

2025

# EMPLOYMENT NODES & PEDESTRIAN ACCESS

## AN APPLICATION OF LEHD-LODES DATA

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# OVERVIEW

- ▶ Introduction
- ▶ Mapping LEHD Data
  - ▶ Employment Nodes
  - ▶ Pedestrian Access
- ▶ Technical Process
- ▶ Client Outcomes



The background is a solid orange color. On the left side, there is a large, stylized number '1' formed by two overlapping rectangular shapes. The top part of the '1' is a lighter shade of orange, while the bottom part is a darker shade. The word 'INTRODUCTION' is written in a bold, white, sans-serif font, positioned in the lower right quadrant of the image.

# INTRODUCTION

# THEORY INTO PRACTICE

Committed to **holistic thinking** and  
**sustainable development.**

We design strategies that will  
support your community's  
**vision for the future.**



**1995**

YEAR FOUNDED

**600+**

ENGAGEMENTS

**425+**

CLIENTS

**44**

STATES

**7**

COUNTRIES

# OUR PRACTICE AREAS



## STRATEGY

*Insight and tools to support sound decision-making and create healthy, vibrant economies through our Talent-Innovation-Place framework.*



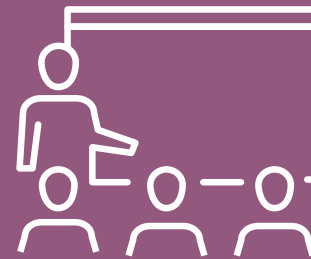
## RESILIENCE

*Strategies to stabilize businesses and strengthen systems and organizations to position communities to withstand and emerge from disruptive events.*



## TALENT

*Workforce planning to implement shared objectives among stakeholder groups, meet employer needs, and increase opportunities for residents.*



## ADVISORY

*Custom solutions to implement bold initiatives, establish innovative programs, and stand up effective organizations.*



