9/11 Scholar Project: COVID-19 Impacts on Socioeconomic, Demographic and Travel Demand Forecasts

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Goals of the Study

- Analyze potential impacts of increase in Telework during COVID-19 in the New York Metro Area

- Grounded in **3 dimensions**:

  1. **Current** telework levels

  2. **Forecast** telework trends

  3. **Sensitivity** of Socio-Economic, Demographic and Travel Demand forecast models to changes in telework

Area of Study

- New York Metro Area

  - 28 Counties

- Forecast models work with Traffic Analysis Zones (~5k)
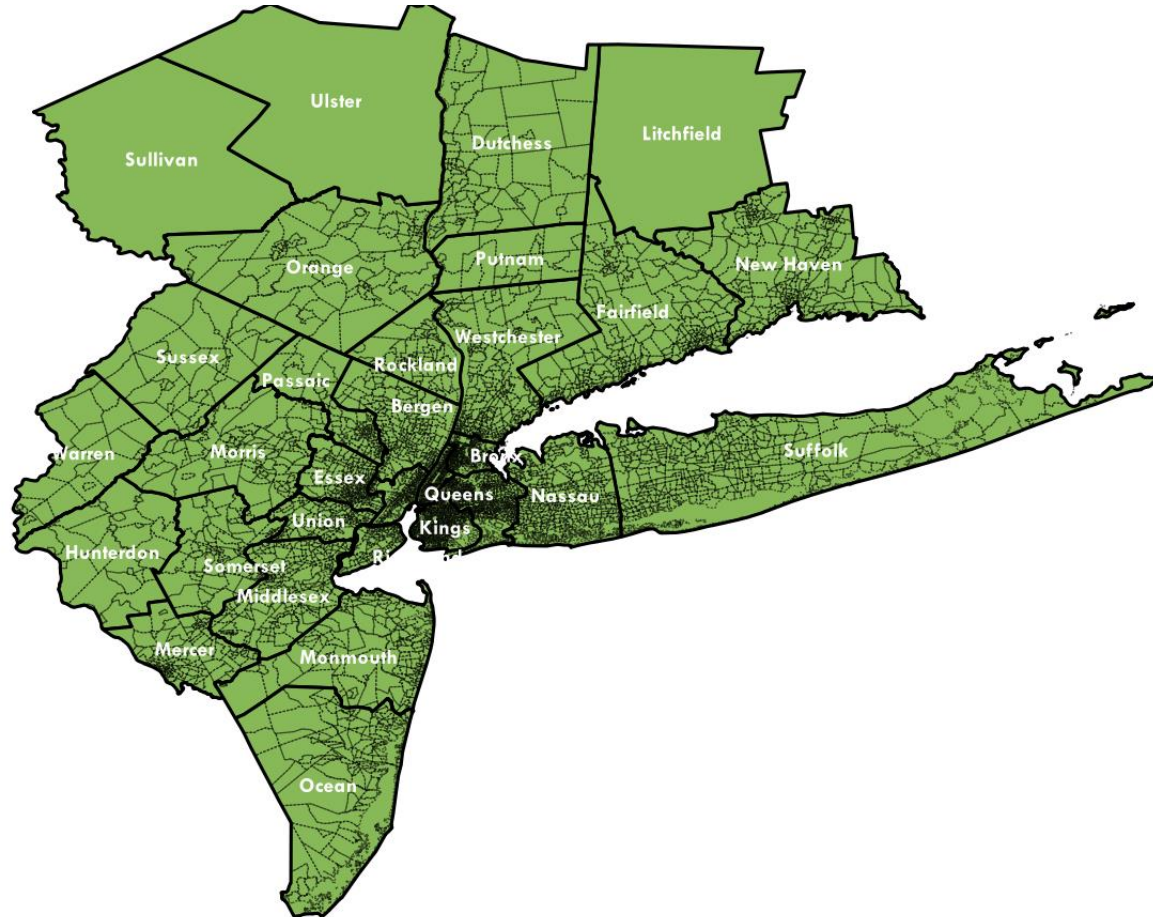
TELEWORK DURING COVID-19

Current Teleworking Estimates

Objective: measure % of jobs conducted from home full-time during COVID
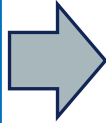
Methodology:

1. Estimate teleworking capability

2. Compare aggregate capability with limited available survey data on actual take up rates of telework
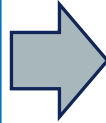
Teleworking Capability - Methodology

