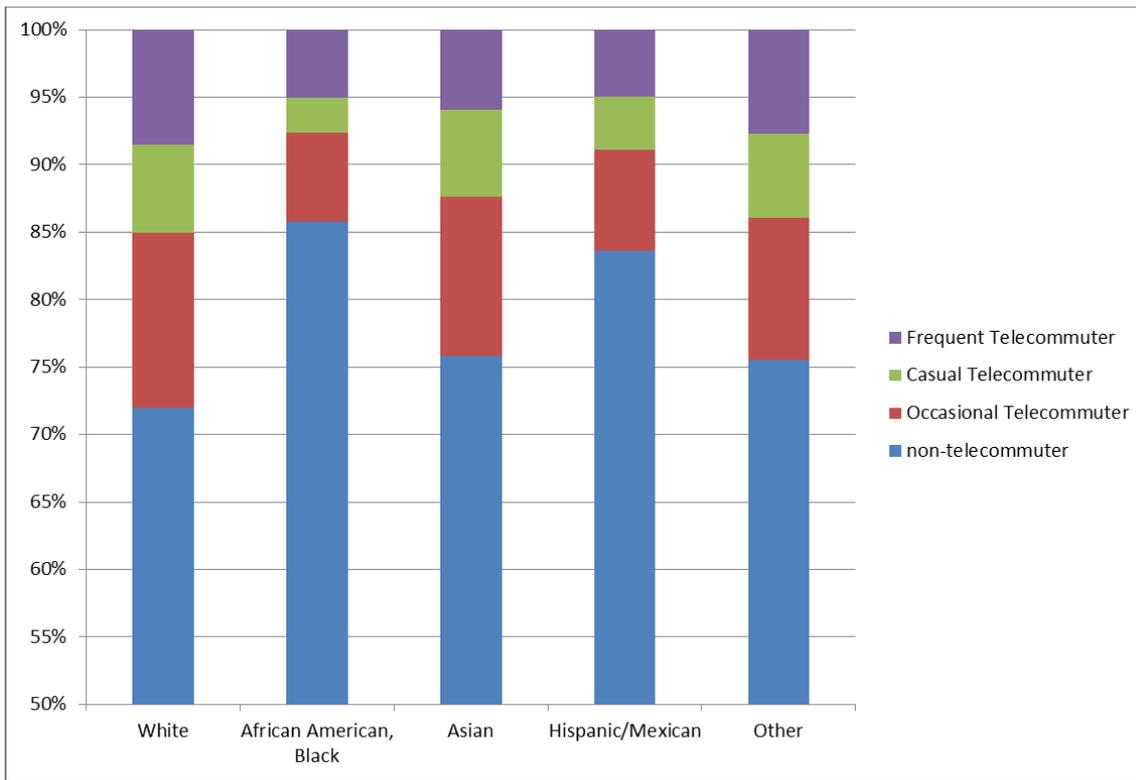
## Telecommuter Category



- Industry
  - Real estate
  - Arts, recreation
  - Information, trade, technical
- Typical travel time to work

	Mean	N	Std. Deviation	Median
non-telecommuter	34.88	12641	25.935	30.00
Occasional Telecommuter	40.66	1998	28.849	35.00
Casual Telecommuter	44.29	807	33.864	40.00
Frequent Telecommuter	33.99	339	33.159	30.00
Total	36.07	15785	27.082	30.00

