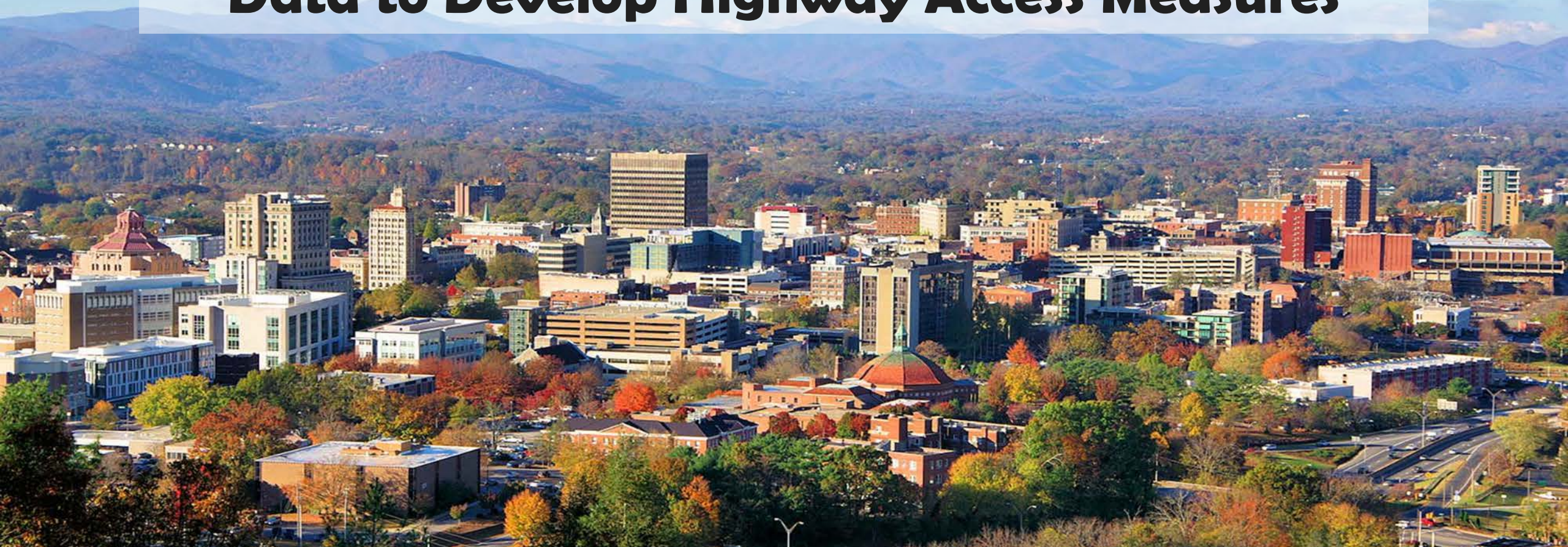


Combining LODES, ACS and OpenStreetMap Data to Develop Highway Access Measures



Accessibility Measures

- Defined as “ease with which one can reach destinations”
- Example: *How many jobs are within 20 minutes of my home?*
- Common uses in transportation planning:
 - EJ & Title VI analysis for Federally funded projects
 - Land use & travel forecasting (induced development & smart growth)
 - Value uplift assessment & value capture finance
- Some sources of available data:
 - US EPA Smart Location Mapping (<https://www.epa.gov/smartgrowth/smart-location-mapping>)
 - UMN Accessibility Observatory (<http://access.umn.edu/>)
 - Citilabs’ Sugar Access (<https://www.citilabs.com/software/sugar/>)

Challenges in Accessibility Modeling

- In 2017 85% of Americans drove to work or carpooled.
- In most cities, “transit” means buses—which use the same congested streets and highways as personal automobiles.
- Some understanding of congestion is required to estimate accessibility measures!
- However, congestion data is *expensive*.
 - Costly proprietary data (e.g. Here or INRIX)
 - Time-consuming models (i.e. traffic forecasting models)