DETERMINE TELEWORKABLE OCCUPATIONS
(Dingel and Neiman 2020)
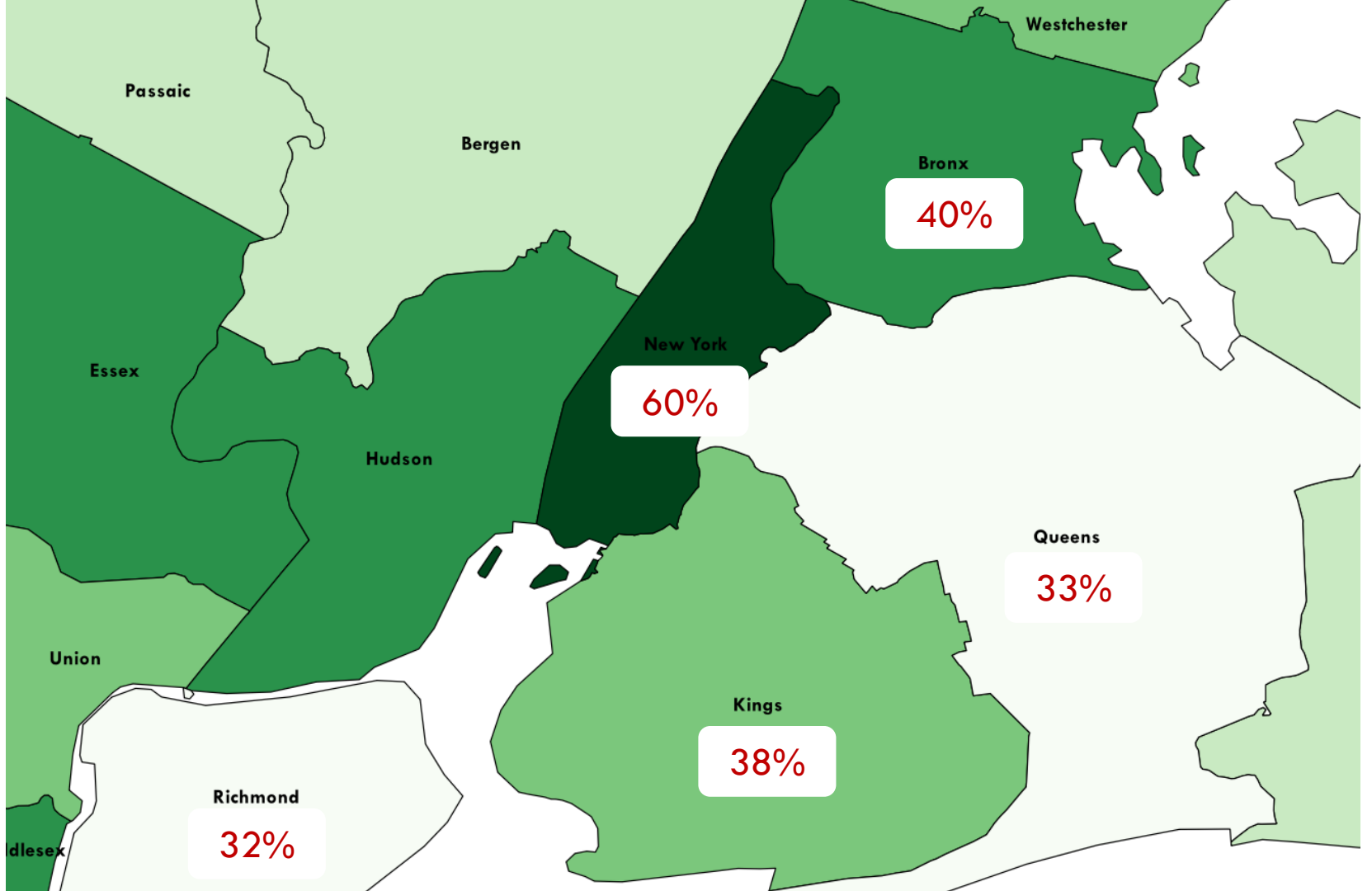
➡