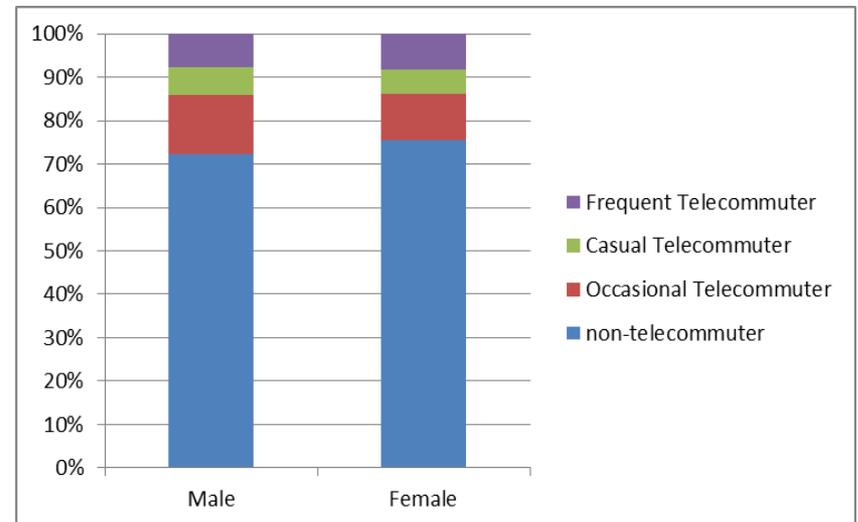
## Work Related Factors



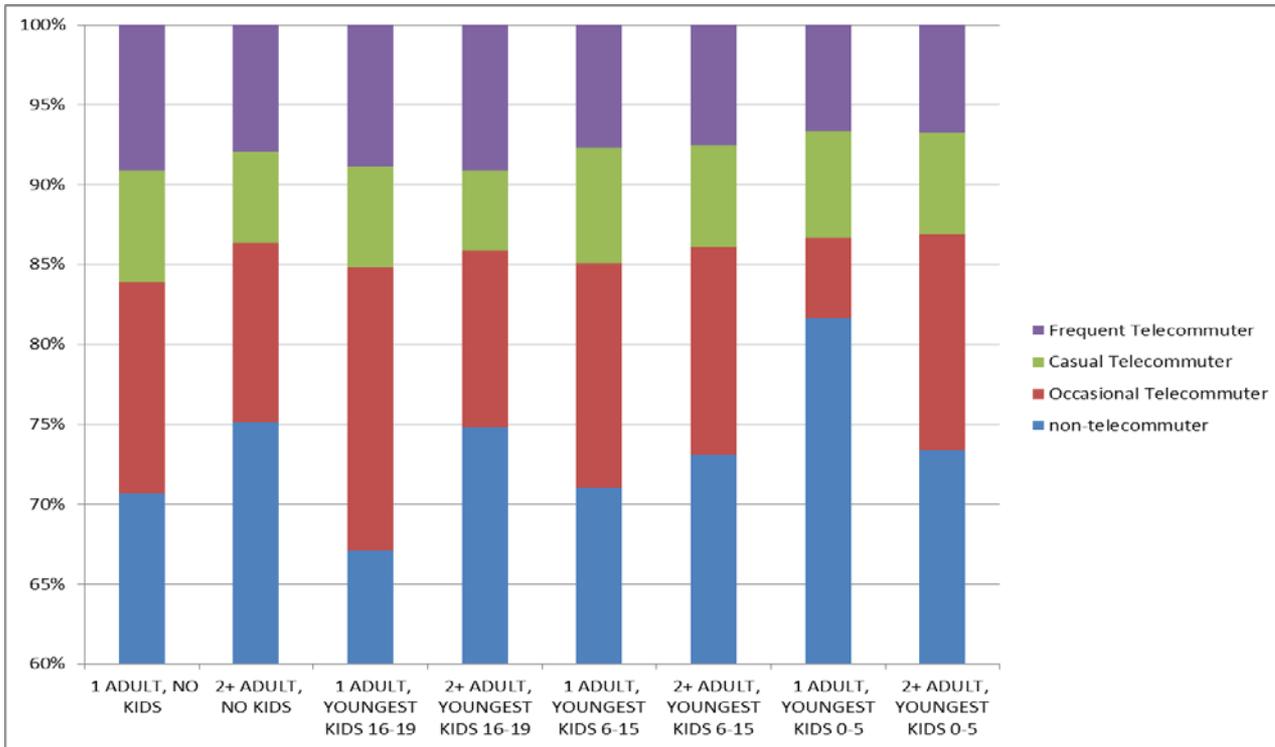
# Demographics

## Age

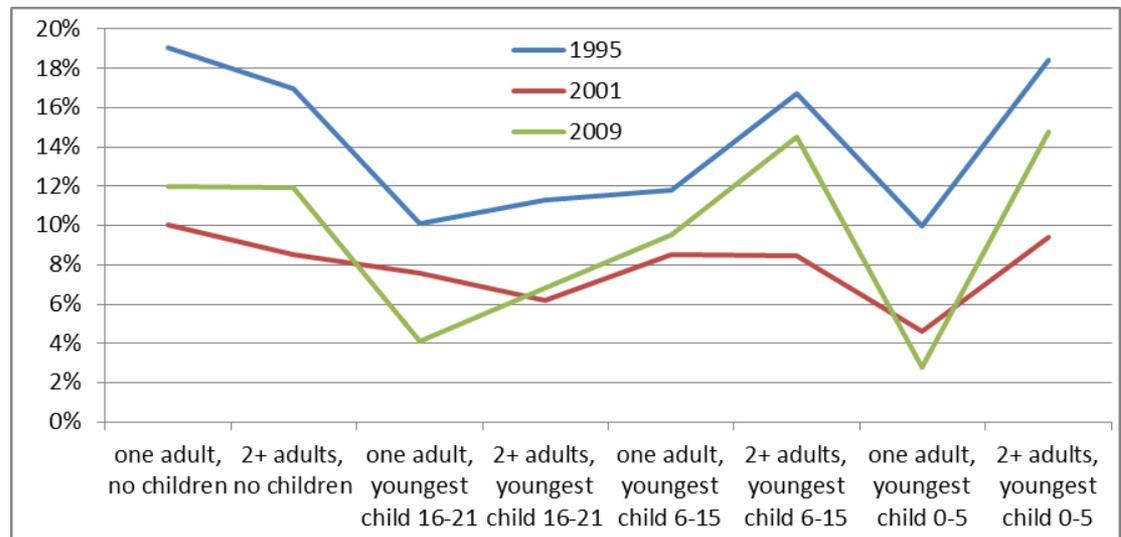
	Mean	N	Std. Deviation	Median
non-telecommuter	46.36	13502	12.854	48.00
Occasional Telecommuter	48.09	2212	11.253	49.00
Casual Telecommuter	49.43	1101	11.427	50.00
Frequent Telecommuter	50.80	1444	11.971	52.00
