CAMBRIDGE SYSTEMATICS

Think Forward

Predictive Model to Estimate Rideshare Trips

Findings from Austin

presented to

7th TRB Innovations in Travel Modeling Conference

presented by

Zeina Wafa

Anurag Komanduri

June 27, 2018

Background

- Rideshare is an increasingly common travel mode
- But, travel demand models do not typically account for the rideshare mode
- Primarily because data from rideshare companies are not available for analysis
- Until …

The Data

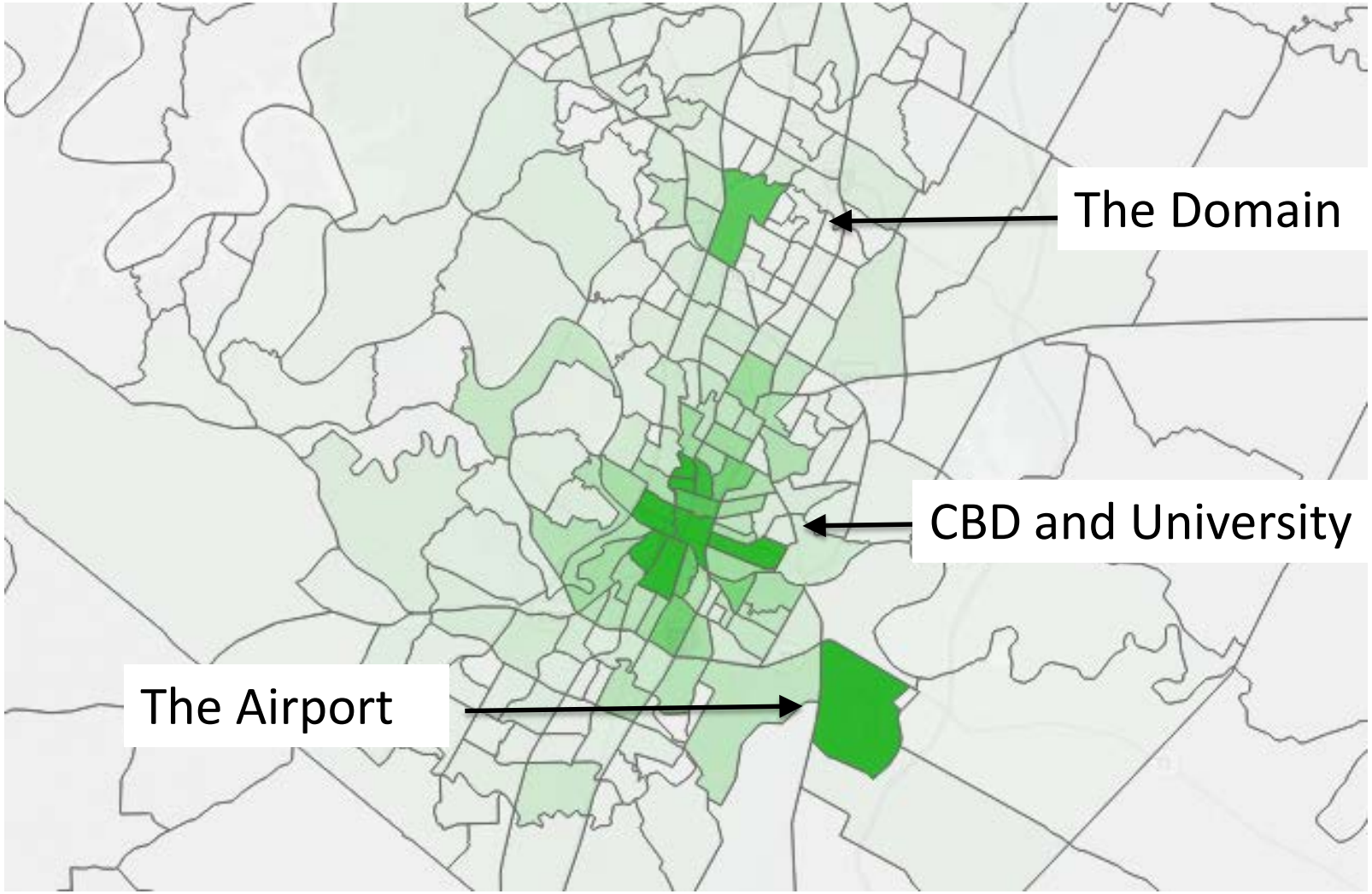
RIDE | AUSTIN

- Data from June 2016 to April 2017
  - 180 weekdays (Mon – Thu)
- Almost 1.5 million rides
  - 40% on weekdays (Mon – Thu)
  - Large share of TNC traffic
- Detailed trip information
  - No demographic information

