OPERATIONALIZING EQUITY

Transit and Active Transportation

November 20, 2025

Presented by

Phil Plotch, Ph.D, AICP
Transportation Planning Division

Cheri Soileau, AICP
Moderator

Bjorn E. Hansen, AICP CTP
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Definitions and Future Events

Equity Statement for 2025 State of Transportation Planning Report

Equity in planning starts with a broad perspective of equity as fair and just inclusion in a society where everyone can participate and thrive. Equity in transportation planning is a value-driven approach that recognizes the inequities that past discriminatory practices may have caused. These inequities need to be considered and ideally rectified in current transportation planning activities. The transportation planning community strives to provide transportation improvements through a holistic approach, recognizing that communities have unique needs and challenges. The goal of these efforts is a society where everyone shares in the benefits and burdens of the overall transportation system.

Final webinar! January 29 - Community and Economic Opportunity

Transportation Planning Division has a book club! See “In the Community” on TPD web page for details

Moderator

Cheri Soileau, AICP

Cheri Soileau, AICP, most recently served as the Director of Planning and Program Development at the Capital Area Transit System (CATS), with additional responsibilities as the Interim Chief Operations Officer. Prior to this role, Cheri held the position of Chief Explorer at For a New Adventure from January 2019 to August 2020, and Executive Director at the Imperial Calcasieu Regional Planning Commission from April 2016 to January 2019. Cheri's extensive experience includes roles such as Director of Transportation Services at the University of Louisiana-Lafayette, Senior Transit Planner at Denton County Transportation Authority, Transit Project Manager at Wilbur Smith Associates, and Project Manager at Dallas Area Rapid Transit. Cheri began a career as a Transportation Planner at the City of Plano from 1990 to 1994. Educational qualifications include a Master's degree in Public Administration from the University of Houston-Clear Lake and a Bachelor's degree in History from Drake University.

Presenters


Andrea Garfinkle-Castro, PhD, and Elizabeth Akinjobi, MNTP

Andrea Garfinkle-Castro, PhD, is Founder and President of Transport Futures, a research institute focused on transport governance, policy, research, and practice. She is trained in ABCD-Asset-Based Community Development and in Place community engagement. Her research and publications explore equity and justice in planning, walkability, pedestrian safety, planning governance, planning culture, and planning with diverse communities.

Elizabeth Akinjobi is a Full Member of the Nigerian Institute of Town Planners (MNITP), with a Bachelor's degree in Urban and Regional Planning from Obafemi Awolowo University, Nigeria. Her research and professional interests lie at the intersection of transportation planning, pedestrian safety, and sustainable urban development. She has contributed to various national and international projects, including the MIT-supported Lagos Commuter Panel Survey, the Springer-published study on neighbourhood walkability in Nigeria.

Michelle Zuniga, PhD, AICP

Dr. Michelle E. Zuniga is an Assistant Professor of Urban and Community Planning at the University of North Carolina at Charlotte. Her research centers on transportation equity, environmental justice, and community engagement, with a focus on shaping inclusive and sustainable policy solutions. Dr. Zuniga's applied work critically examines contempora1y planning initiatives-including the 15-minute City and Reconnecting Communities-to understand how meaningful public participation influences their success and to identify the challenges planners encounter during implementation.

Lekshmy Hirandas, AICP

Lekshmy Hirandas, AICP, is a transportation planner and urban designer at Kittelson & Associates with experience in multimodal planning, safety analysis, and transportation equity. She has contributed to regional transportation plans, Safe Routes to School programs, and intersection safety studies across the U.S. and India. Before joining Kittelson, Lekshmy worked with the World Resources Institute and Bloomberg Initiative for Global Road Safety in Mumbai, advancing child- and pedestrian-focused street safety projects.

Lily Wilcock, AICP

Lily Wilcock works in and is from Champaign and Urbana, Illinois. She holds a Bachelor's degree in Urban Planning and Public Administration at University of Illinois Chicago and a Master's in Urban and Regional Planning at University of Illinois at Urbana-Champaign. Lily has worked at the University of Illinois at Urbana -Champaign, the City of Urbana, and currently at the City of Champaign. Through data and storytelling she been able to show dockless bike share as a vital missing link for many people that do not have a car and work, live, and study in places outside of frequent bus service areas.

OPERATIONALIZING EQUITY

Captive Pedestrians, Choice Pedestrians: Who They Are, How Their Walkability Needs Differ, and Why Differentiate?

November 20, 2025

Authors:

Andrea Garfinkel-Castro, PhD

Elizabeth Akinjobi, MNTP

APA

Presented today by:

ELIZABETH AKINJOBI; MNITP

Town Planning Officer

Introduction

- **Captive pedestrians** walk out of necessity due to lack of income + few alternatives, often combining walking with public transit
    - Most pedestrians worldwide are captive + walk for transportation
    - American captive pedestrians are often low-income, rural, transit poor, disabled, very young/very elderly

- **Choice pedestrians** walk out of preference due to having alternatives.
    - Most American pedestrians are choice + walk for leisure

- Popular **walkability models** prioritize choice walking

Theoretical Framework: Mobility & Agency

Traditional theory

People walk based on utility maximization.
(Cavill, 2001; Goodman, 2001)

Emerging theory

Behavior is shaped by both personal choice and structural limitations.
(Tiwari, 2001; Sietchiping et al., 2012)

STUDY AIM

To critically examine pedestrian safety and walkability literature to

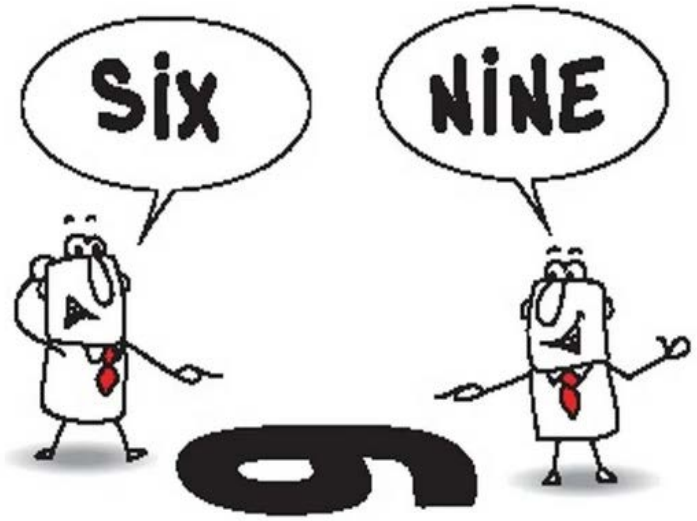
- realign them with the infrastructure and safety needs of captive pedestrians in low-income contexts
- foster inclusive and equity-driven transportation planning

Different Walkers, Different Priorities

Walkability

- Characteristics of the built environment that encourage and support walking through planning and design

(Dovey & Pafka, 2020; Jacobs, 1961; Speck, 2012)



Biases & Blindspots

- Dominant walkability models focus on aesthetics & pleasure - choice walkers
- Minimal focus on walking for transportation & adequate infrastructure - captive walkers

(e.g.: Ameli et al., 2015; Ewing & Handy, 2009; 2015; Mehta, 2008)
(critique: Olojede et al., 2024; Sietchiping et al., 2023; Wood, 2024)

Methodology

- Conduct an **integrative literature review** to critically synthesize research on pedestrian safety and walkability models.
(Snyder, 2019)

- Develop an emergent **typology** categorizing pedestrians as ‘captive’ or ‘choice.’

Explore the differences between pedestrian types to **reframe** walkability and road safety literature in a way that uncovers and addresses structural gaps.

Pedestrians Types: CAPTIVE

- **Characteristics:**

  Low- and moderate income, those living in rural areas

  Youths, the elderly, people living with disabilities, and those with no driving privileges or access to a vehicle

- **Typical walking conditions**: unsafe/incomplete infrastructure, air pollution, poor lighting, traffic at high volumes & high speeds, inclement weather
- **Priorities**: direct routes, safe night access, protection from weather, traffic

(Okyere et al., 2021; Olojede et al., 2024; Sietchiping et al., 2012; Tiwari, 2001; Tony et al., 2024; Wood, 2022)

Pedestrians Types: CHOICE

- **Characteristics:**

  Higher income, often have driving privileges and access to vehicles, walking supplements other forms of transport

  Choose when/where to walk, walk for leisure, exercise, or to support values (e.g., low-carbon transport)

- **Typical walking conditions**: mode-separated paths and sidewalks, car-free zones, access to transit, landscaping & beautification, retail space

- **Priorities**: aesthetics, comfort, entertainment, safety

(Okyere et al., 2023; Olojede et al., 2024; Sietchiping et al., 2023; Tiwari, 2001; Tony et al., 2024; Wood, 2022)

Key Findings

Pedestrians are not all the same but walkability models usually ignore this reality

Recognizing the two types of pedestrians helps planners focus on different needs

Low-income pedestrians are more likely to use walking for transportation

Understanding and addressing walking as transportation is critical to operationalizing equity and sustainability in transportation

Call to Action

- ✓ Understand different pedestrians, different priorities
- ✓ Conceptualize local realities, local contexts
- ✓ Collaborate with planners in low-income and rural communities for grounded solutions
- ✓ Test and adapt models using community feedback – and check your biases & blindspots

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Challenges and criticisms of the 15-minute city: Developing and implementing chrono-urbanism policies in the U.S