Measuring Congestion: Travel Time Index

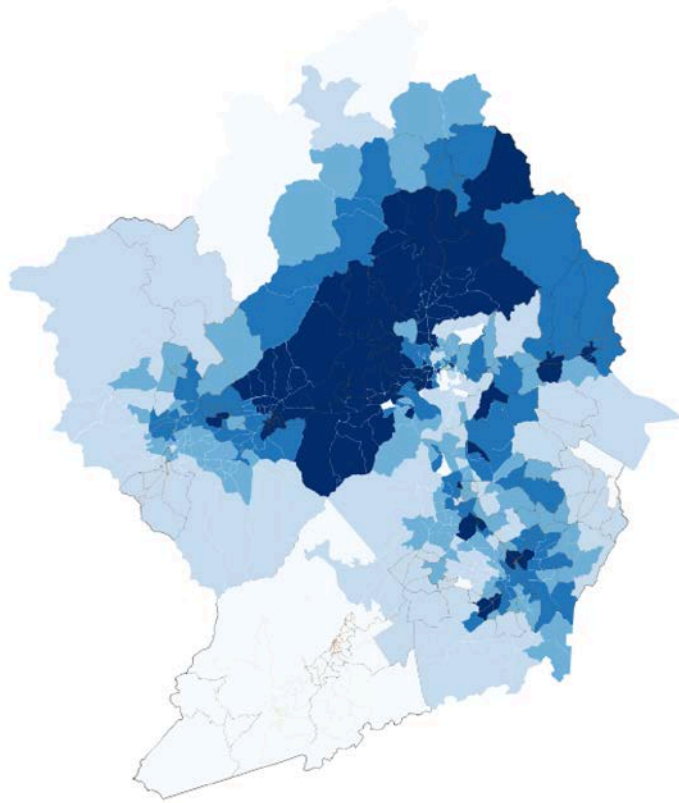
- Defined as “ratio of travel time in the peak period to the travel time at free-flow conditions.”
- Generally reported for metropolitan regions as a whole
- However, can be summarized for smaller areas using only freely available Census data
- This suggests a way to estimate access to jobs by car without relying on proprietary data or models

Freely Available Tools and Data

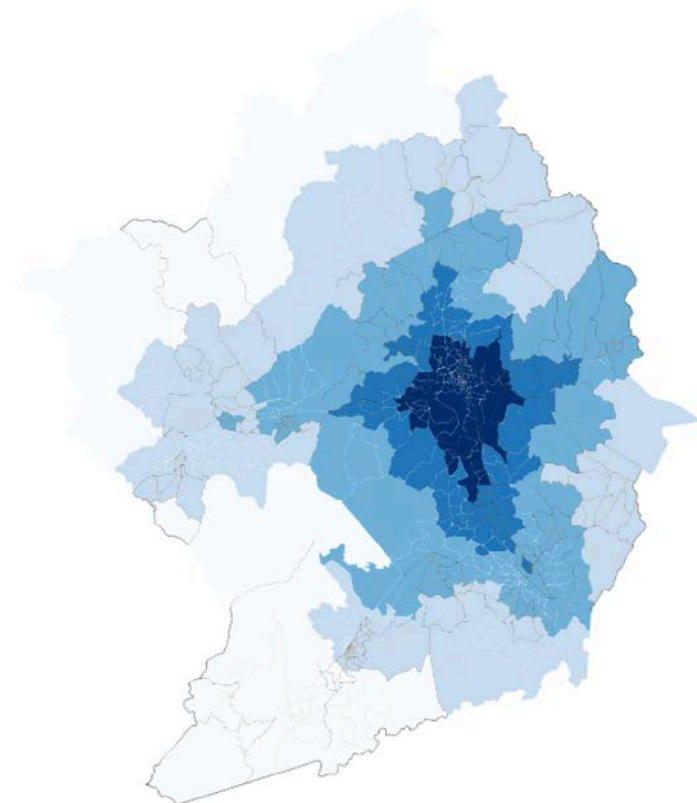
- **R Project for Statistical Computing**
 - *dplyr* (general-purpose table manipulation)
 - *dodgr* (directed origin-destination graph analysis)
- **OpenStreetMap**
 - A crowd-sourced, routable map of the world
 - Geofabrik.de for historical extracts of subareas
- **Census LEHD LODES – origin-destination worker flows**
- **Census ACS summary file data (journey to work questions)**

Case Study: Greater Asheville

Travel Time Index



Auto Access to Jobs



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The logo for Manhan Group, featuring the words "MANHAN" and "GROUP" in a bold, blue, sans-serif font. The text is positioned in the bottom left corner of the slide, with a decorative blue abstract shape behind it.

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