# **MAPPING LEHD DATA**

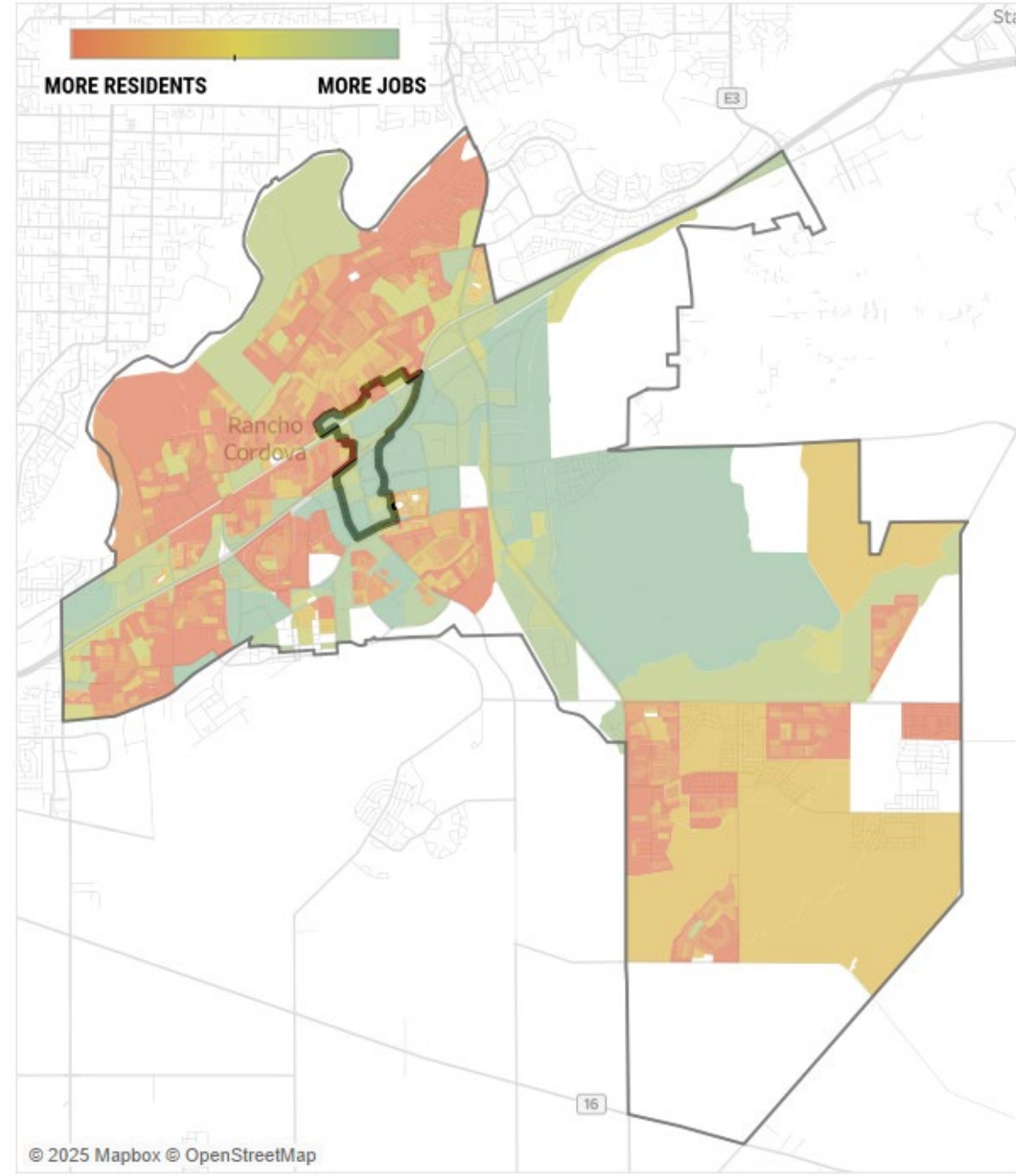
# EMPLOYMENT NODES

*Geospatial comparison of jobs and resident workers*

- ▶ **Where are employment and residential centers concentrated?**
- ▶ Direct application of LEHD-LODES data
  - ▶ Difference in jobs and resident workers by block
  - ▶ Color shows a modified percentile of the difference within the project area
- ▶ Identifies employment centers and neighborhoods by census block
- ▶ Can reveal emerging development patterns over time
- ▶ Combined with local zoning overlays to highlight development patterns

Sources: US Census Bureau, Longitudinal Employer-Household Dynamics (LEHD), Origin-Destination Employment Statistics (LODES); TIP Strategies, Inc.

Notes: Blank census blocks represent those with zero reported jobs and resident workers in the selected year.