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Image credit: moveBuddha

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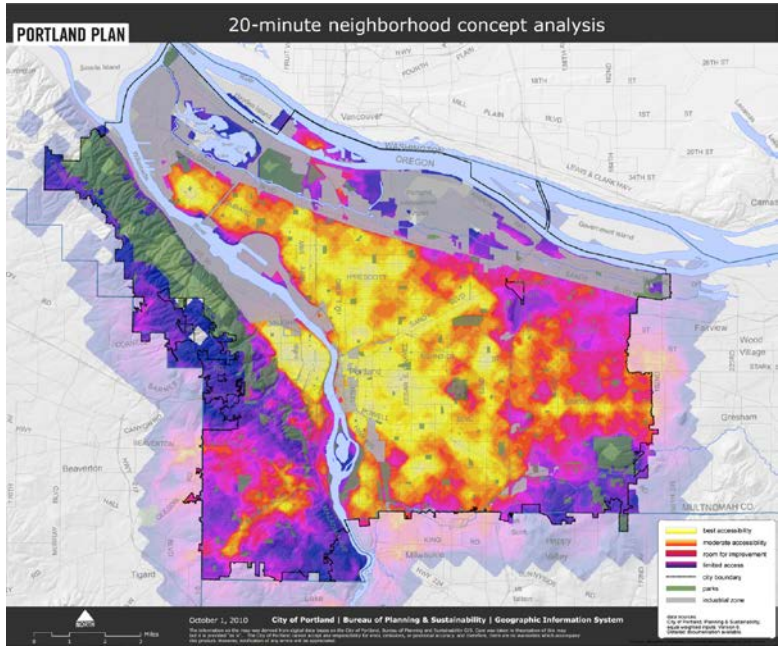
Chrono-urbanism concepts

Moreno et al. 2021
"Introducing the '15-Minute City': Sustainability, resilience and place identity in future post-pandemic cities."



City of Portland, 2009
20-Minute Neighborhood Concept

Chrono-urbanism, illustrated Image by Micaël Dessin/Paris en Commun

Literature review

The Promise of x-minute city initiatives

- Its basic principles are rooted in previous walkability paradigms, including Clarence Perry's **neighborhood unit**, theories of urban vitality advanced by **Jane Jacobs**, and the **New Urbanism** movement.
- Chrono-urbanism approaches have **potential to improve** urban sustainability, livability, and health (Allam et al. 2022)
- Improved access to high-quality, reliable, and accessible transportation **could help connect people to resources, jobs, and services** (Stacy et al. 2020).
- City leaders and scholars alike have embraced chrono-urbanism as a means of **confronting** growing threats of **climate change** (Khavarian-Garmsir AR, et al 2023; Allam, Z. 2021).
- While smart growth and transit-oriented development (TOD) initiatives also focus on sustainability and accessibility, chrono-urbanism specifically **prioritizes the efficient use of time** (Abdelfattah et al. 2022).

Criticisms

- Branding strategy (Gower A & Grodach C 2022)
- Potential to exacerbate urban inequality (Glaesar 2022)
    - Gentrification and displacement (Loukaitou-Sideris A et al 2019)
- Initiatives fail to consider the varying needs of different social groups (Khavarian-Garmsir et al. 2023; Idziorek & Zuñiga, in press)
- Misses concrete indicators to measure success (Abbiasov et al 2023)
- Requires large-scale systemic changes (Pozoukidou & Chatziyiannaki 2021)

Performance Measures

- Performance measures vary (Lu & Diab 2023)
    - Travel behavior surveys and geospatial data to assess what groups live in 15- or 30 minute cities (Birkenfeld et al. 2023)
    - GPS data from US mobile devices to define ‘15-minute usage’ (Abbiasov et al 2023)
- Less described and measured is the pedestrian experience (Mouzon 2012)

Research questions

1. How are “15-minute city” plans taking shape in cities across the US, and to what extent do they consider pedestrian experience?
2. What opportunities and challenges have arisen for urban planners at the local level through the implementation of “15-minute city” initiatives?

Approach

Identification of Cities

- Identify top 50 populous cities of US
- Literature Review (chrono-urbanism, 15 minute neighborhood, 20 minute city)

Review of Planning Documents (comprehensive plans, city council meeting minutes)

- Identify policies and/or goals related to x-minute neighborhood initiatives
- We found that **21 US cities** had x-minute neighborhood/city goals and/or tools (private and public sector)
    - **19 cities** had initiatives, **two** plans were proposed
    - **Two later decided to do away** with chrono urbanism

Approach

Interviews

- Conducted **19 semi-structured interviews** with **public** (16) and **private** (3) **planners** who have worked on developing or are in the process of developing an x-minute initiative
    - Motivations and challenges
    - Implementation
    - Metrics to assess success
    - Equity & pedestrian experience
- Reached out to public/private planners via email
- Interviews, all conducted on zoom, took 40-60 minutes to complete.

Data Analysis

- Both authors **used Atlas.ti** to analyze data in **two stages**:
  - Stage 1: inductive coding
  - Stage 2: deductive coding
- Codes included: framing, motivations, performance measures, challenges, successes/opportunities, pedestrian experience, priorities, equity, and tools
  - Guided by literature review
- Thematic Analysis

Results: How is chrono urbanism taking shape in cities across the US?

Challenges and criticisms of the 15-minute city

Case Study: City of Portland

20 minute neighborhood planning goal, 2009

- Used as a **policy guide** for future decisions, sometimes an initiative in the **background**
- **Motivations** include sustainability, mobility, and also equity in the context of fostering more **mixed income spaces**
- Examines neighborhoods that are **not complete**, to then think about investing services/amenities/infrastructure there
- Examines neighborhoods that **are complete**, and recommends more affordable housing there

Source: Conde Nast Traveler

Case Study: City of San Diego

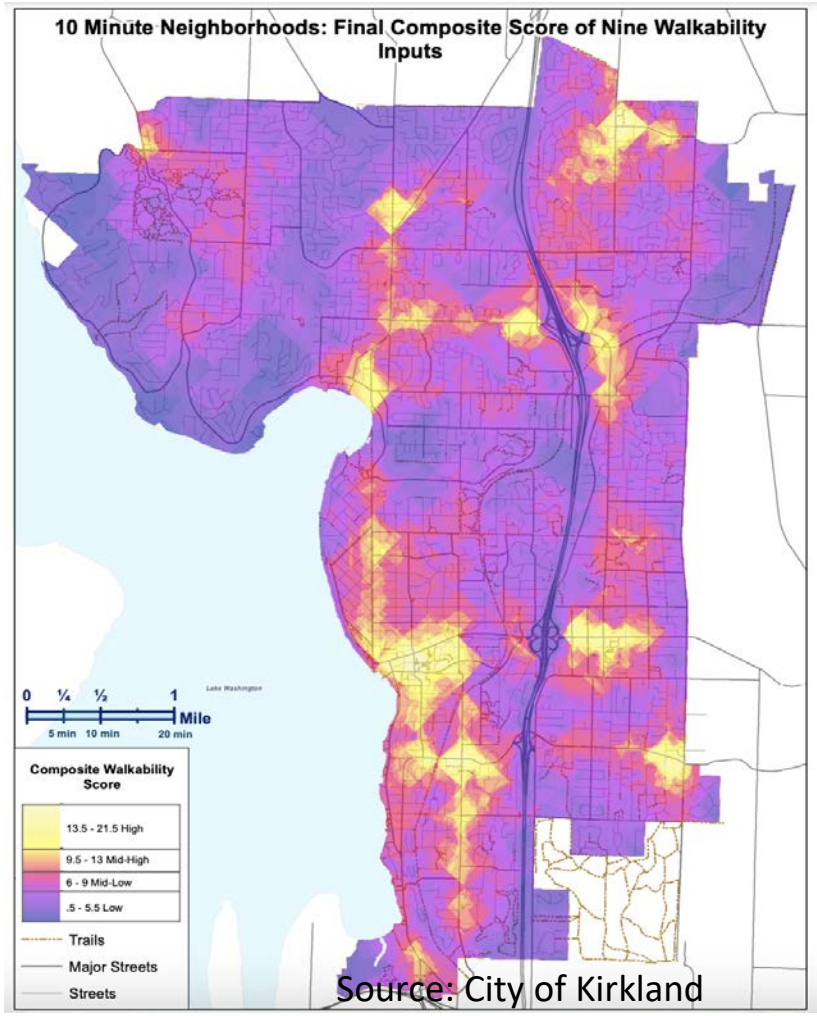
15 minute neighborhoods, College Area Plan, 2022

- Used as a **tool** to emphasize a district
- Offers a new way to talk about introducing more density and mixed-use
- Bolster more **opportunities** to integrate campus with the surrounding community, leverage transit, and enhance bike-ped connections to new town centers
- Public realm **improvements**
- Increase **mobility choices** to form a sense of place
- Encourages **"missing middle"** housing

