

From Hotspots to Routes: Measuring Walkability in St. George, Utah

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Interactive Map

INTRODUCTION

This project explores walkability in St. George, Utah by analyzing pedestrian count data collected from traffic signals between 2018 and 2022.

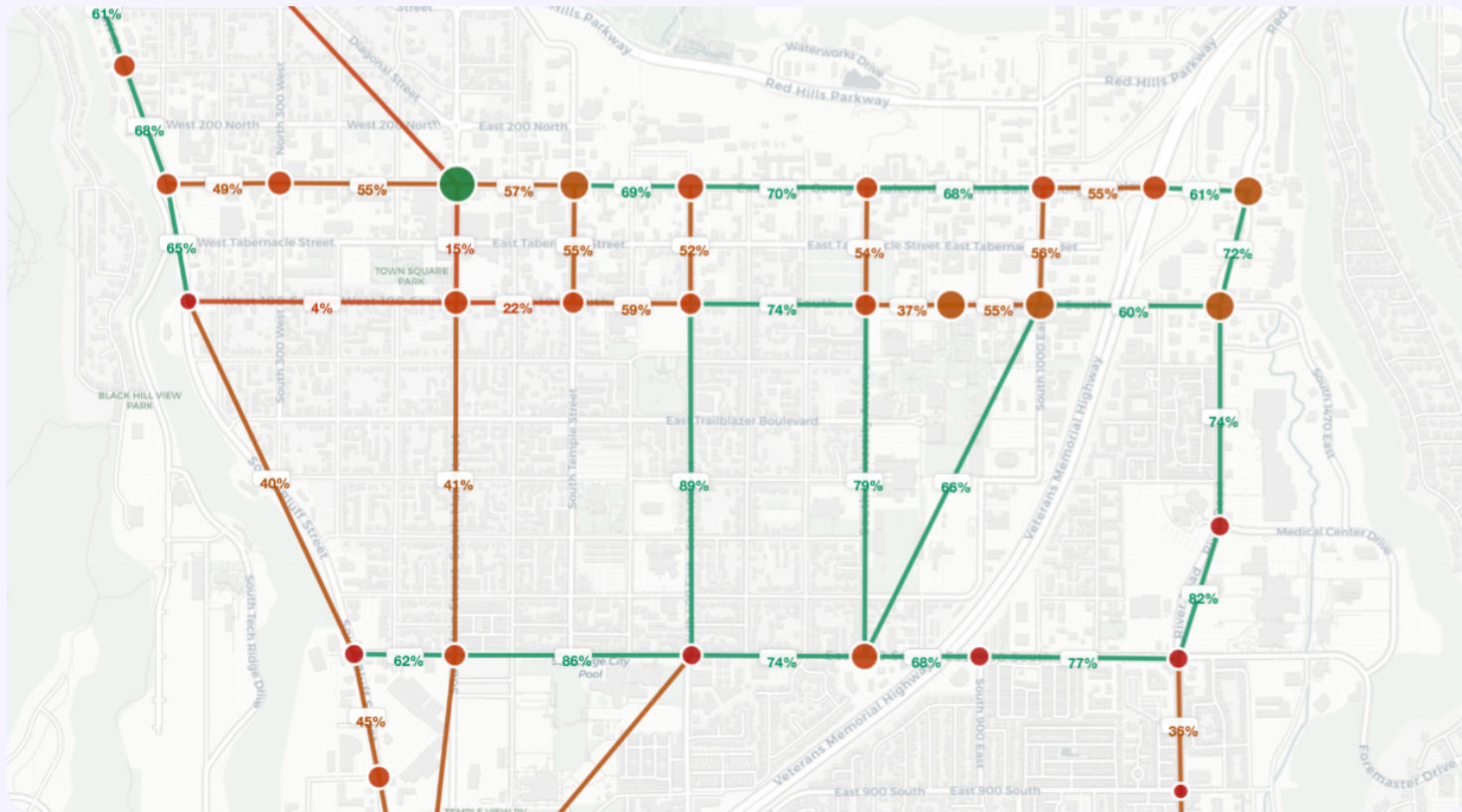
Using correlation analysis and community detection, we examine how factors like bus stop proximity, business density, review activity to pedestrian traffic patterns.

Early findings suggest certain infrastructure and commercial factors may be meaningful predictors, and that groups of nearby signals show correlated activity worth further investigation.

Understanding where pedestrians move — and where they don't — is the first step toward building a city that works for them.

