

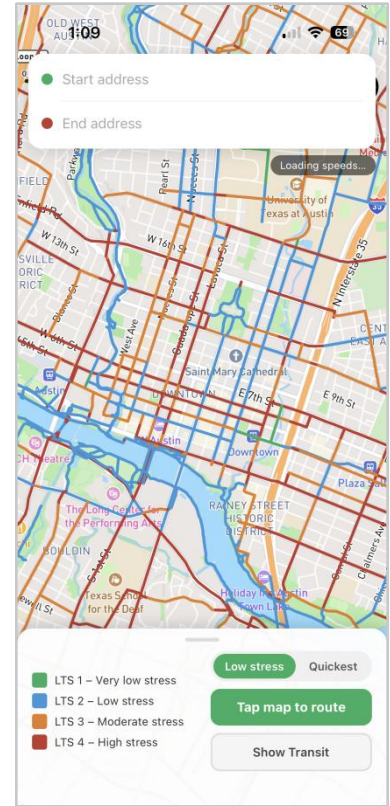
ROLL



From Planner to Programmer: Building an LTS Analysis Tool with AI-Assisted Coding

Anais Schenk · Senior Transportation Planner

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Who I Am



Anais Schenk

Senior Transportation Planner · Kimley-Horn

- **VMT Mitigation Program**
Vehicle miles traveled reduction strategies
- **Land Use + Transportation**
Planning at the nexus of land use and mobility
- **Human Behavior & Policy**
Why people travel the way they do
- **Not a developer**
Built each of these tools in one weekend

Why I Built This

Santa Cruz, CA

- Small Town: quick & easy to learn
- Infrastructure is functional
- Slower narrow streets
- Cycling feels accessible to most
- Ideal weather most of the year

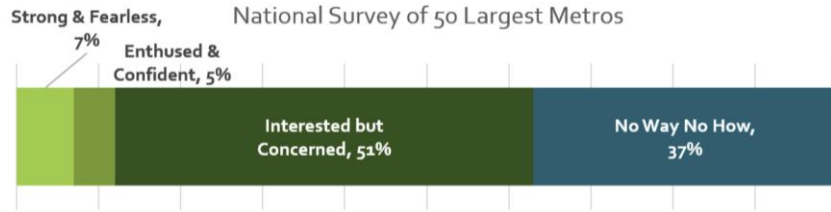


Austin, TX

- Urban City: easy to navigate, but large
- Protected facilities mostly recreational
- Faster traffic, wider roads
- Cycling feels like a competitive sport
- Boiling oasis for 6 months



I thought I was an enthused and confident cyclist



But how does that measure of attitude relate to my needs?

How can I better understand LTS framed through my day-to-day experience?

THE DUTCH CATEGORISE CYCLISTS INTO SIX GROUPS



THE EVERYDAY CYCLIST

Someone trying to get to work or school, taking a direct route & wishing to continue cycling undisturbed, wanting to stop as rarely as possible.



THE SPORTS CYCLIST

Someone doing cycling for sport, including mountain bikers, road racers & others. They tend to cycle in laps or for a long distance, moving very quickly, which can lead to conflict with other road users & even other cyclists!



THE RECREATIONAL CYCLIST

Someone cycling for the enjoyment of being on their bike and with others, stopping commonly for food, coffee or at other attractions.



THE ATTENTIVE CYCLIST

Someone who wants to be able to cycle safely, understands the traffic rules well and also wants to follow them. They want good sign posting, and clear intersections.



THE VULNERABLE CYCLIST

Someone who wants a traffic-safe, peaceful cycling environment, where they are not passed by other traffic and even other faster cyclists; infrastructure must be forgiving to allow for errors. They tend to be children, the elderly and disabled people.