Challenges and criticisms of the 15-minute city

Results: Performance Measures

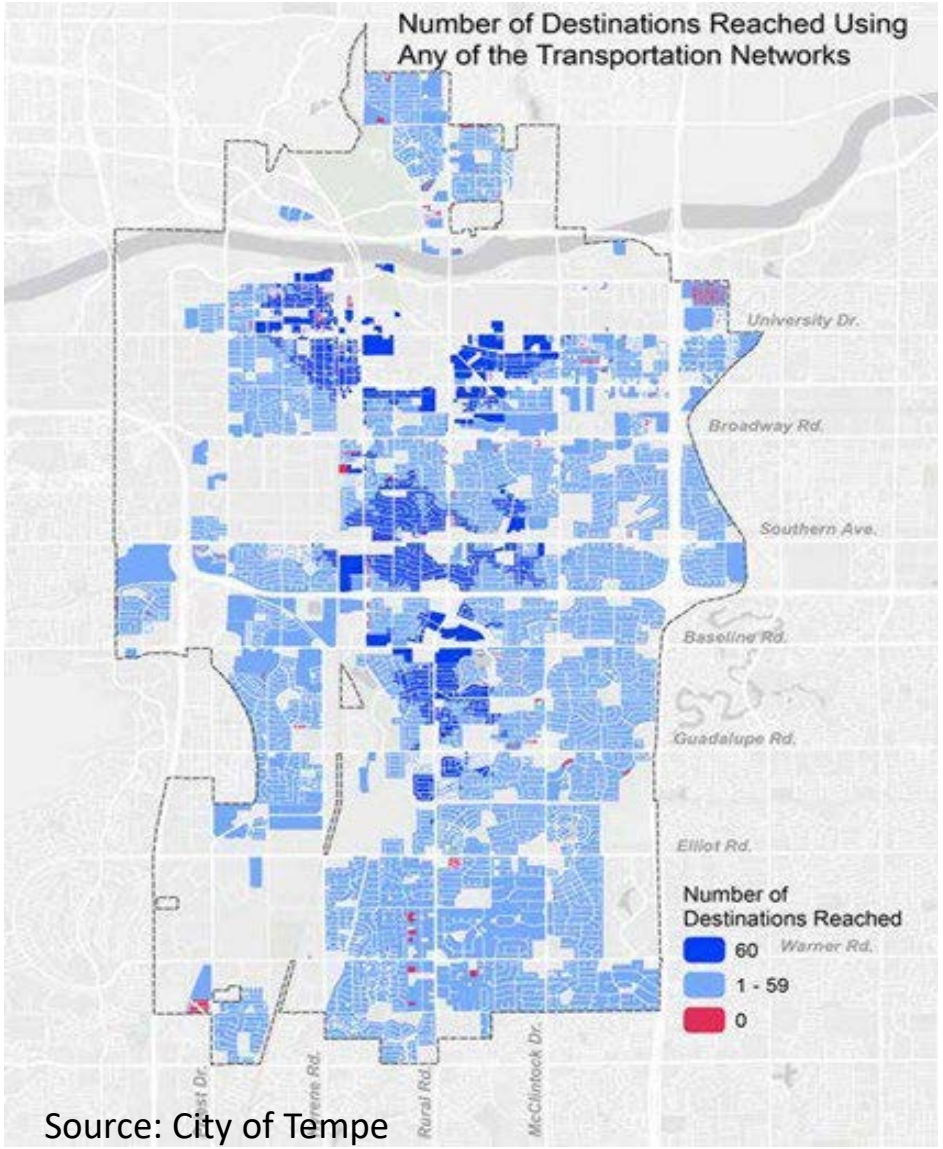
- Some cities had a robust system for assessing success
  - Others lacked capacity to track data, lacked GIS support, had difficulty updating data
- Tools Used
  - GIS (network analysis)
  - Public Outreach (development of categories)
- Metrics considered
  - Proximity to services and amenities
  - Bike lanes
  - Public transit
  - Housing
  - Parks and Rec
  - Zoning (commercial/residential)



Source: City of Kirkland

Challenges and criticisms of the 15-minute city

Case Study: City of Tempe



Source: City of Tempe

City of Tempe General Plan 2040, 20 Minute City

Modes: walk, bike, & public transit

Tools: Arc GIS Pro, Arc GIS Network Analysis, & Model Builder

Data Used: Parcel data, barriers (freeways, street intersections)

Objective: Assess distance covered in 20 minutes of travel time (walking, biking, and in public transit)

Results: Visual representation of what properties can access services in a span of 20 minutes (Baumann 2020)

Challenges and criticisms of the 15-minute city

Results: Pedestrian Experience

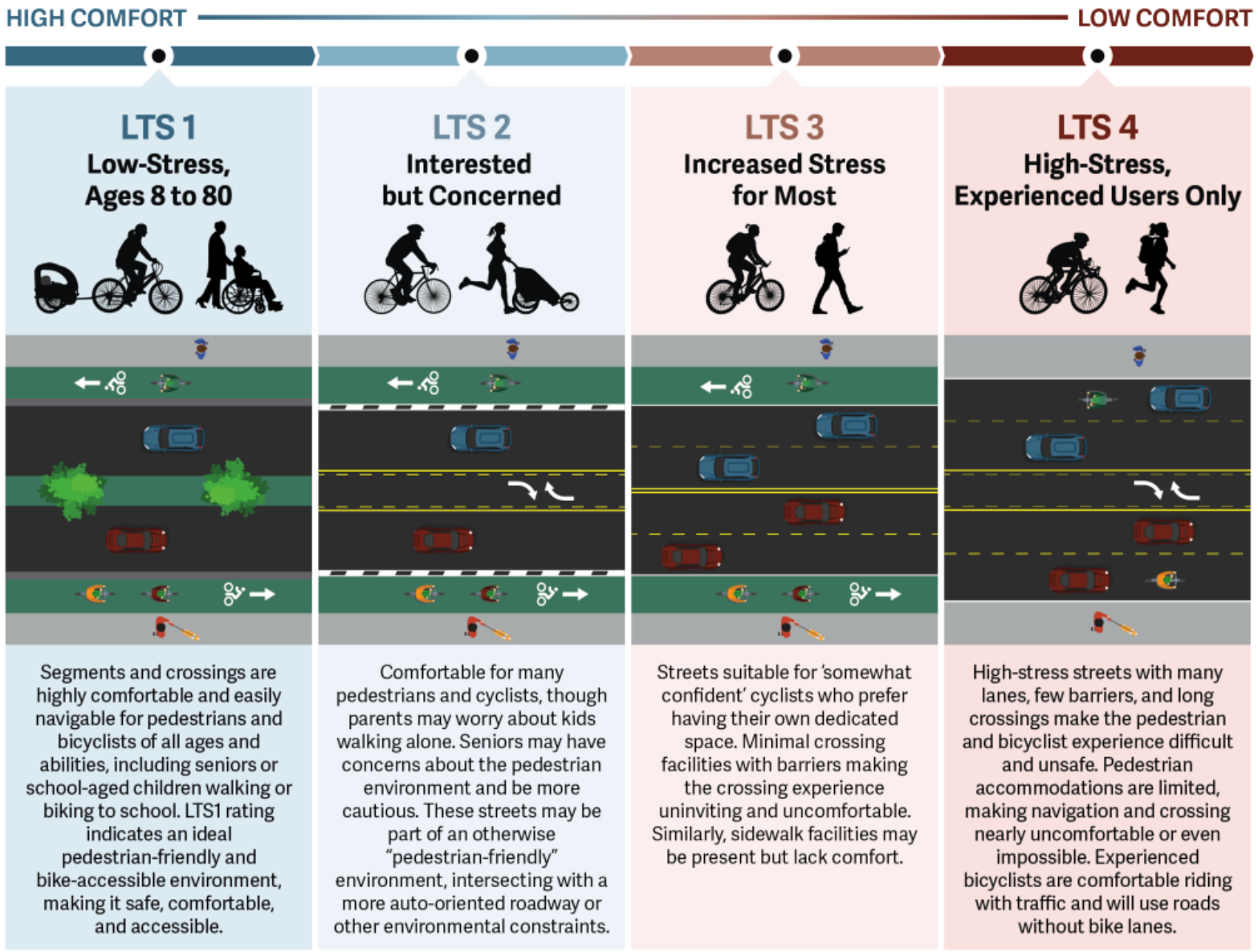
- Using time helped planners center pedestrian experience in the planning process
- Few cities focused on pedestrian experience rather than just distance in relation to time despite high traffic fatality count across country
- Low Stress. Comfort. Experience. Safety.
- Integration with planning for Vision Zero

"The bicycle networks created included the assignment of a low-stress network that would provide comfortable riding for bicyclists of all ages and abilities (City of Tempe, Baumann 2020)."

Source: Walk Friendly Communities

Case Study: City of Boulder

Source: City of Boulder, 2024



15 Minute Neighborhood Assessment (tool)

2019 BOULDER
Low-Stress Walk and Bike Network Plan

Challenges and criticisms of the 15-minute city

Results: Challenges

- Lack of **GIS** and **data analysis** capacity
    - Cities like Tempe may opt to work with a graduate class
- Zoning made it **illegal to make changes** to accomodate 15 minute city goals (increasing density, mixed-use, etc.)
- While there is much community support, there is also a lot of **community resistance** (conspiracy theories, afraid of control and increased density, NIMBYism, others concerned for displacement)
    - **Two** cities drew back their plans for 15 minute city
- Lack of control of **external (market) factors**/competing categories
    - For example: If grocery stores do not locate in an area due to a lack of demand or if it is closed due to another entity purchasing it

Challenges and criticisms of the 15-minute city

Implications for practice

- Consider **different performance measures** for different neighborhoods
  - Different communities may need different services/amenities/infrastructure
  - Alternative performance measures (e.g., stress, comfort)
- Link with **Vision Zero** goals (reduce pedestrian fatalities)
- Enhance **data collection** methods and fund **GIS support/expertise**
- **Incentivize** certain types of uses needed in target communities, and protective measures
- Community engagement
  - New way of engaging stakeholders, **focus on experience**
  - Does your community want this initiative?