SIGNAL CORRELATION

Do Signals Move Together?



Spearman correlation compared how intersections changed over time. Signals that ranked busy and quiet days in the same order may be part of the same walking route — converting isolated hotspots into a network of pedestrian correlations.

KEY FINDINGS

- Downtown**
Strongest walkability; high volume, dense destinations, and strong signal correlation.
- Destination-rich areas**
Scored higher, confirming land use shapes pedestrian behavior.
- Correlated signals**
Suggest shared walking routes and likely pedestrian correlations.
- River Road & interchanges**
High counts but weak correlation; car-oriented, not walkable.

LIMITATIONS

- Signal counts**
A proxy for pedestrian activity, not full movement data.
- Business & review data**
A snapshot in time and only a proxy for actual foot traffic.
- Scores**
Relative within St. George — not comparable to other cities.
- Correlation**
Suggests routes, but does not prove them.

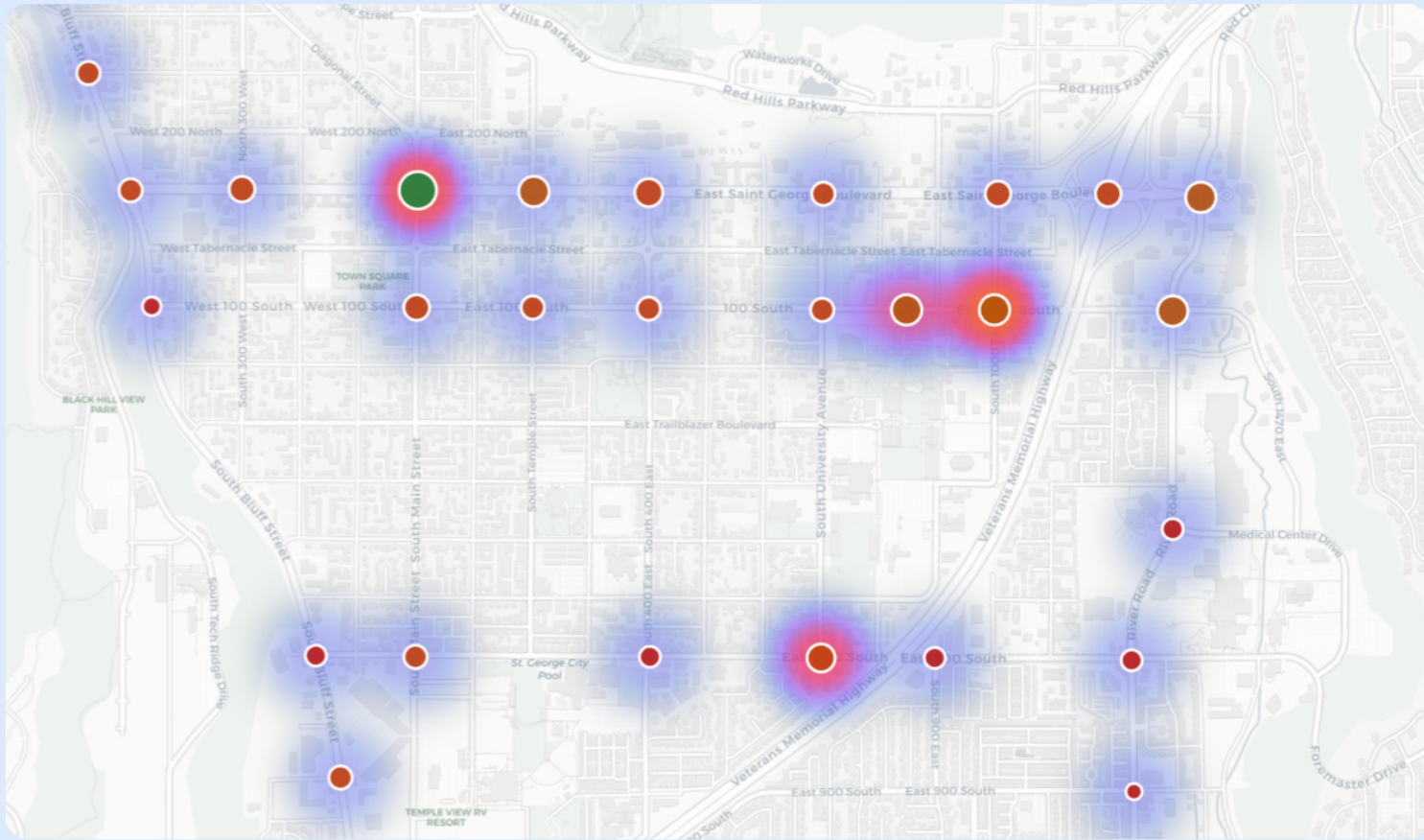
FUTURE WORK

- Refresh data**
Update signal and destination data to reflect current growth.
- Track change over time**
Compare new scores to 2018–2022 to see where walkability improved or stalled.
- Route-level analysis**
Use richer movement data (GPS traces, mobile data) to confirm likely walking correlations.
- Design experiments**
Test how specific street or land-use changes shift walkability scores.

Walkability Score

35% · PEDESTRIAN VOLUME

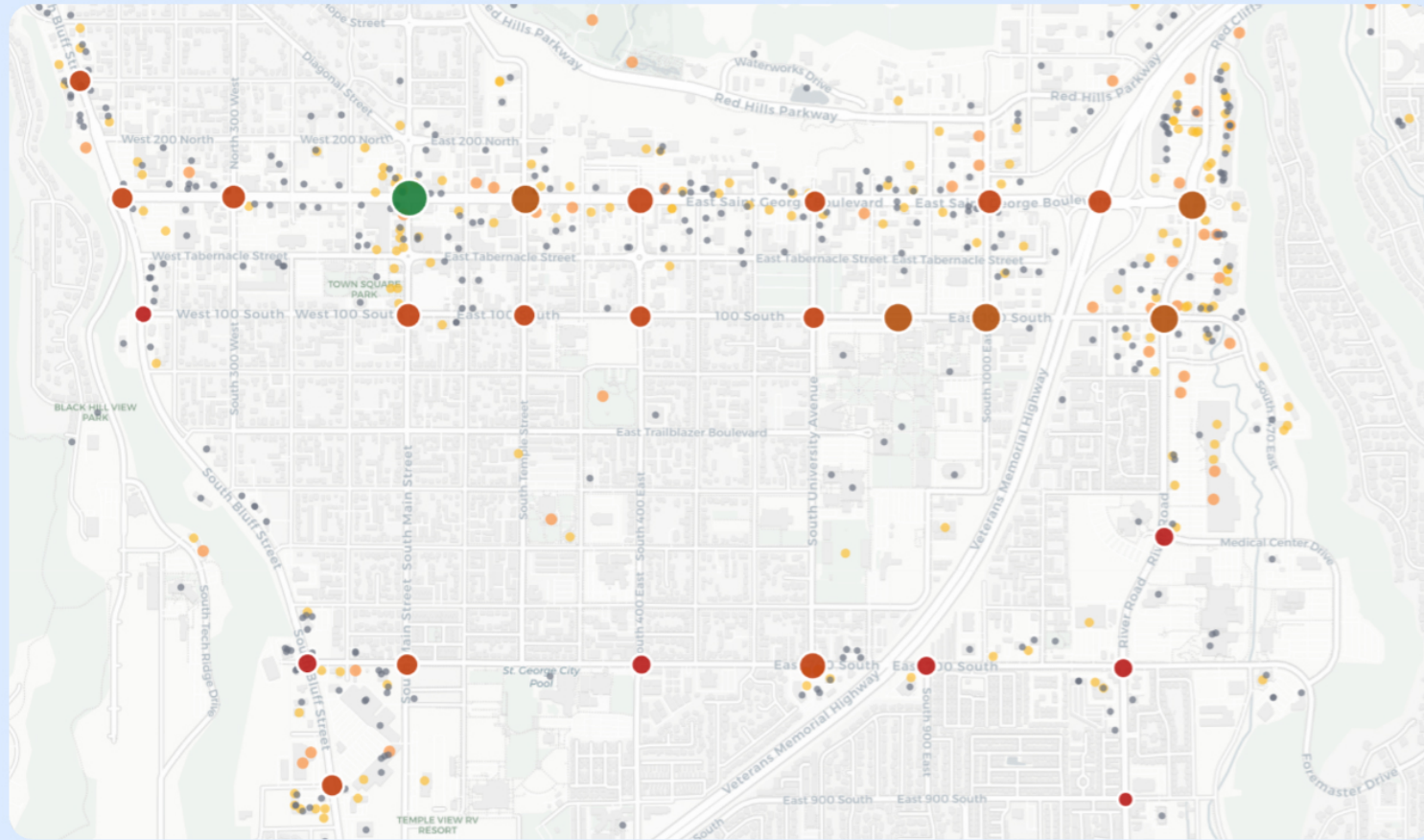
Most direct measure of walking.