# PEDESTRIAN ACCESS

*Site location relative to jobs and resident workers*

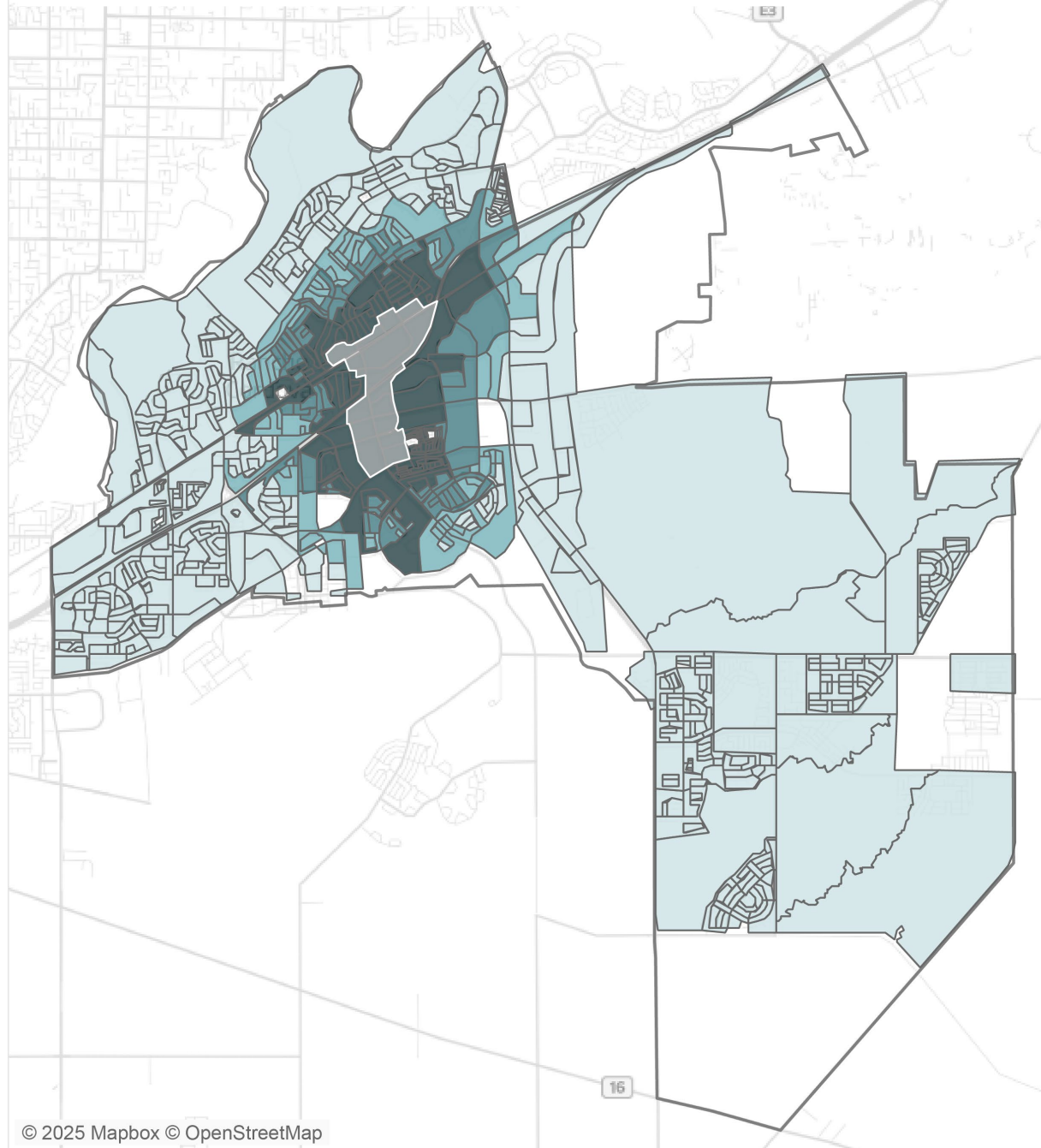
- ▶ **What is the proximity of redevelopment sites to city residents and workers?**
- ▶ Combines LEHD-LODES data with OpenRouteService (ORS) data
  - ▶ Isochrones of various transportation modes (walking, cycling, car)
  - ▶ Open-source API maintained by the Heidelberg Institute for Geoinformation Technology
- ▶ Summarized to show percentage of jobs and resident workers within certain distance/walking time to site

Sources: OpenRouteService; OpenStreetMap; US Census Bureau, Longitudinal Employer-Household Dynamics (LEHD), Origin-Destination Employment Statistics (LODES); TIP Strategies, Inc.

Notes: Blank census blocks represent those with zero reported jobs and resident workers in the selected year.