Total	47.10	18259	12.596	49.00



# Household Characteristics



■ lifecycle



- **Significant**

- Age
- Total work hours / Gender
- Hispanic origin
- Typical travel time to work
- Work type
- Employer type
- Compressed schedule
- Household size
- Household composition
- occupation

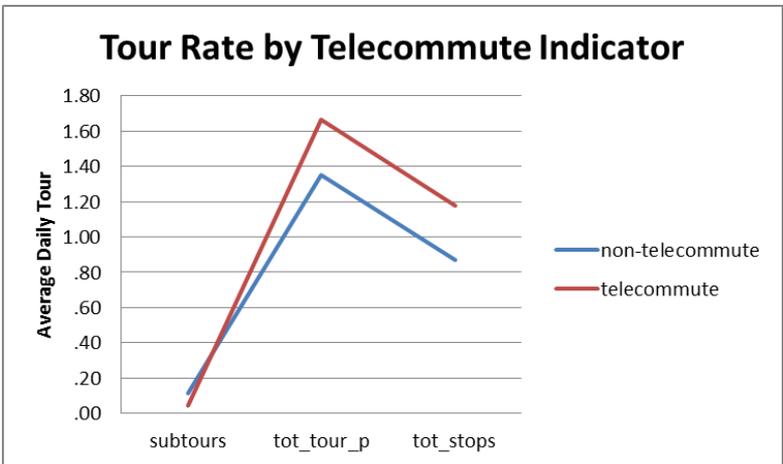
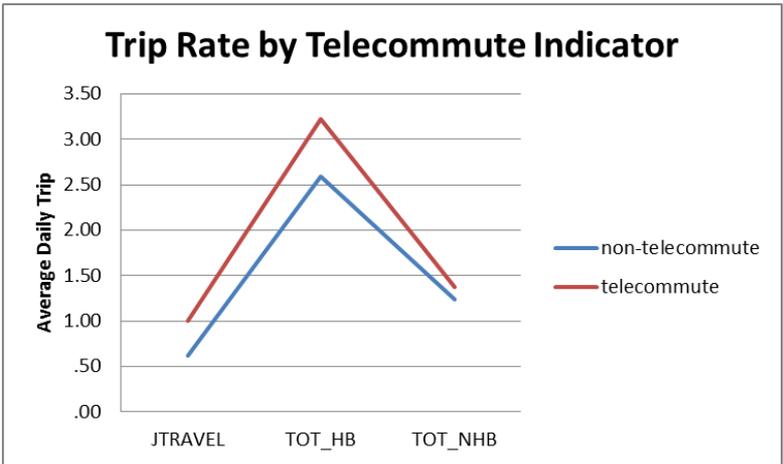
- **Insignificant**