MATCH WITH REGIONAL OCCUPATIONAL DATA

➡

DETERMINE # OF EMPLOYEES IN TELEWORKABLE IN NON-TELEWORK OCCUPATIONS

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COMPARE WITH AVAILABLE TRENDS ON ACTUAL TELEWORK RATES

Capability in Metro Area
42%

Census Survey Metro Area
43% - 50% (Aug20 – Mar21)
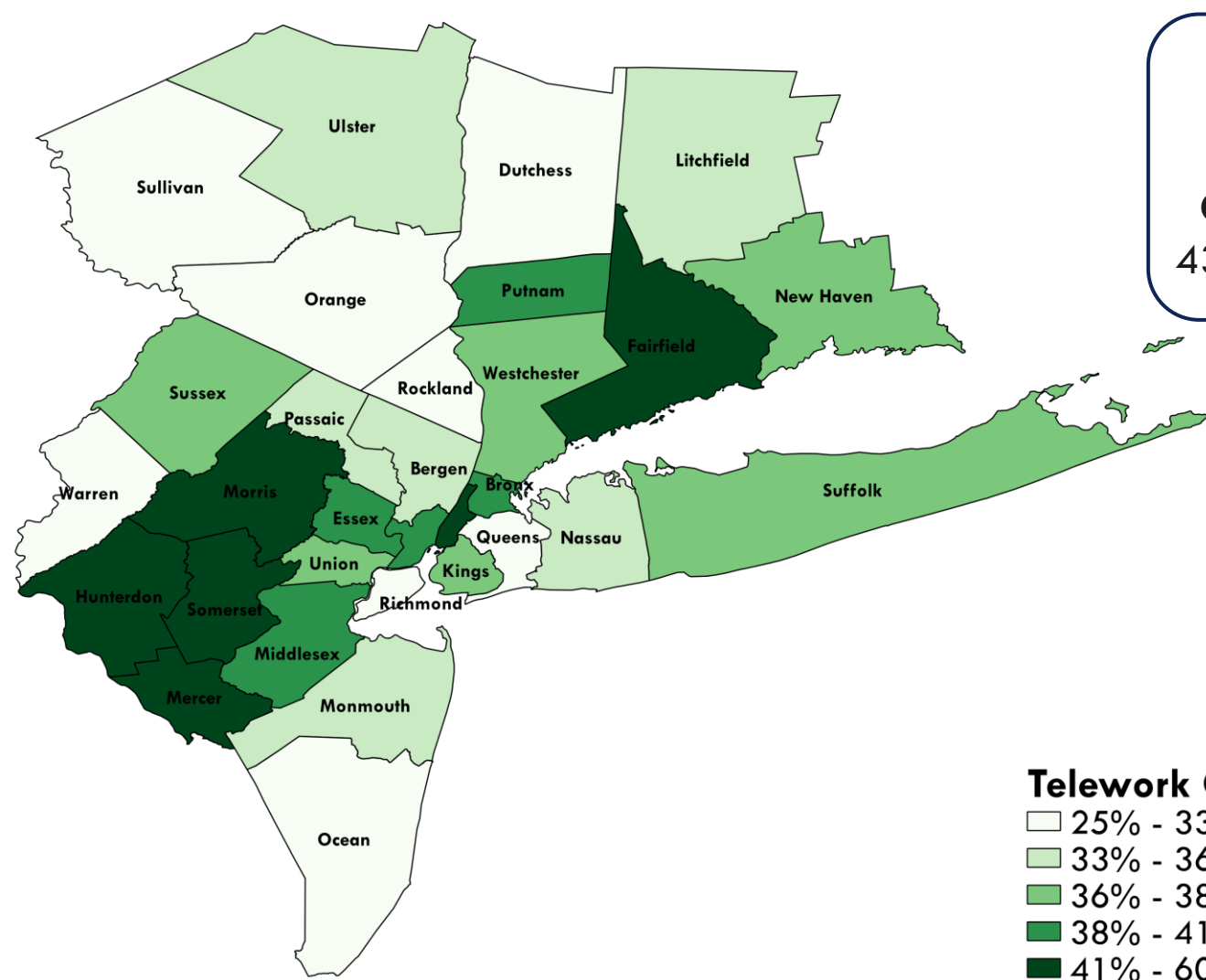
Telework Capability
- 25% - 33%
- 33% - 36%
- 36% - 38%
- 38% - 41%
- 41% - 60%

FORECASTING TELEWORK TRENDS

Forecasting Telework - Methodology

1. **Review of surveys on telework expectations post-COVID**, covering:

    ❑   Expectations from both Employers and Employees

    ❑   Representative of the entire US workforce

    ❑   Attitudes towards full-time telework and only work flexibility

2. **Long-term forecast (2022-2055) using surveys + previous data on Work-from-Home rates**

Survey Results

#	Date	Survey	Sample	Employee Preferences	Employer Preferences
1	May-20	Atlanta FED	Representative of US Firms		**27.8%**
2	Nov-20	Pew Research Center	Representative of US Working Population	**54%**	
3	Jan-21	PwC	Executives and Office workers in US Financial Services, Tech and Consumer Products	**39%**	
4	Nov-20	University of Chicago	Representative of US Working Population & asked about their employers plans	**35%**	**15%**
5	Oct-20	COVID Future Project (University of Arizona)	Representative of US Working Population		**21%**

SENSITIVITY OF SOCIO-ECONOMIC & DEMOGRAPHIC FORECAST MODEL

Changes in SED Forecast Model

Sensitivity: locations of jobs switches among Counties/Traffic Analysis Zones if people telework full-time in the long-term.