## WALK TIME TO SITE (IN MINUTES)

■ 5 or less   ■ 5 to 10   ■ 10 to 15   ■ Greater than 15





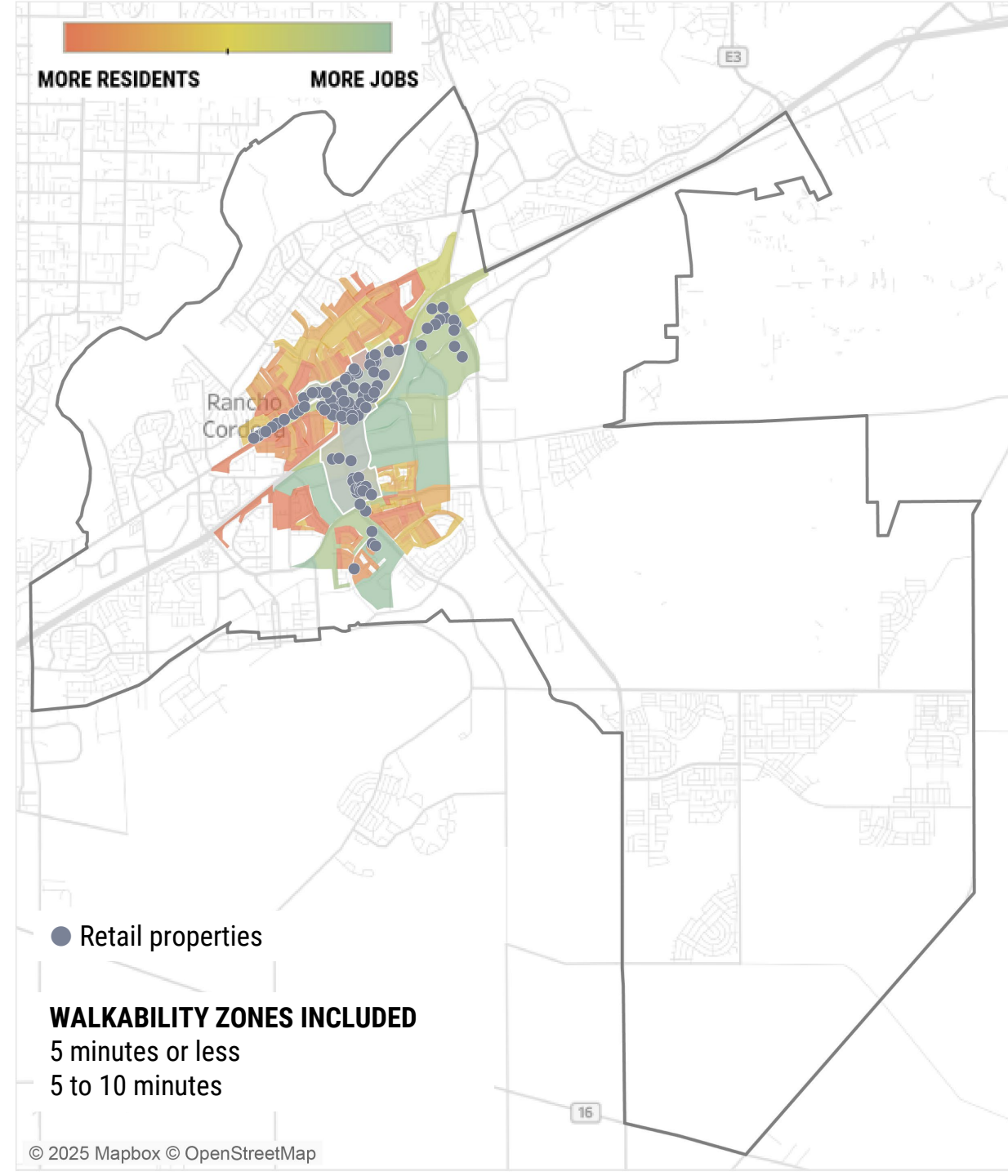
# COMBINATION & ADDITIONAL CONTEXT

*Peripheral data to help decisionmakers*

- ▶ **LEHD-LODES data on jobs and resident workers** identifies employment nodes, neighborhoods, and mixed areas
- ▶ **OpenRouteService walking time isochrones** show pedestrian access to sites
- ▶ **Local zoning overlays** add context for potential development opportunities or barriers
- ▶ **CoStar commercial properties** within ½ mile of site add context to walkability and placemaking opportunities

Sources: CoStar Group; OpenRouteService; OpenStreetMap; US Census Bureau, Longitudinal Employer-Household Dynamics (LEHD), Origin-Destination Employment Statistics (LODES); TIP Strategies, Inc.