- Number of jobs
- Household income

MNL on  
Telecommuting  
Frequency

# Observed Daily Travel Activity

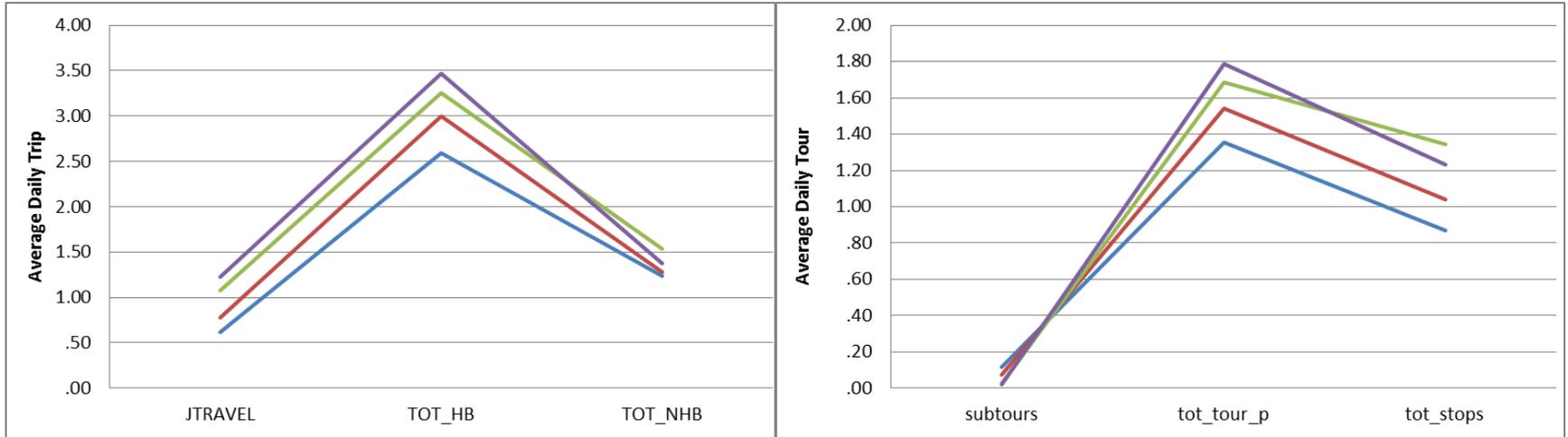
- **On the recorded travel day**
  - 18,571 workers
  - 2,018 telecommuted
    - 444 non-regular
  - 1,443 no travel (8%)
  - 346 telecommuter no travel (17%)
  - 3,102 regular telecommuters (64% out of 4,864) did not telecommute



mean	N	TRPDUR	TOURDUR
non-telecommute	15456	75.97	581.58
telecommute	1672	77.53	355.60
Total	17128	76.12	559.52