- **Location of Jobs Effect (-)**

- **Location of Labor Force effect (+)**

Result: new Socio-Economic and Demographic Forecast model incorporating shift in jobs' location for 2022-2055

Changes in Jobs' Location 2025, by TAZ

County Limits

% Changes in Total Employment
- -9% - 0%
- 0% - 6.5%
- 6.5% - 18%
- 18% - 28%

Changes in Jobs' Location 2025, by County (%)
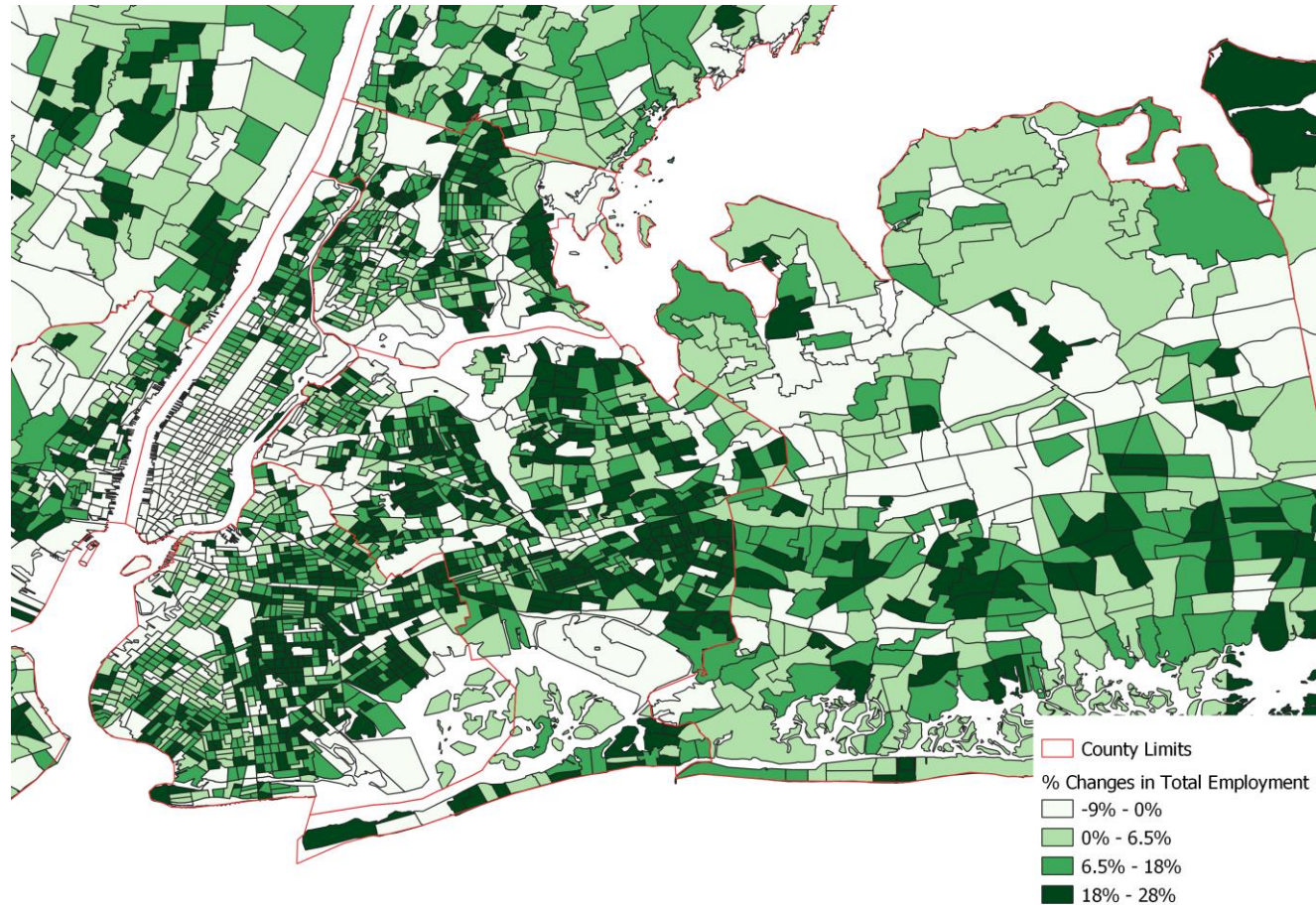
SENSITIVITY OF TRAVEL DEMAND FORECAST MODEL