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Online

Demonstration

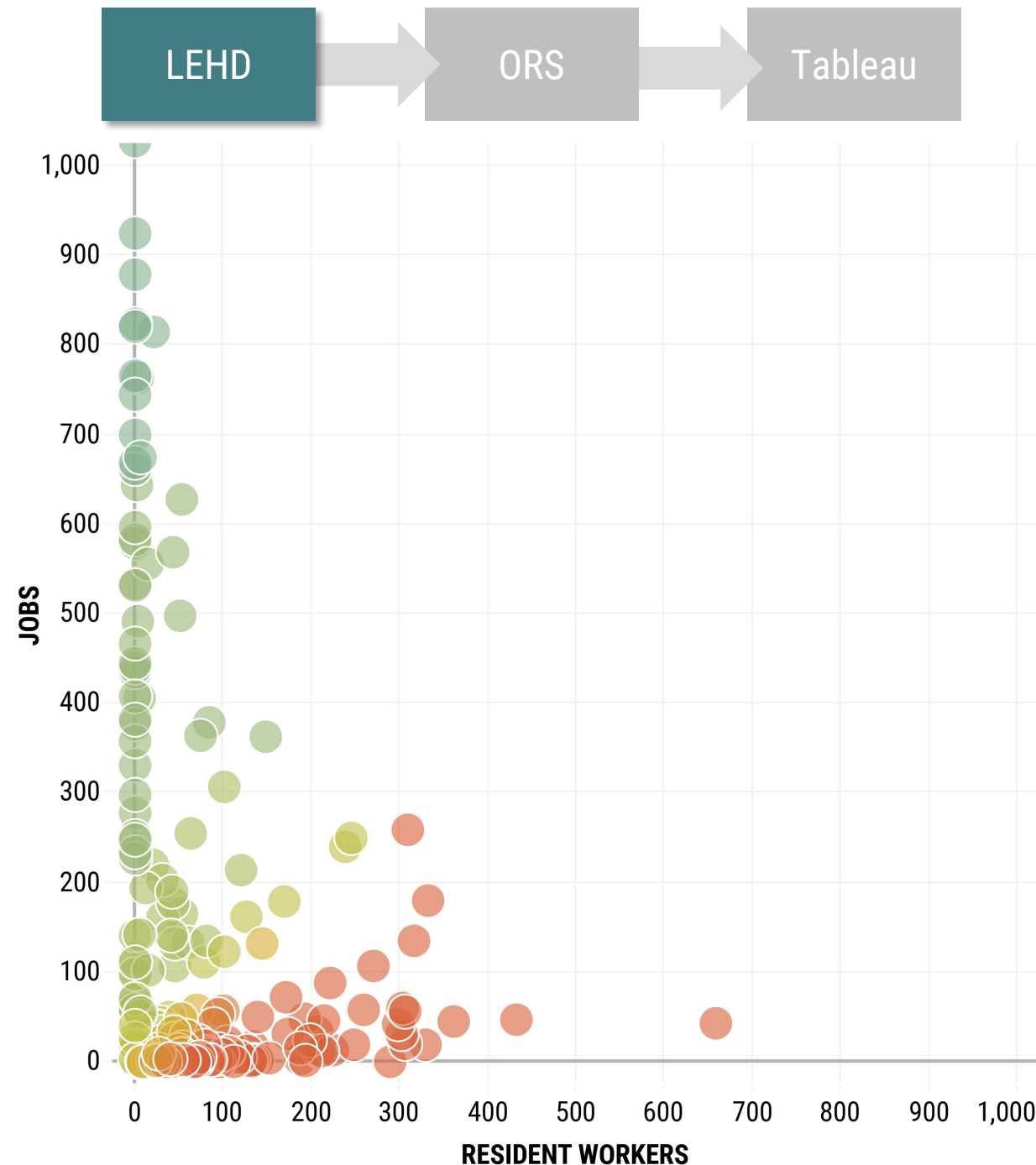
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# TECHNICAL PROCESS