\*removed high school student workers (173), high percentage of telecommute

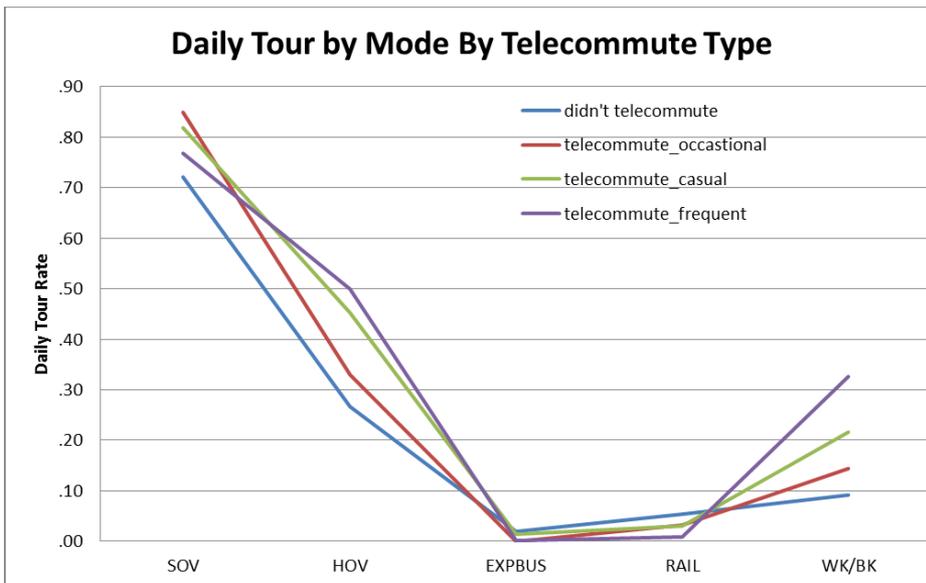
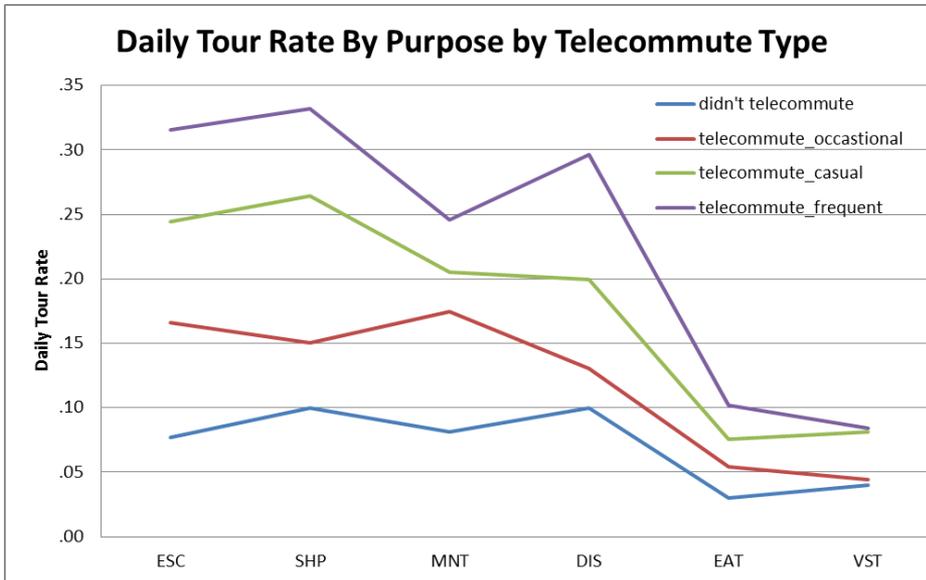
- Average daily travel frequency by detailed telecommuter category



- ANOVA tests indicate significant differences on travel indicators among the telecommuting categories.
  - Trip duration
  - Joint travel
  - Daily trip rate
  - Tour rate and chaining