Heatmap of button-press volume across all 36 intersections. Downtown signals showed 5x more activity than outer intersections — but volume alone does not equal walkability.

30% · BUSINESS DENSITY

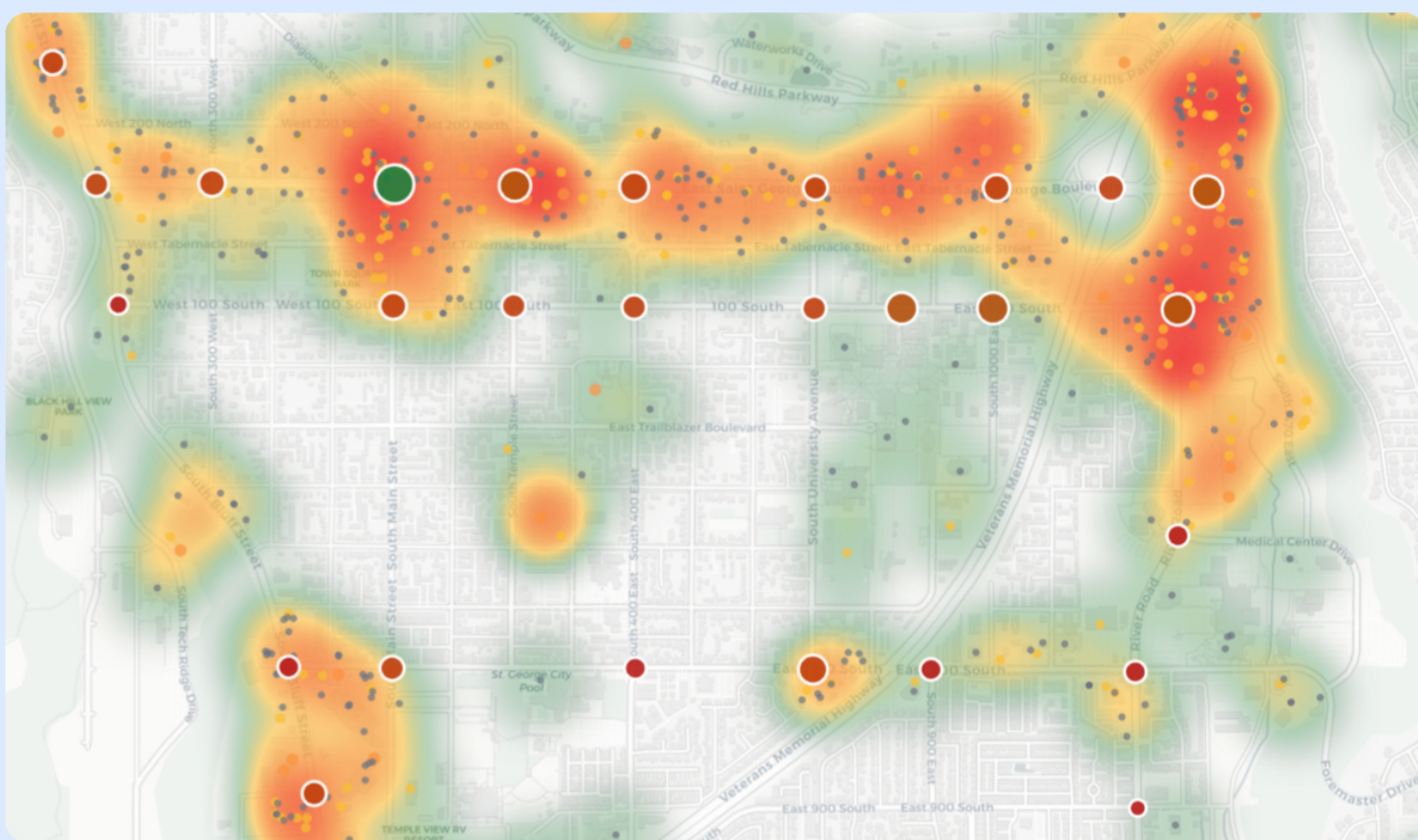
Destinations generate walking.



Each intersection scored by businesses within a 400 m "5-minute walk" radius — the typical threshold people will walk to reach a destination.