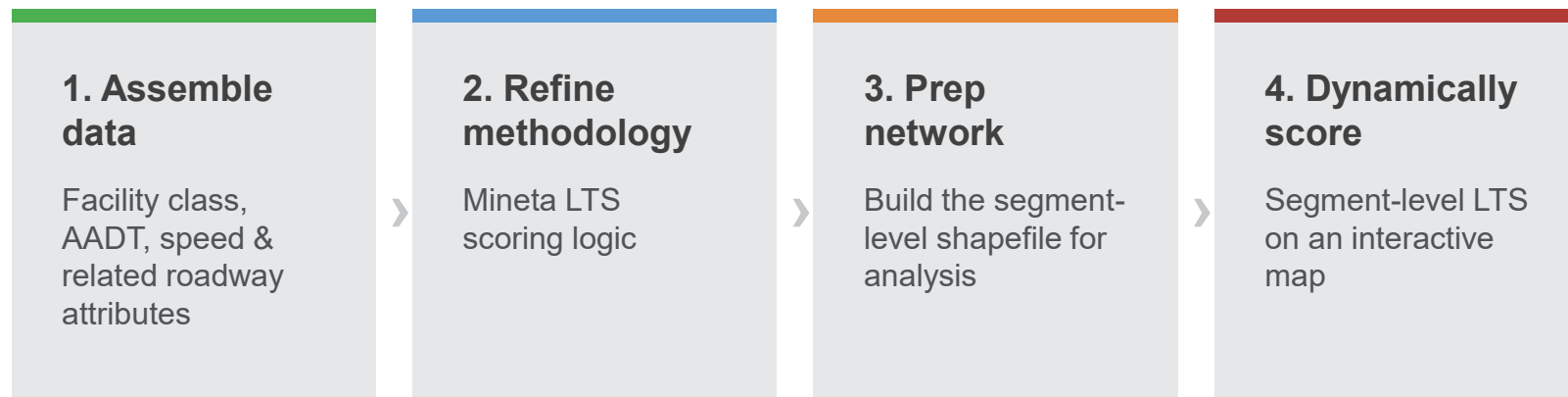


THE COURIER CYCLIST

Someone who wants to get from A to B very quickly because they cycle under time pressure. They also often require more space. They represent a range of riders, some wearing large backpacks, others using three or four wheel cargo bikes.

The First Tool: LTS Analysis App

A standard geospatial workflow to visually understand the impact of changing variables



The tool calculates LTS in real time from user-adjustable inputs — facility, AADT, and speed.

Built with a Lightweight Stack



Open-source tools using AI to learn

THE STACK

- **GeoPandas + Shapely**
Geospatial data processing
- **Flask**
Lightweight Python backend
- **Leaflet**
Interactive web map
- **Anaconda**
Environment & dependency management

THE AI BUILD TOOLS

ChatGPT

Step-by-step instruction, code generation, debugging, and Python explanations

Cursor

The AI-guided IDE where code was written, tested, and iterated

A fully functioning analysis tool — built by someone who didn't previously write code.



☒ STREET MAP

☐ AERIAL + LABELS

Scenario

No active scenario

Select a scenario... ▾

New

Load

Save

Segment Details

Road Name: Monterey Pass Road

Current LTS: 4

BIKEWAY TYPE

No separate path or bike lane ▾

SPEED LIMIT (MPH)

40 or more ▾

NUMBER OF LANES (TOTAL)