Thank you! Questions?

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Advancing Transportation Equity in Centralina Region

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Background

CONNECT Beyond initiative by Centralina Regional Council, NC aims to enhance regional mobility and connectivity by ensuring equitable access to transportation options and opportunities

Traditional equity reviews focus narrowly on demographic vulnerability and often overlook where transportation burdens accumulate and how sustainable options vary.

Existing CONNECT Beyond Equity Review similarly focuses on transit propensity based on socioeconomic factors.

This research project used CONNECT Beyond as a case study to demonstrate a multidimensional, data-driven framework to assess benefits, burdens and access to sustainable options.

Analysis Framework

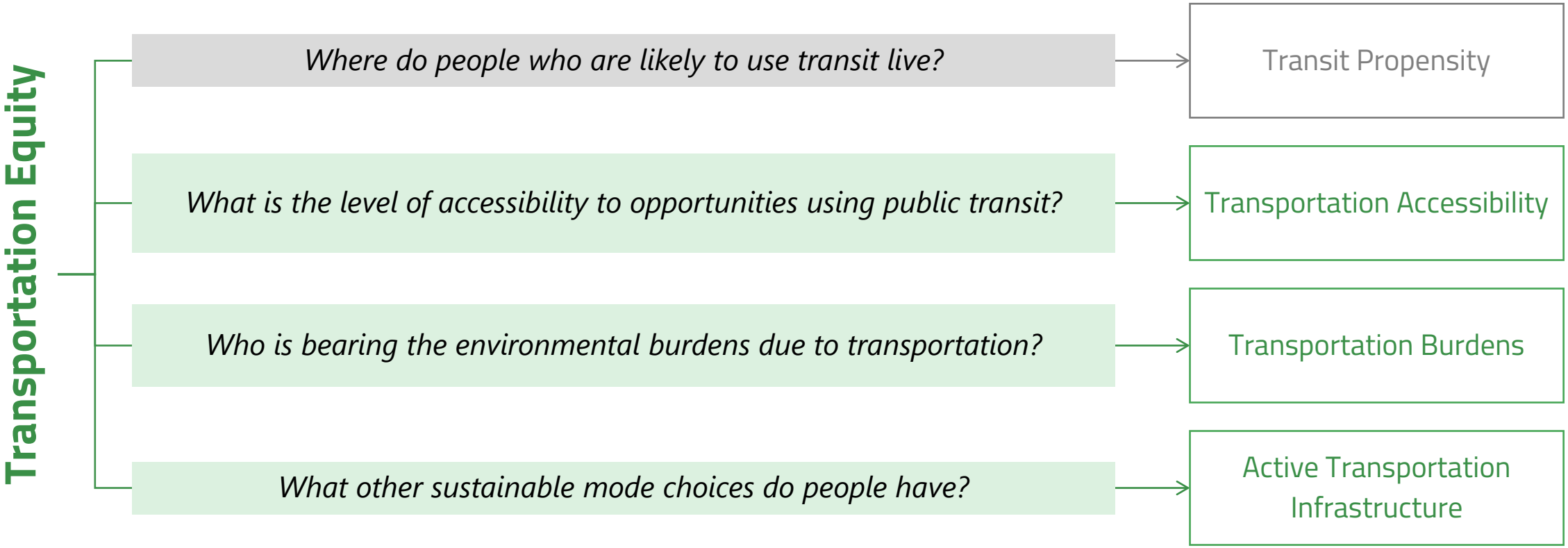
Existing frameworks

- Focus only on demographic indicators (BIPOC, low-income, zero-car households).
- Rarely quantify accessibility or environmental burdens.
- Ignore multimodal connectivity and infrastructure quality.
- Depend on static indices rather than performance-based measures.

Proposed Framework

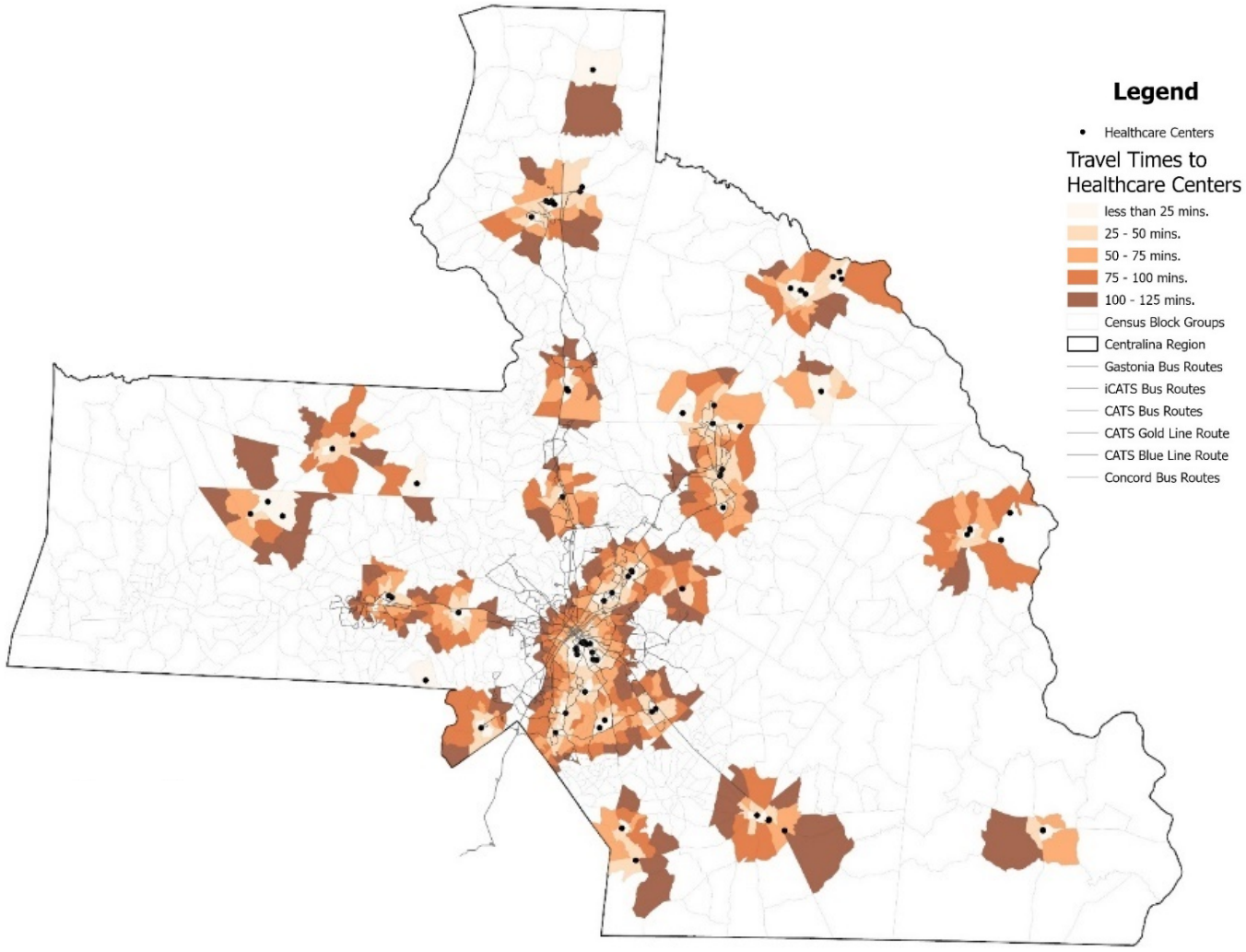
- People-centered, distributive justice–based framework.
- Expands focus from 'who needs transit' to 'who benefits and who bears costs.'

Proposed Analysis Framework



Accessibility Analysis

1. Created a multimodal travel time matrix (≤180 minutes) using General Transit Feed Service (GTFS) and Open Street Map data.
2. Analyzed access to key destinations: **healthcare, groceries, open spaces,** and **recreation**.
3. Measured weighted travel times and correlations with socioeconomic variables.