# LEHD-LODES DATA

## *Data retrieval and processing*

- ▶ LEHD-LODES data pulled using an R script
  - ▶ Resident Area Characteristics (RAC)
  - ▶ Worker Area Characteristics (WAC)
- ▶ Pulls 10+ years of data for project county
- ▶ Data is filtered to only retain the total value (C000) at the block level
- ▶ Two data files are joined by block and year to easily compare jobs and resident workers
- ▶ Compare jobs and resident workers using a modified percentile rank of difference (Jobs – RWs)
  - ▶ Percentile function is preferred instead of a difference or ratio to avoid emphasizing blocks with few jobs, resident workers, or both





# OPEN ROUTE SERVICE ISOCHRONES

## *Data retrieval and processing*

- ▶ Districts or areas of interest are defined
  - ▶ Rancho Cordova identified three districts to examine
- ▶ District polygon shapes converted to point layers in ArcGIS Pro
  - ▶ Based on the size of the districts relative to the city, we generated points at 400ft intervals
  - ▶ ORS generates isochrones for each point on the district boundary
  - ▶ ORS Tools plugin in QGIS is used to generate polygons for each district point's 5-, 10-, and 15-minute walk shed
  - ▶ Multiple isochrone vector layers are merged into a single layer for each district
- ▶ Census blocks classified based on intersection with isochrone layers
  - ▶ Classification based on the shortest walktime isochrone intersection for each district