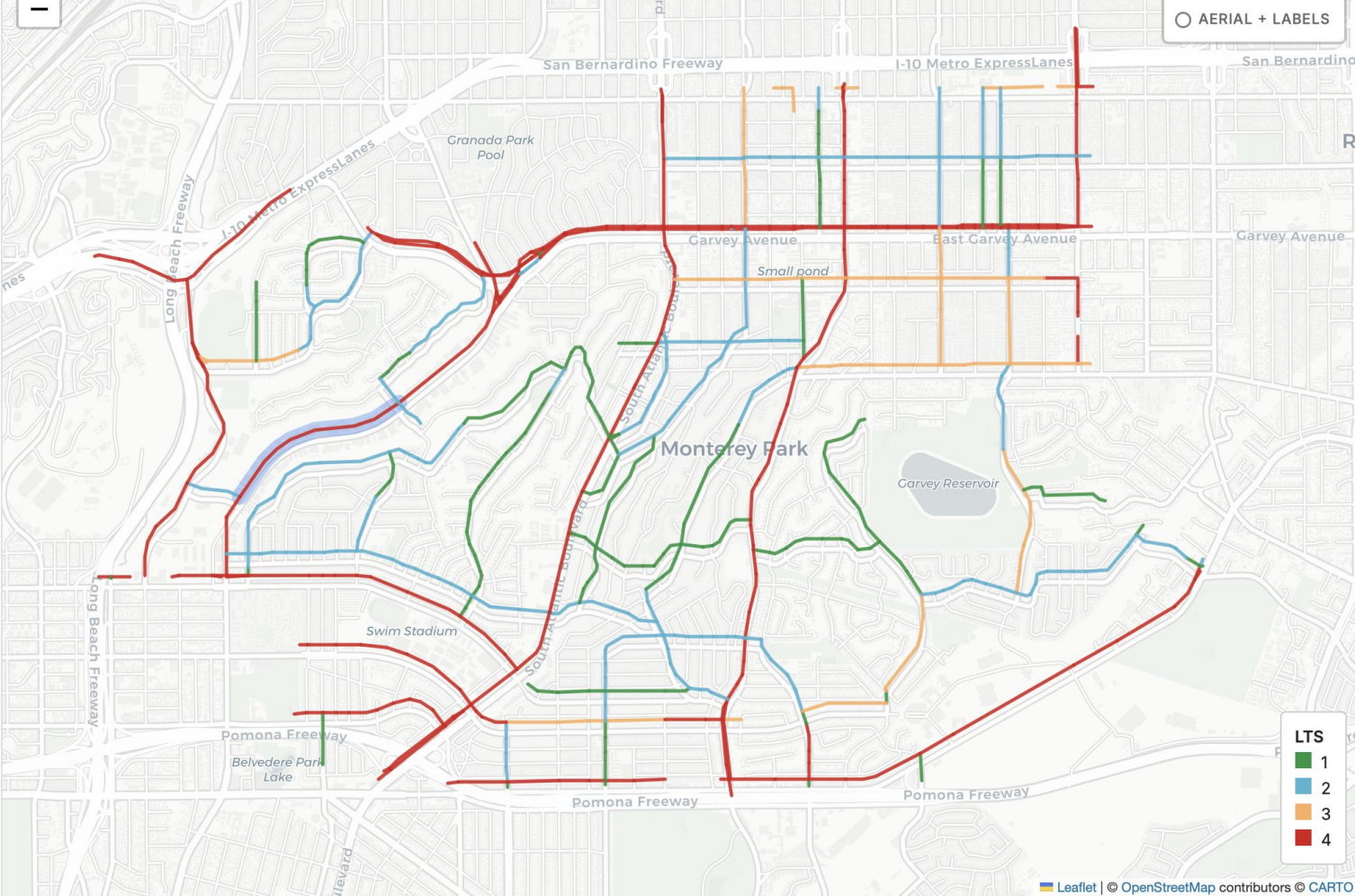
4 ▾

ROAD HAS CENTERLINE?