Map showing travel time in minutes to the closest healthcare facility via public transit

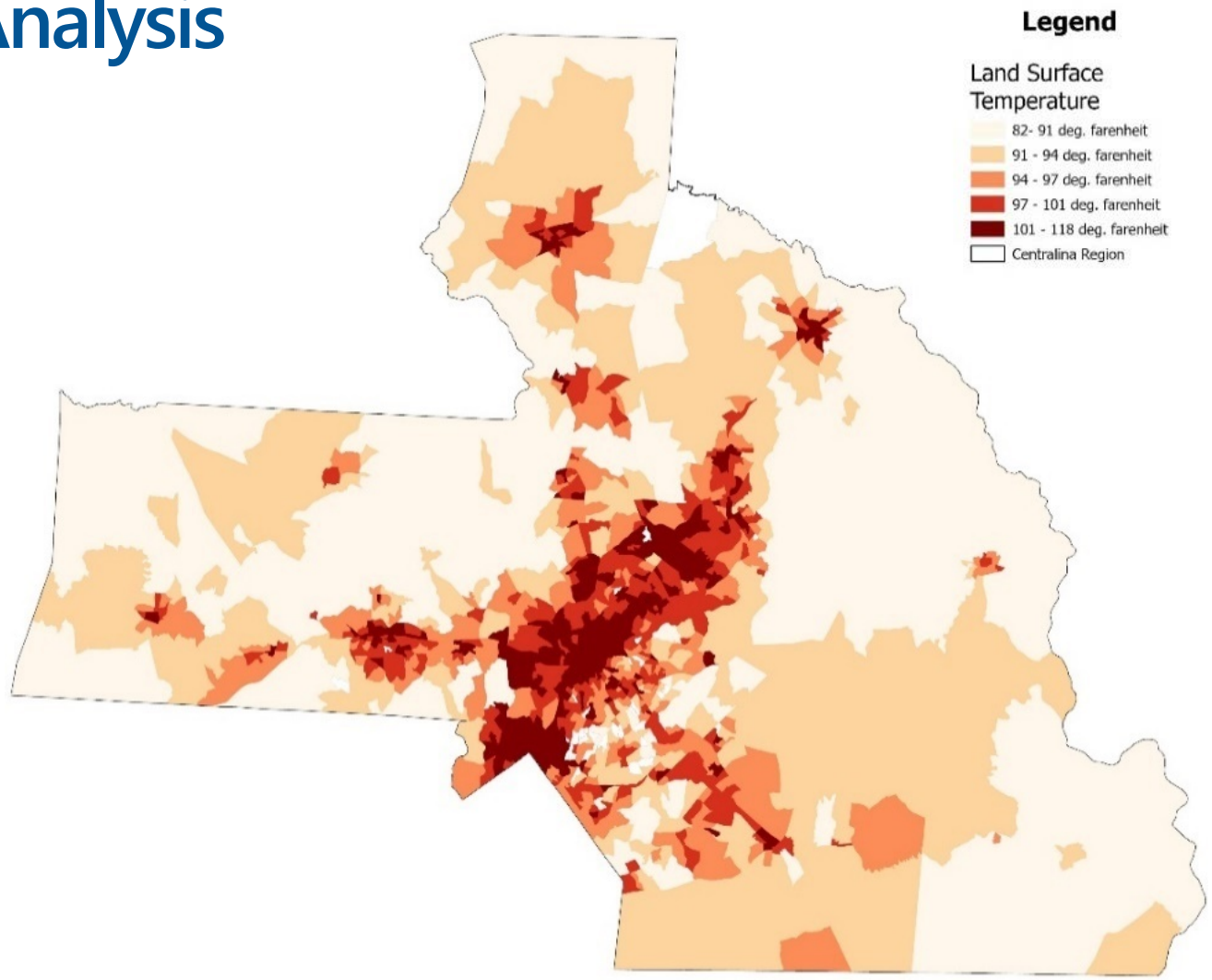
Findings: Transit Accessibility

"Minority, low-income populations, and zero-car households had shorter travel times. But disabled, seniors, children had longer travel times on average.

- 1.2 million people (51%) had no fixed route transit access to any healthcare facility within 180 mins.
- 46% of low-income and 51% of disabled individuals were affected.
- Only 22% of block groups can access open space under 60 mins
- 46% of census block groups (1.1 million people) had fixed route transit access to a grocery store in under 60 mins.

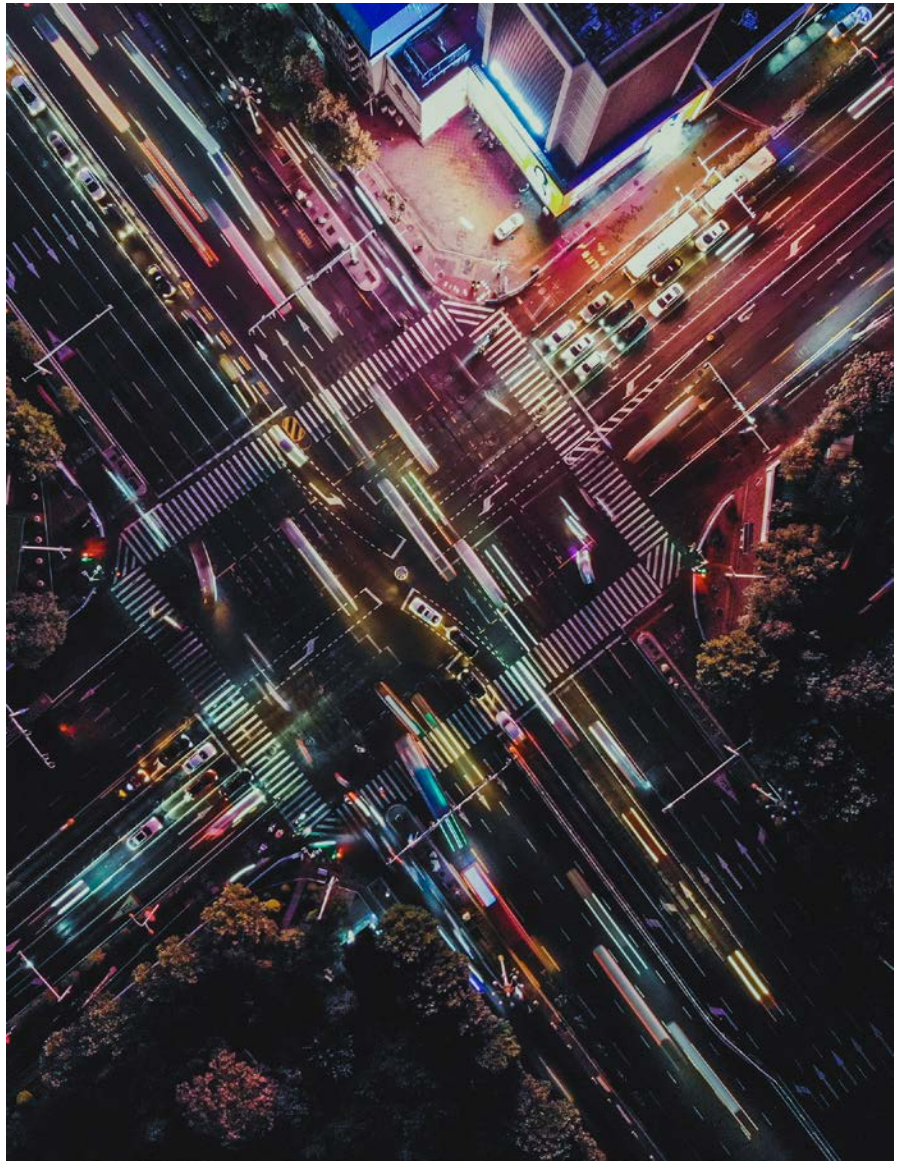
Transportation Burdens Analysis

1. Crash Burden: Fatal & Severe Injury (FSI) hotspots using Getis-Ord Gi* statistics.
2. Urban Heat Burden: Land Surface Temperature (LST) from Landsat imagery.
3. Correlated exposure to crashes and heat with demographic variables.