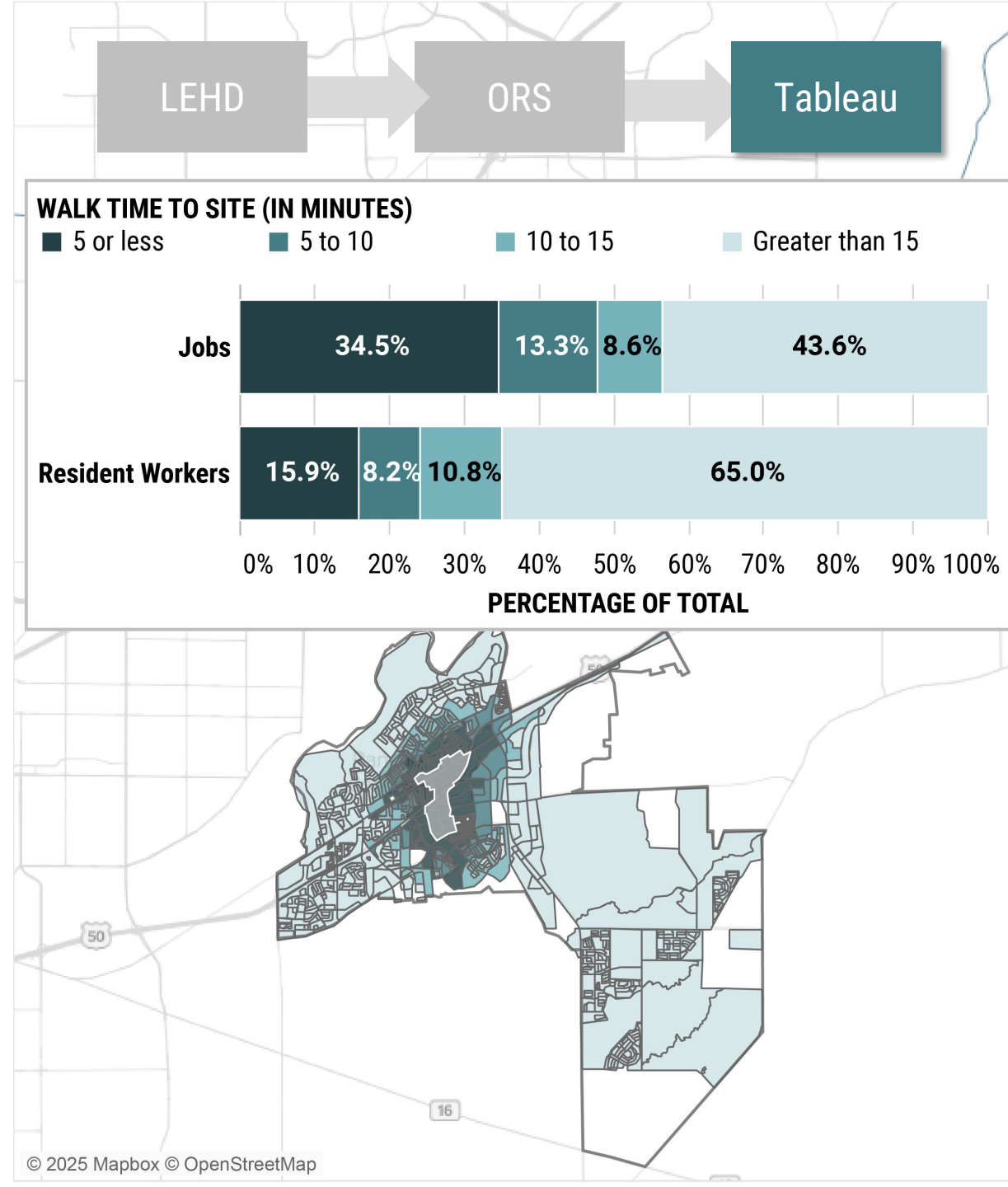
# DATA VISUALIZATION

*Combining data, summarizing, and visualizing*

- ▶ Data from LEHD-LODES and ORS classifications joined by census block
- ▶ Maps visualize the two aspects of the data:
  - ▶ Employment node view shows relative concentration of jobs and resident workers
  - ▶ Walk time view shows all blocks by their walk time to the selected site
  - ▶ Map can be filtered or highlighted to emphasize blocks within a certain walkshed
- ▶ Responsive summary bar chart shows percentage of jobs and resident workers that fall into each walkshed for the selected site
- ▶ More detailed information appears on hover, and additional layers can be added

Sources: OpenRouteService; OpenStreetMap; US Census Bureau, Longitudinal Employer-Household Dynamics (LEHD), Origin-Destination Employment Statistics (LODES); TIP Strategies, Inc.

Notes: Blank census blocks represent those with zero reported jobs and resident workers in the selected year.





# CLIENT OUTCOMES

# CLIENT OUTCOMES: RANCHO CORDOVA, CA

## *Using employment nodes & pedestrian access to inform strategies*

- ▶ Explore opportunities for future development that identify priority nodes and corridors for development.
  - ▶ Create a framework for decision-making that will identify which nodes or corridors should be prioritized for action.
  - ▶ Craft a community-centered vision for each high-priority node or corridor to guide economic growth that encourages the development of amenities.
  - ▶ Coordinate efforts across stakeholders to implement the node and corridor plans.
- ▶ Identify the infrastructure needed to connect residents with amenities and job opportunities.
  - ▶ Coordinate with the planning and public works departments to gain an understanding of current plans and opportunities related to pedestrian, bike, and trail infrastructure.
  - ▶ Understand the needs and concerns of businesses in multimodal transportation projects, with a focus on improved access and connectivity.



# USE CASES FROM ACROSS THE US

*TIP Strategies projects using employment nodes or pedestrian access analysis*

## ► **Employment Nodes & Pedestrian Access to Sites**

- Rancho Cordova, CA
- Bloomington, MN
- Harker Heights, TX
- Alexandria, VA
- College Station, TX

## ► **Employment Nodes & Pedestrian Access to Commercial Real Estate Properties**

- Richmond, TX
- Indian River County, FL

## ► **Employment Nodes**

- Pflugerville, TX

# THANK YOU



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