☒ YES ☐ NO

Update LTS

Reset LTS



Scenario

Test

Test

New

Load

Save

Scenario Edits 2 segments

raised median: raise

Monterey Pass Road

Bikeway Type: Bike lane without parking

Speed Limit (mph): 30

Lanes (total): 4

Bike Lane + Parking Width: 13.5

Bike Lane Width: 6

Status: Existing

Has Centerline: true

Blockage: Frequently

Raised Median: false

Segment Details

Road Name: Monterey Pass Road

Current LTS: 1

BIKEWAY TYPE

Physically separated

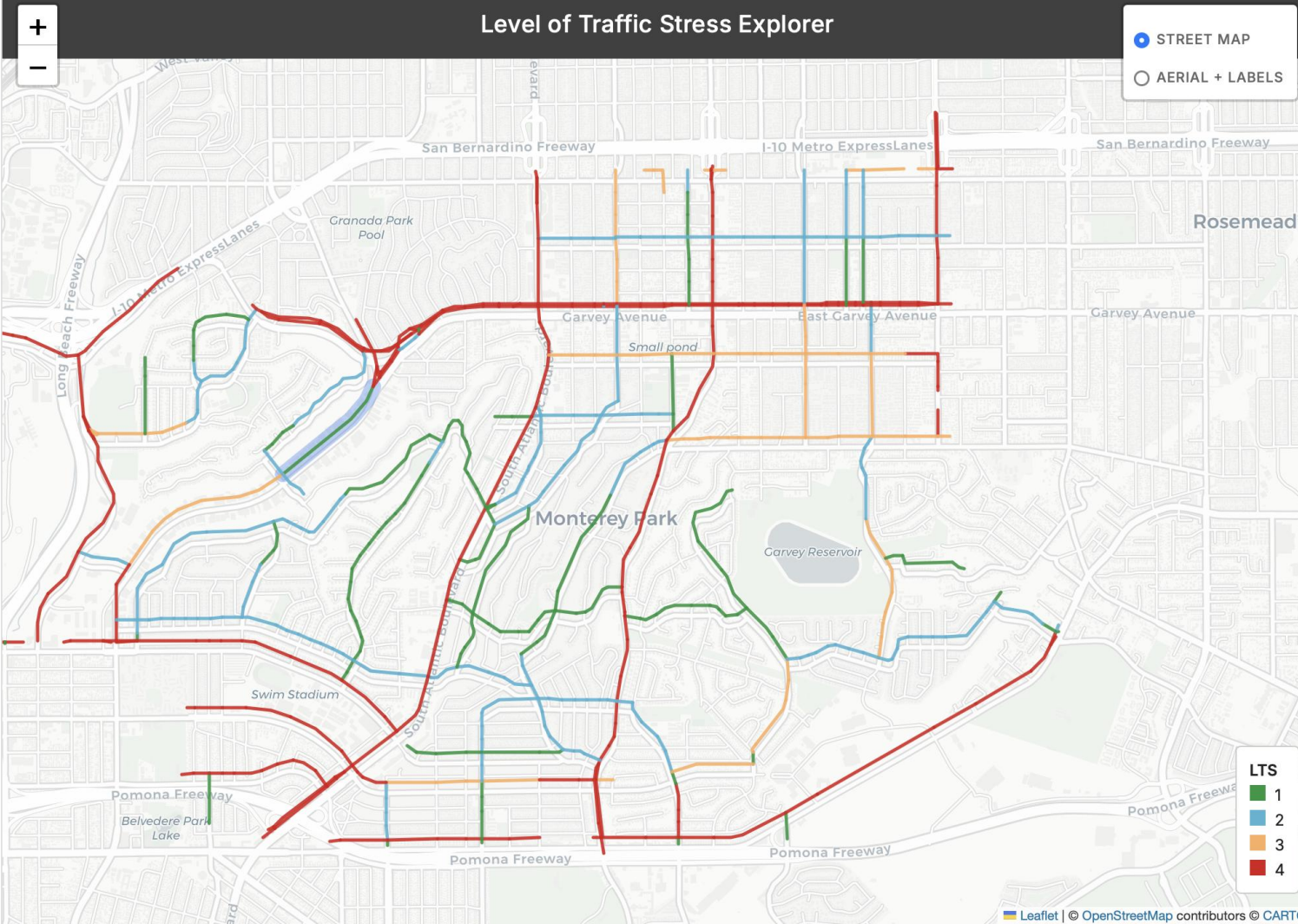
Update LTS

Reset LTS

Level of Traffic Stress Explorer

STREET MAP

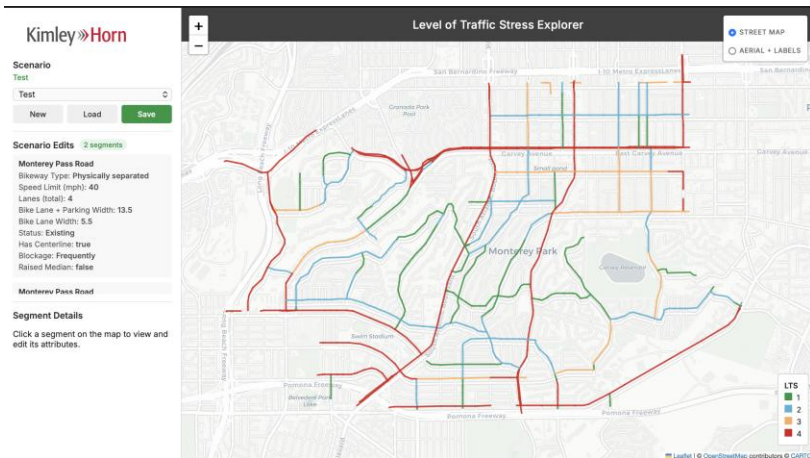
AERIAL + LABELS



Skills I Gained

It started here

A browser-based LTS app — my first project, built through chat — showing how an LTS score shifts as you adjust a variable.



What it taught me

- Comfort with the terminal & working directly in it
- Familiarity with file structures across different application types

Since then

- **A personal assistant agent**
Using Open Router and Claude
- **Two websites**
Using Replit
- **A cooking & health tracker**
architecture in planning

Learning with AI