20% · REVIEW ACTIVITY

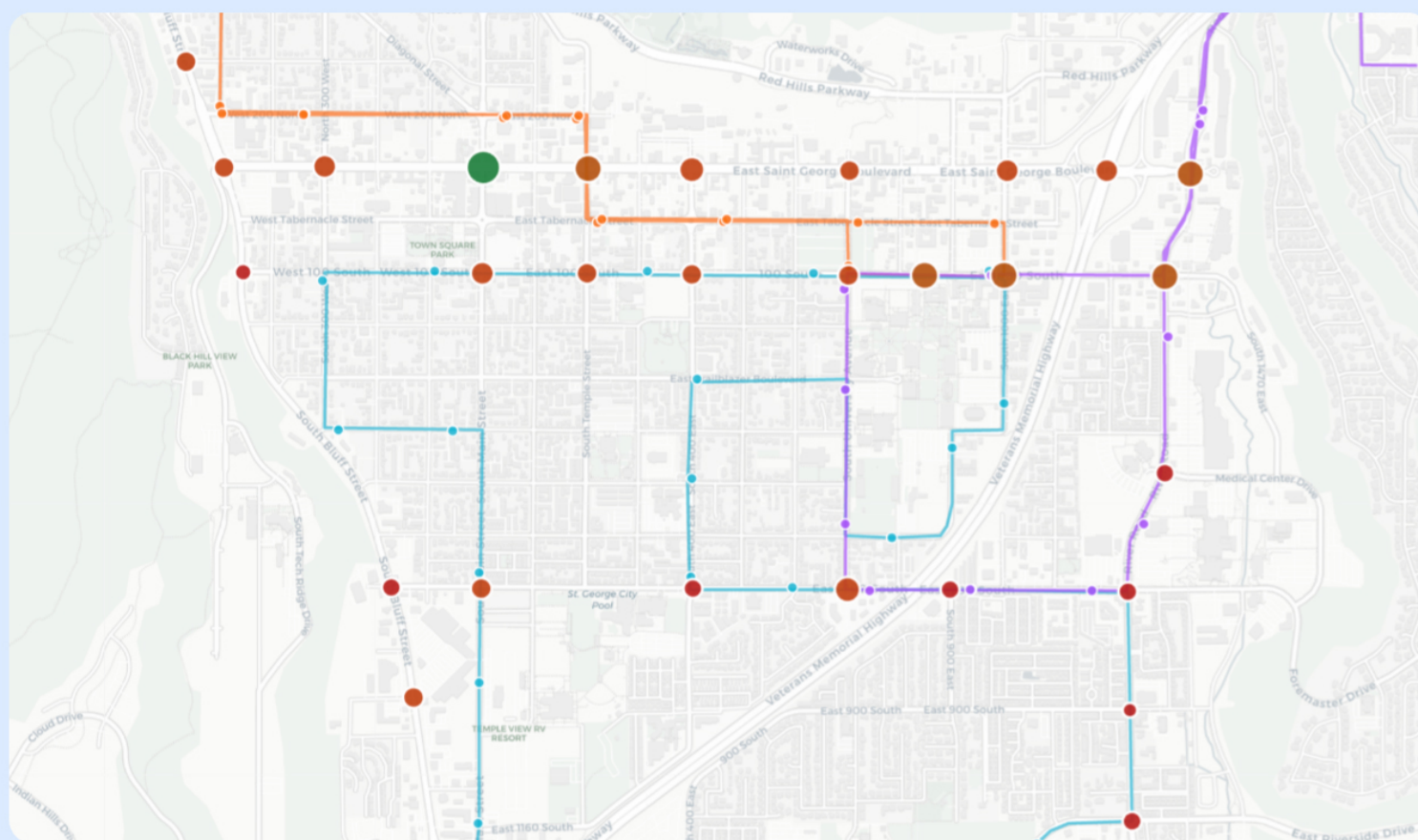
Are destinations actually visited?