Map showing average Land Surface Temperatures in census block groups

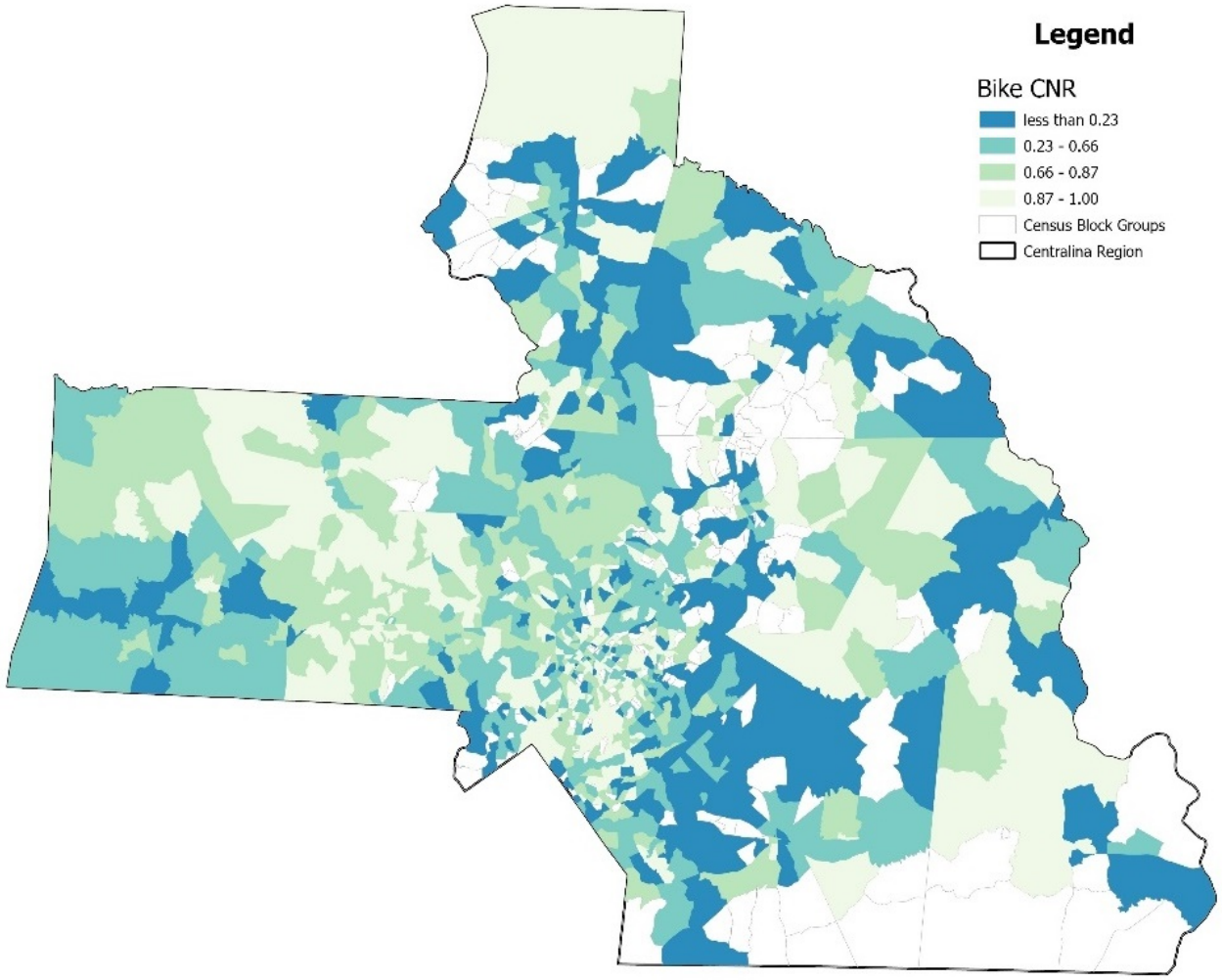
Findings - Transportation Burdens



- Fatal and Severe Injury (FSI) Crash Hotspots: Urban centers like Charlotte, Gastonia, Concord
- Higher FSI crash rates reported in areas with more minority, disabled, senior, minor populations.
- 1.07 million (45%) live in high FSI crash areas, including 48% minorities, 58% low-income, 57% disabled people.
- Areas with more 10% transportation infrastructure landcover was 7.25°F warmer than others
- 1.29M people (54%) live in high-heat zones; 70% minorities & 59% low-income populations.

Active Transportation Infrastructure Connectivity

- Measured connectivity using the Connected Node Ratio (CNR).
- Evaluated pedestrian and bicycle networks across block groups.
- Identified gaps where sustainable mobility is least accessible.



Map showing CNR values for bike networks in census block groups

Findings - Active Transportation Infrastructure Connectivity

Pedestrian network present in 94% census block groups, bike network in 87% census block groups.

Higher bike network connectivity in areas with more low-income population & zero-car households

Lower pedestrian connectivity in areas with more seniors, and lower bike connectivity in areas with more minors

Integrating the Framework

Transit Accessibility	Transportation Burden	Active Transportation Infrastructure	Classification	Interpretation
High	Low	High	**Equity-Advantaged**	Well-served, low burden
Low	High	Low	**Equity-Disadvantaged**	Underserved, high burden
High	High	Low	**Access–Burden Trade-off**	Good access, high risk/ exposure
Low	Low	High	**Latent Potential**	Good active transportation infrastructure, but limited transit service

Conclusions

Combined all three analyses at the Census Block Group level demonstrated the need for holistic planning and mitigation:

Communities with better transit access often faced higher crash and heat exposure in Centralina

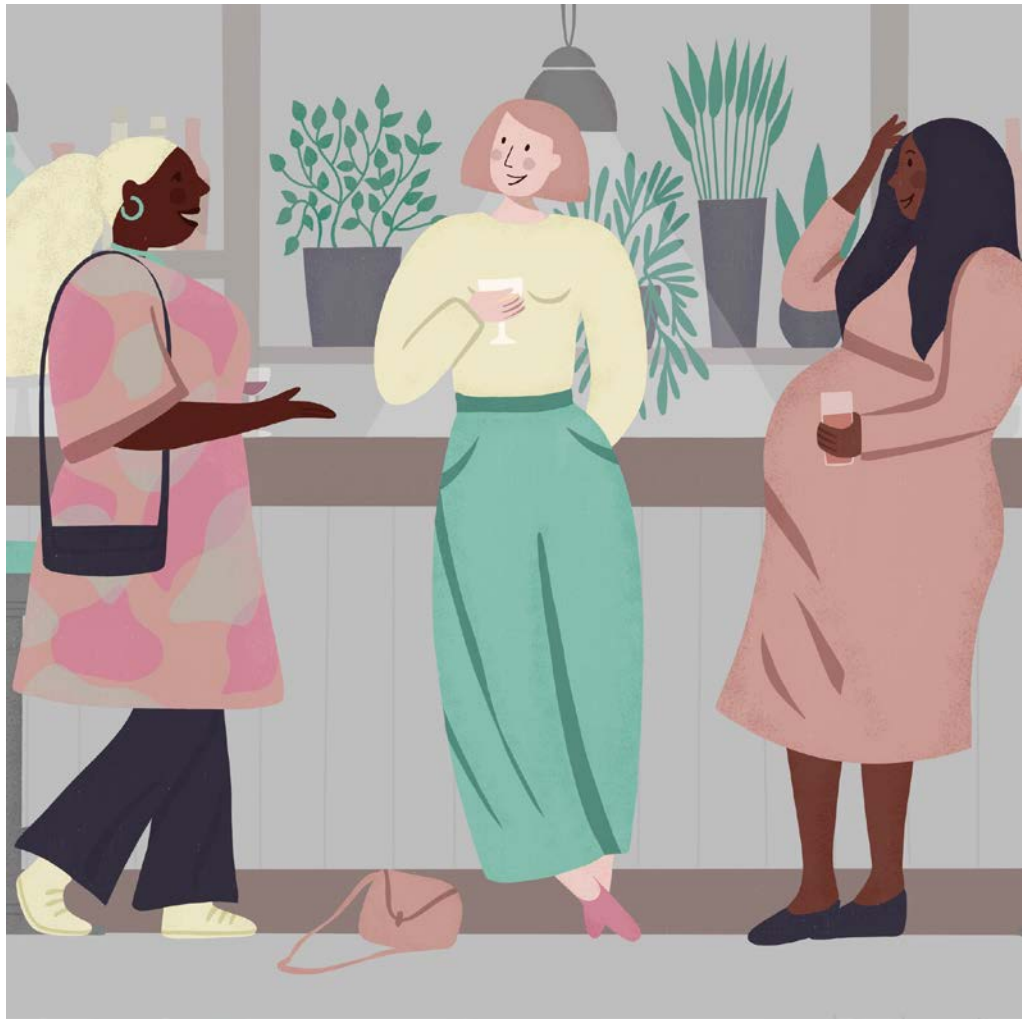
Roughly 30–35% of block groups fall into "**Equity-Disadvantaged**" zones.

These areas align strongly with minority and low-income populations in the western and southeastern parts of the region.

Conversely, "**Access–Burden Trade-off**" areas clustered around Charlotte.

Lessons Learned & Next Steps

- Quantitative findings must be validated through community engagement.
- Field observations and lived experiences are critical to contextualize data.
- Deepen the Framework by expanding the analytical layers:
  - Move beyond quantitative indicators to include contextual factors influencing mobility and access.
  - Recognize that who people are, their roles, responsibilities, and safety perceptions, shapes how they experience transportation systems.



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Acknowledgements:

- UC Berkeley Faculty - Professors: Daniel Chatman, Daniel Rodriguez, Marta Gonzalez, Iryna Dronova
- Scott Curry, Lauren Prunkl (Kittelson & Associates) & Reaghan Murphy, Sarah Neiss (Centralina Regional Council)

Thank you!

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Telling a Data Story with Bike Share Data in Small/Medium-Sized Communities

Presented by

Lily Wilcock, AICP

City of CHAMPAIGN

COMMUNITY insights

Active Transportation: Operationalizing equity is small and medium-sized cities.


PURDUE
FOUNDR
HELPING PEOPLE WITH
PARKINSON'S
DISEASE
FIRE
VEORIDE

Receiving complaints? Reflection needed.