Each step handed a little more of the work to the AI.

1

Browser LLMs

Started with LLM functions inside standard browser apps — copy, paste, prompt.

2

Claude desktop app

Downloaded Claude and learned VS Code through chat-led, step-by-step instructions.

3

Claude Code in VS Code

Moved into the editor — running Claude Code directly alongside my project.

4

Full file-write access

Gave Claude direct access to write specific files. From prompting to delegating.

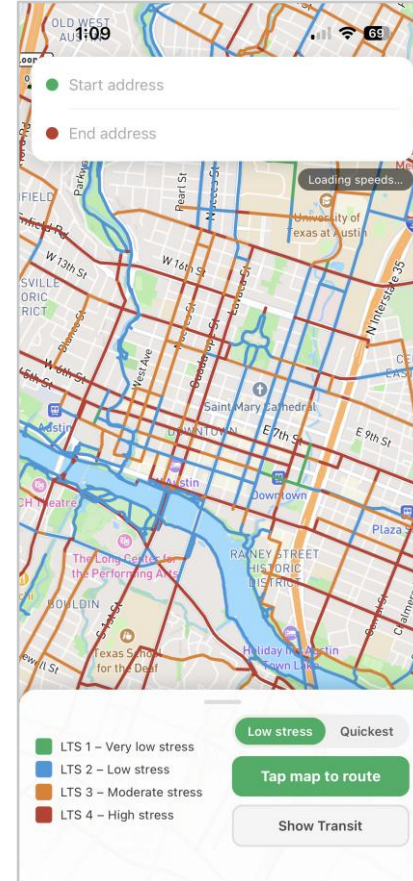
The Second Tool: ROLL

Every street scored using WSDOT method

-  LTS 1 — Very low stress
-  LTS 2 — Low stress
-  LTS 3 — Moderate stress
-  LTS 4 — High stress

Three inputs per segment

Facility type · Traffic volume (AADT) · Target speed



The Tech Stack



1

weekend

no prior mobile dev
experience



Expo / React Native

One codebase — iOS + Android



Mapbox GL

Custom layer rendering for stress



TomTom Traffic API

Live speed data, every 5 minutes



Austin GIS + Replica + OSM

14,285 segments, p85 speeds, AADT

Planners can build this kind of tool without massive investments.