Impacts on Travel Behavior

Sensitivity: number of trips by origin/destination given changes in jobs' location & assuming no changes in modal split

Methodology:

SOCIO-ECONOMIC FORECAST WITH NEW JOBS' LOCATIONS *Input of Travel Demand Model*	**RUN TRAVEL DEMAND MODEL WITH NEW SED** *Selected year 2025 for analysis*	**COMPARISON OF SCENARIOS** *Results with Original Jobs' Location versus New Jobs Locations (shifted due to telework)*

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Changes in Origin & Destination of Trips (%)

Daily Trips By Destination

Region	No telework	Telework	Difference (%)
Manhattan CBD	**4,018,102**	**3,730,247**	**-7.2%**
Upper Manhattan	2,409,597	2,486,053	3.2%
Other NYC	12,754,884	13,041,134	2.2%
Long Island	7,285,616	7,398,268	1.5%
Mid-Hudson	5,110,759	5,156,471	0.9%
New Jersey	18,186,044	18,248,166	0.3%
Connecticut	4,895,593	4,893,581	0.0%
Total	**54,660,598**	**54,953,918**	**0.5%**

Changes in Trips to Manhattan Central Business District, by Origin

Origin	Change
Inner CBD Trips	-5%
Other NYC	-14%
Upper Mhtn	-1%
Mid-Hudson	-8%
Conn	-7%
Long Island	-8%
NJ	-10%

Changes in Origin & Destination of Trips (%)
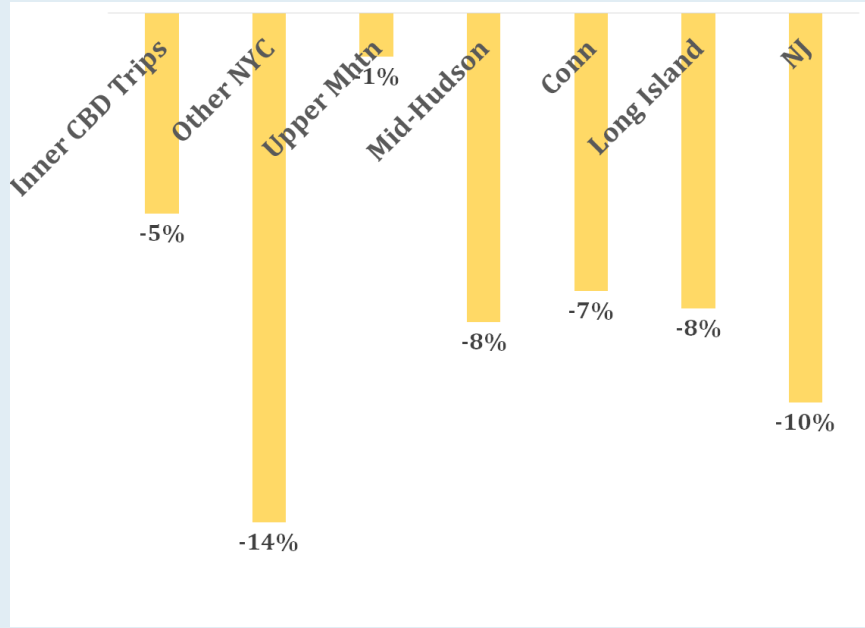
Changes in Trips between NYC Boroughs

Destination

NYC Region	CBD	Upper Manhattan	Bronx	Queens /Brooklyn	Staten Island
CBD	-5%	2%	-9%	-12%	-7%
Upper Manhattan	1%	14%	9%	2%	11%
Bronx	-11%	11%	5%	6%	13%
Queens /Brooklyn	-13%	3%	7%	8%	12%
Staten Island	-5%	9%	15%	10%	10%

Origin

CONCLUSION

Key Takeaways and Conclusions

- Almost **half of the workforce** teleworked full-time during COVID-19 in New York

- Median scenario is for around **a fifth of the workforce** to continue working remote

- This would imply changes in job location, with **over 10% less jobs taking place in Manhattan CBD**

- Changes in job location impact travel behavior, with **significantly less trips towards CBD**