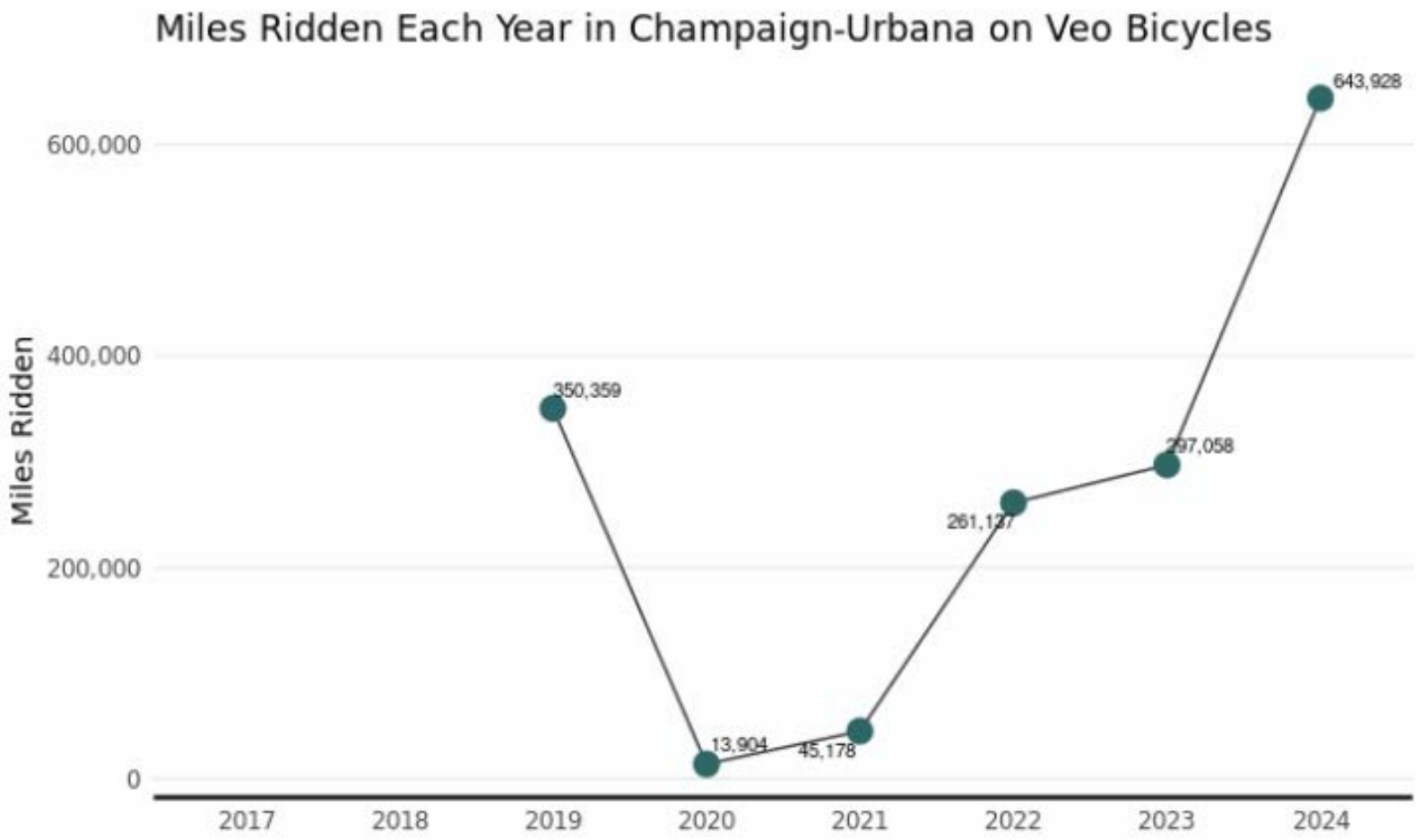
- Is the complaining party using these bikes? What is their transportation preference? Do they relate to the users of the bikes?
- Why are people excited to use the bikes? Are their problems with existing transit and sidewalks?

"Who talks to Planners?"

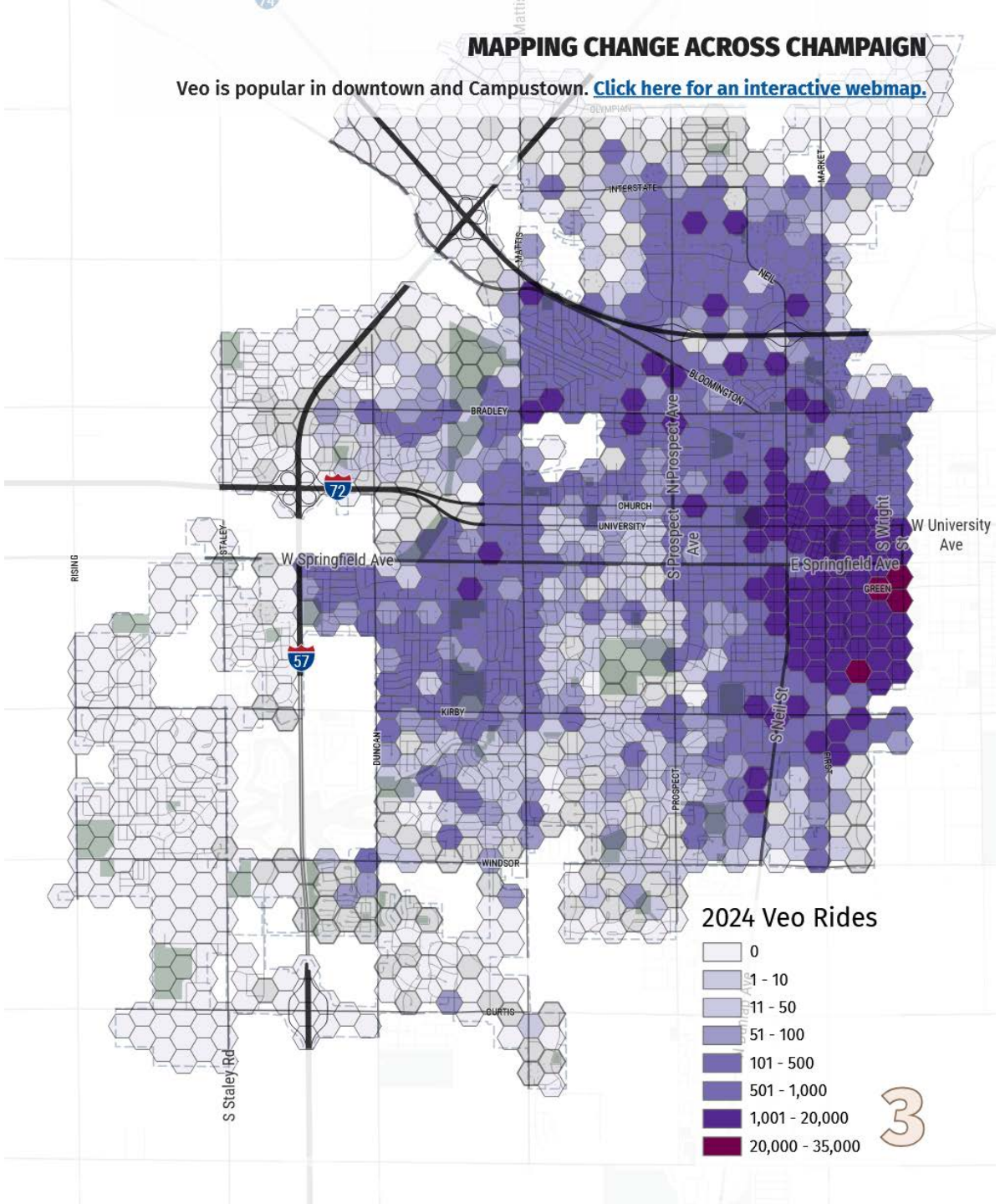
"Who gets lost in the conversation?"

A "silent" user base grows and grows...

Less complaints, absolutely no positive feedback (except asking while someone is riding).



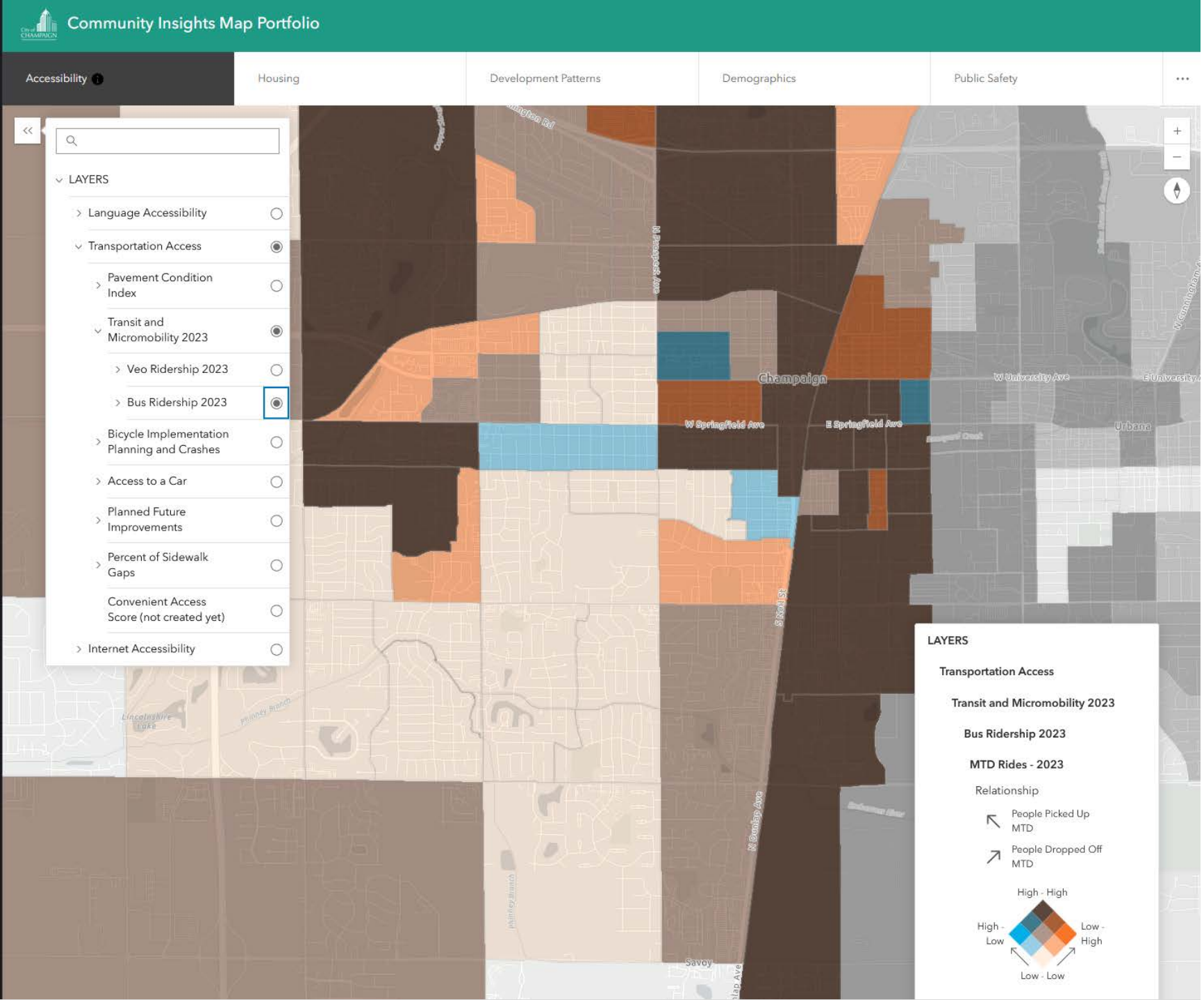
Miles ridden are shooting up. Many rides are headed for places buses struggle to go (farther from campus and low-density retail and low-density residential).