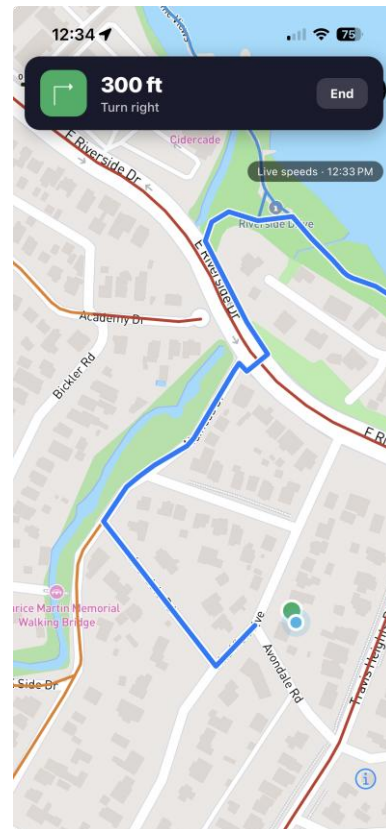
Live Data + Routing

Live Speed Scoring

- TomTom Traffic API refreshes every 5 min
- Faster than the speed limit → score worsens
- Congestion never improves a score

Low-Stress Routing

- Dijkstra routing with BLTS penalty weights
- LTS4 costs more: avoided but not prevented
- Gaps filled with local streets from OSM defaulted to LTS3



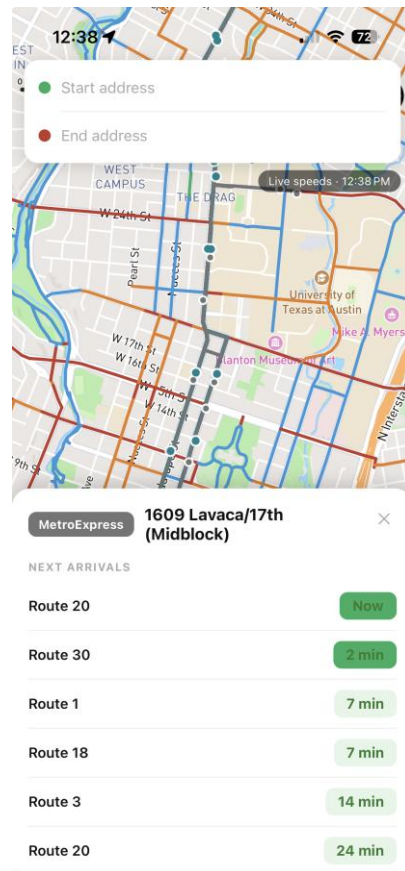
Transit + Navigation

Capital Metro Layer

- MetroRail Red Line, MetroRapid 801/803
- Real-time arrivals via GTFS-RT
- Tap a stop to see next departures

Turn-by-Turn Navigation

- Blue GPS dot tracks your position
- Follow mode — camera rides with you
- Next-turn card + off-route rerouting



Phase 2: Validating LTS with Crowdsourced Data

LTS scores are modeled. Real riders know how a street actually feels — so let them tell us.



**Riders report
real stress**



**Cross-check vs.
modeled LTS**

Validate the methodology

Does the modeled score match how riders actually experience the street? Confirm where the method holds — and where it breaks.

Improve the underlying data

Surface misclassified segments (the I-35 frontage road) and fill gaps the source data misses.

Crowdsourcing turns LTS from a static model into a living, ground-truthed measure.

Are we building for attitude or function?

Are we understating the importance of purpose?



Lessons Learned



1

Teacher, Colleague & Assistant

AI can explain new concepts, reason alongside you, and take on repetitive work. The planner still sets the direction.

2

Human dynamics matter more

As tools lower the technical barrier, durable value shifts toward understanding people, behavior, institutions, and tradeoffs.

3

Creativity is a planning skill

AI rewards people who can imagine better questions, test unusual approaches, and turn ideas into prototypes.

4

Judgement is the differentiator

AI can generate options. Planners decide what is appropriate, equitable, defensible, and useful.

What's Next



App Store

Full public release after the conference



Android

Cross-platform build already in progress



More cities

Methodology is city-agnostic — Austin is just the start



Better data

Improved facility classification + automated GIS QA



Network gaps

Find the missing links that most improve low-stress connectivity

Thank You



Questions?

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