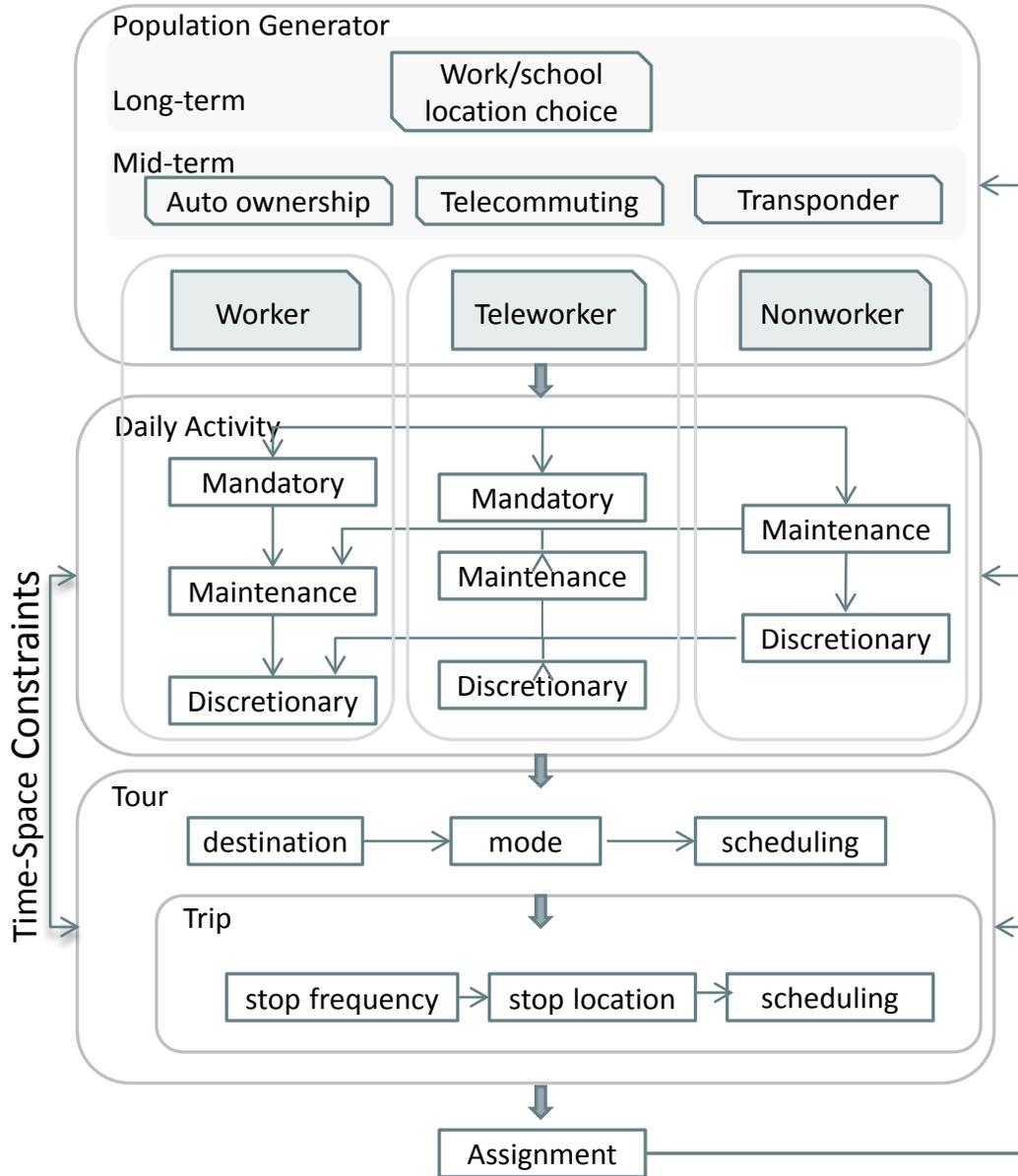
Travel Rate

# Tour Characteristics



- 26% workers telecommute on a regular basis;
- about half of them telework for up to 30% of their work hours, and about 8% telework 70% or more.
- Telecommute likelihood and frequency are influenced by work status, and household composition.
  
- About 17% of telecommute lead to zero travel.
- For those who travel, telecommuters have higher travel rate, and more chaining and joint travel than non-telecommuters;
- Telecommuters have significantly higher travel rate for other non-work activities (escort, shopping, maintenance, discretionary, and recreation);
- Also higher chances for auto and non-motorized travel.

## Summary



# Model Framework

- Jorge Argote, New York Metropolitan Transportation Council.

## Acknowledgement