ASK for the data of this app-based service (if you haven't already.)

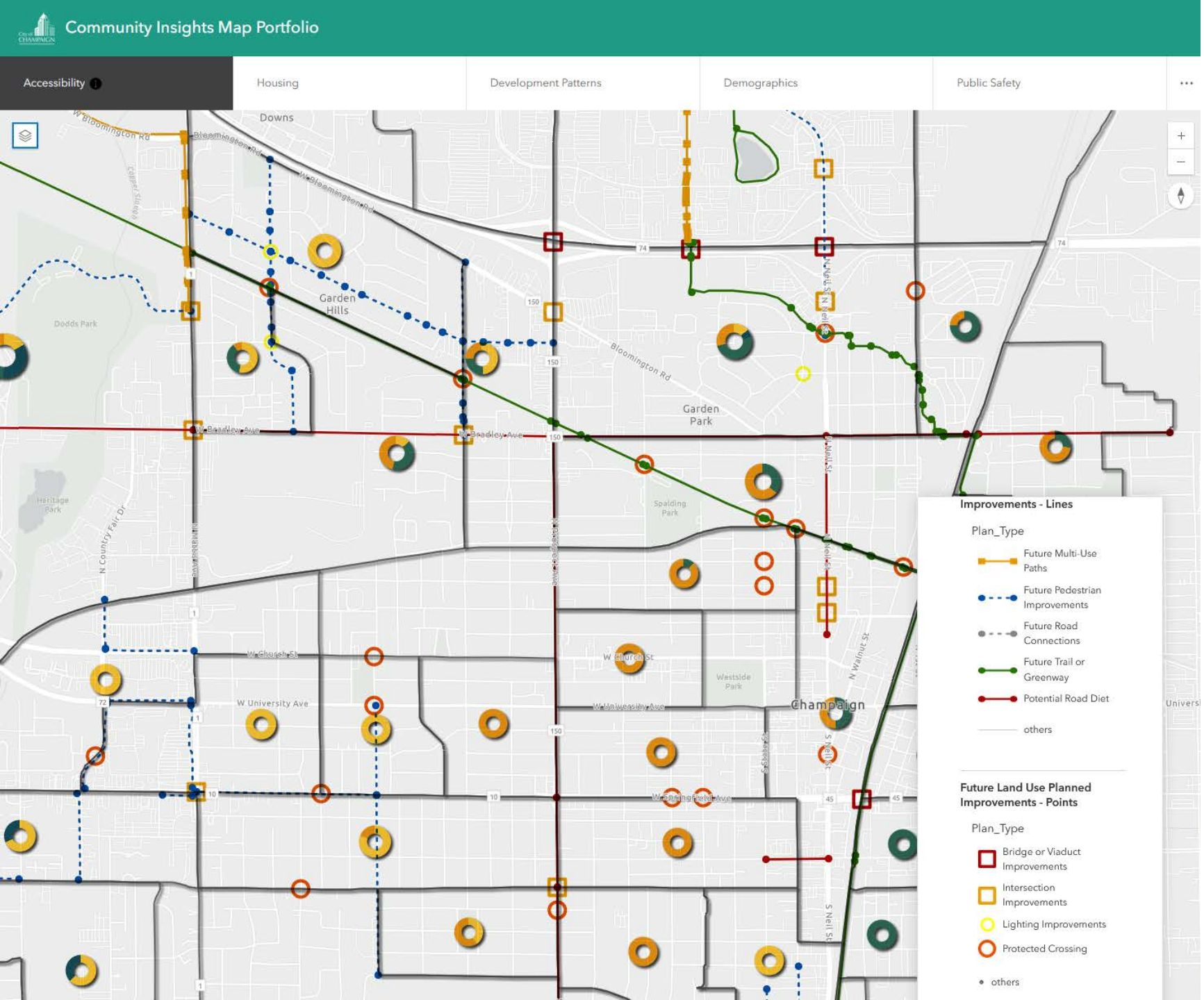
Spell it out for the company- you know what is happening on the ground, but you must back up with data.

Miles ridden are shooting up. Many rides are headed for places buses struggle to go (farther from campus and low-density retail and low-density residential).



Map bike share ridership WITH what people know:

- *Bus ridership*
- *Car access/ownership*



Map bike share ridership WITH what people know:

- *Pair it with infrastructure improvements planning and spending.*

After you're done riding a Veo Cosmo, you have to take a picture of where you left it so Veo knows it's not in somebody's living room, or perched atop the corpse of a pedestrian. Fair enough Veo, fair enough.

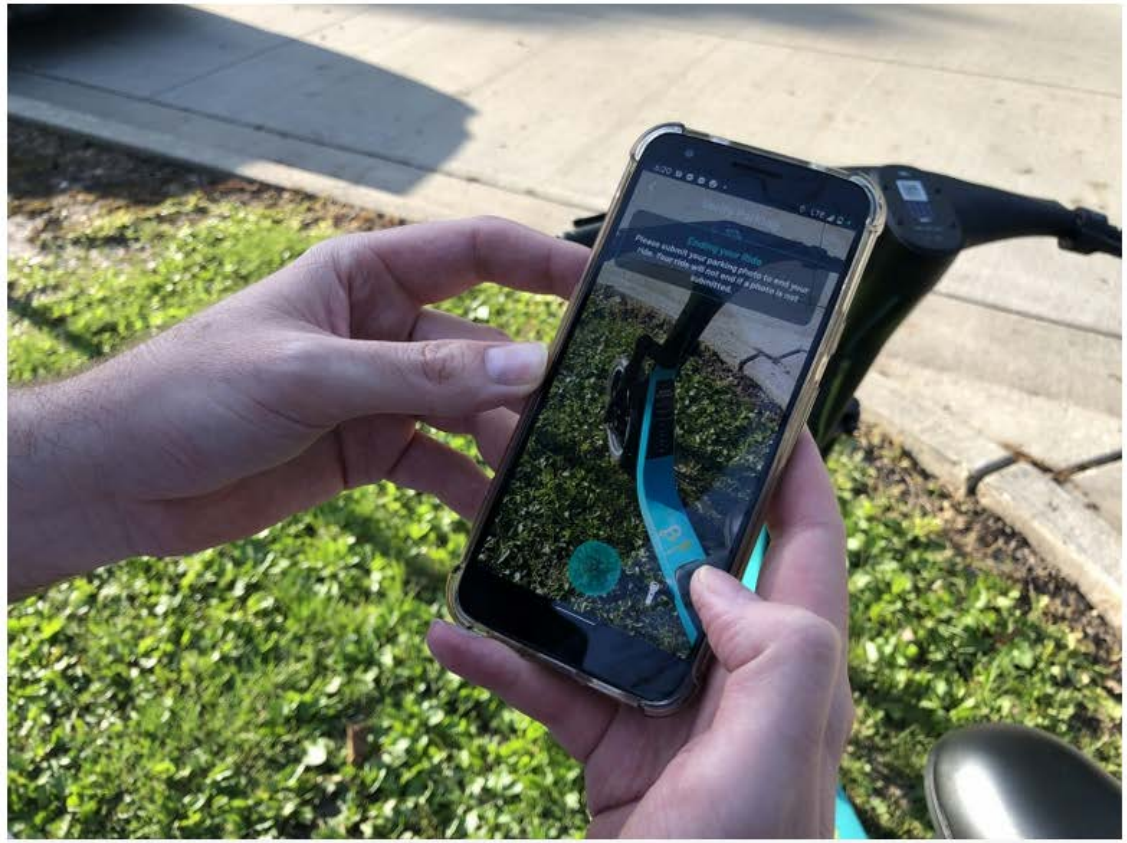


Photo by Andrea Black.

VERDICT: While there's no chance of me replacing my own beloved commuter bike with Veo, I'm definitely keeping the app on my phone and I look forward to using Veo bikes to get around when it's convenient for me. I think it's a pretty slick system with a reasonable price. Also, Veo's whole fleet of bikes in C-U is electric, so if you're curious about e-bikes, Veo is a cheap way to try some out for your real-world transportation needs.

Thank you to Veo for continuing to give the planners piles of data.

Thank you for all the brave decision-makers for taking a chance on equitable transportation.

My contact for questions, comments, and data is:

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Thank you!