United States™ Census Bureau

- 2012-2016 5-Year ACS Estimates
- 2015 LEHD

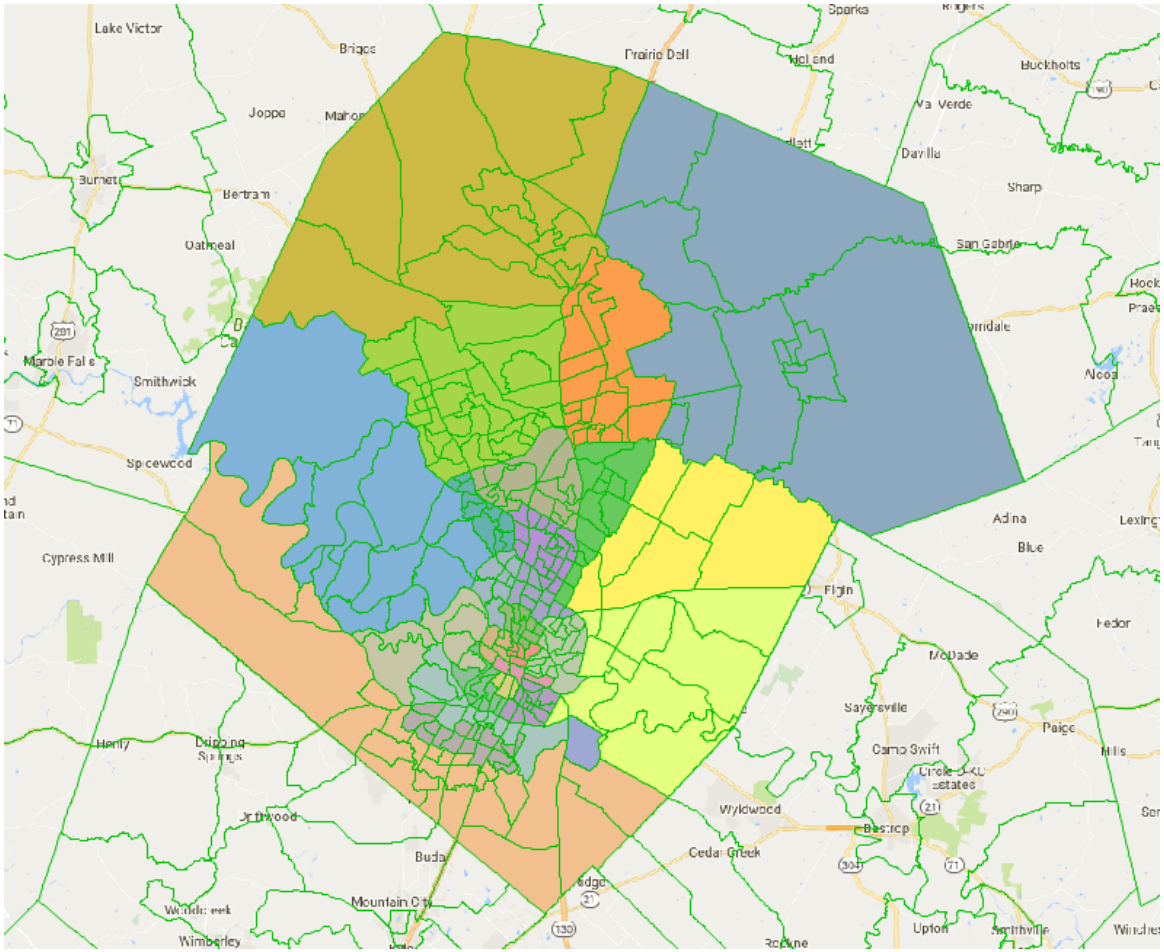
Daily RideAustin Trips



Independent Variables and Model Structure

- Quantify effects of demographics and land use on trip-making
  - Gender
  - “The Millennials” (and older)
  - Income and education
  - Auto deficit households
  - Employment
  - High parking cost areas (Airport, CBD)
- The model formulation
  - Keep it simple
  - Use variables that can be forecast in the future
  - Use variables found in traditional travel demand models

Aggregate Districts



Home End Model

- Home as an origin in the AM Peak (6 AM – 9 AM), home as a destination after 3 PM.

Description	Value	T-stat
Intercept	73.78	3.60
Zero-Vehicle household density: 100 - 200 per sq mi	55.73	3.90
Zero-Vehicle household density: > 200 per sq mi	124.64	7.74
Dummy variable for CBD	497.14	16.11
Percent of households with income greater than 60K	-79.84	-2.34
Adjusted R-squared	**0.96**	

Non-Home End Model

- Non-home destinations in the AM Peak (6 AM – 9 AM), non-home origins after 3 PM.

Description	Value	T-stat
Intercept	18.68	1.96
Employment density 5,000 - 10,000 jobs/sq mi	44.37	2.09
Employment density > 10,000 jobs/sq mi	183.70	5.07
Dummy variable for CBD	343.30	7.19
Dummy variable for Airport	149.60	4.39
Number of transit stops within the district (in 00s)	3.80	3.91
Adjusted R-squared	**0.93**	

Conclusion and Future Research

- Simple yet efficient models using a small number of variables
  - Test variables available in ABMs
  - Build trip distribution models
  - Dream of a day when data from all rideshare services are available for analysis

Questions?

Zeina Wafa
zwafa@camsys.com

Anurag Komanduri
akomanduri@camsys.com