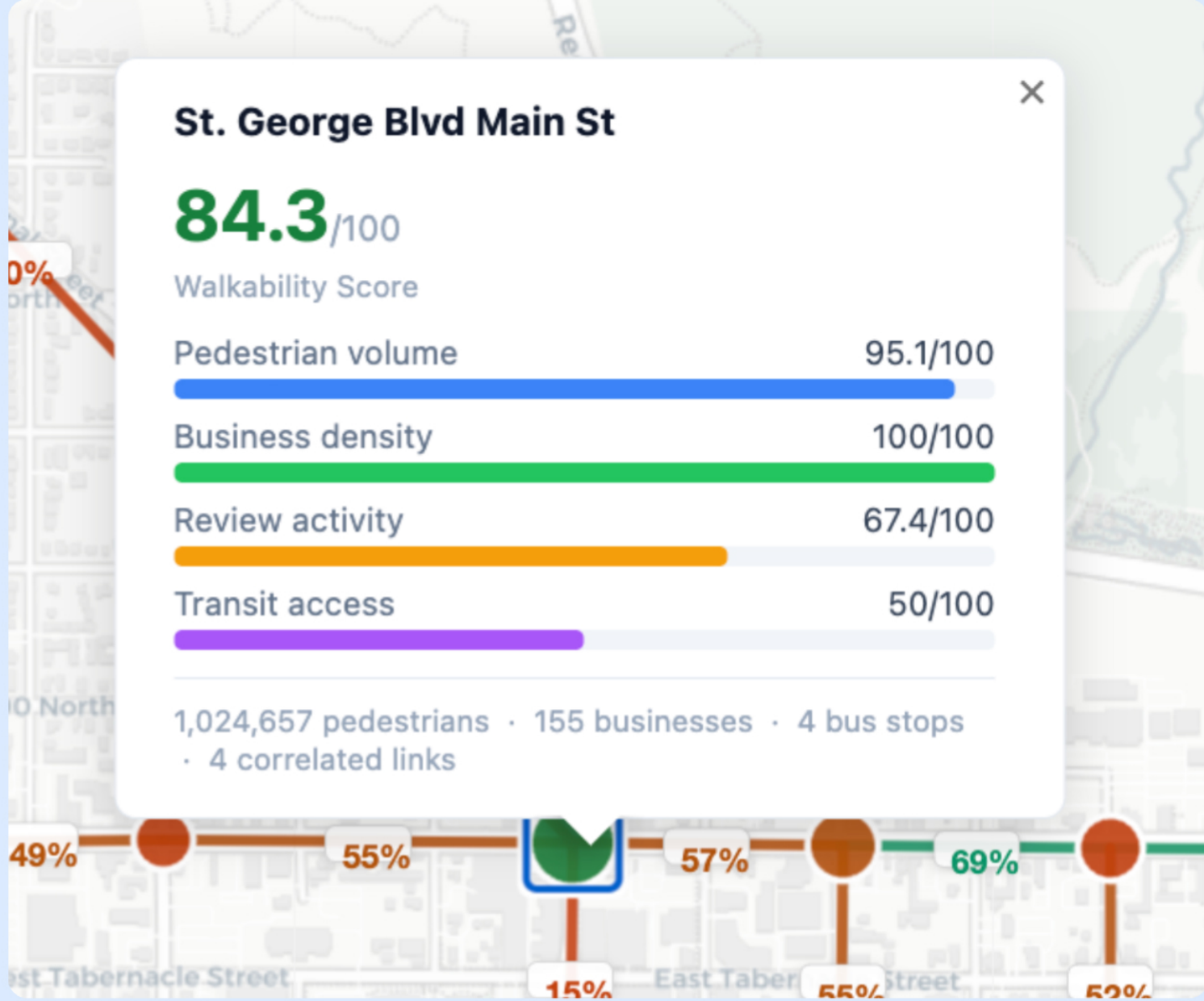
Google review counts used as a proxy for real destination popularity — shifting from "are there places nearby?" to "are these places people actually visit?"

15% · TRANSIT ACCESS

Supports but doesn't measure directly.



SunTran stops and routes mapped to score transit connectivity — transit riders walk the final leg of every trip, making stop placement critical to walkability.



THE DATA

- Date range**
All datasets cover the years 2018–2022.
- Pedestrian Signals — pedat-dev**
Button-press activation logs at 36 signalized intersections · 1,826 days (2018–2022) · each record = one intersection, one day, one raw count. Source: pedat-dev-sg7uw3je2a-wm.a.run.app
- Businesses — McAuley Lab, UCSD**
2,454 business locations across St. George with coordinates, category, and review counts. Review totals used as a proxy for real destination activity. Source: mcauleylab.ucsd.edu
- Bus Routes & Stops — SunTran**
Route shapefiles and stop locations sourced from SunTran and loaded into Python via GeoPandas for spatial joining against intersection buffers.