

WHERE ARE THE TRACKS?

Advanced GIS analysis of crowd sourced bicycle tracks in Reno-Sparks, Nevada



Introduction

RenoTracks is a smartphone app for recording bicycle trips in the Reno-Sparks area. The data collected from the app will provide the **city planner** with primary information to build **future bicycle facilities**. The raw data from this app's database consists of several GPS points collected along a route. Converting this data into volume counts at each street is necessary for future track analysis.

The essential question we seek to address is **where do people ride?** Our analyses treat this question from different approaches.

The first two analyses are related to "**which areas of the region do people bike the most?**"

Further analyses answer questions such as: **what type of street grades and travel distances affect people's decision to ride?** Lastly, the trip distance analysis tries to find out what's the most comfortable bicycling distance.

Popular Rides in Reno-Sparks, NV RTC vs. RenoTracks

Popular Rides was generated to address the lack of contiguous routes with bicycle facilities. The desire of the citizen-driven Bicycle and Pedestrian Advisory Committee (BPAC), in conjunction with the Regional Transportation Commission (RTC), was to identify north-south and east-west routes for commuters and recreational bicyclists alike.

These routes were sourced from a group page with GPS tracks of popular rides led by the Procrastinating Pedalers of Reno Tahoe, a recreational riding group (E. McNeill & R. Collins, personal communication, December 15, 2014).

For our analysis, we were curious to know if RenoTracks data revealed any correlative popular tracks or pinpointed previously undetected popular tracks.

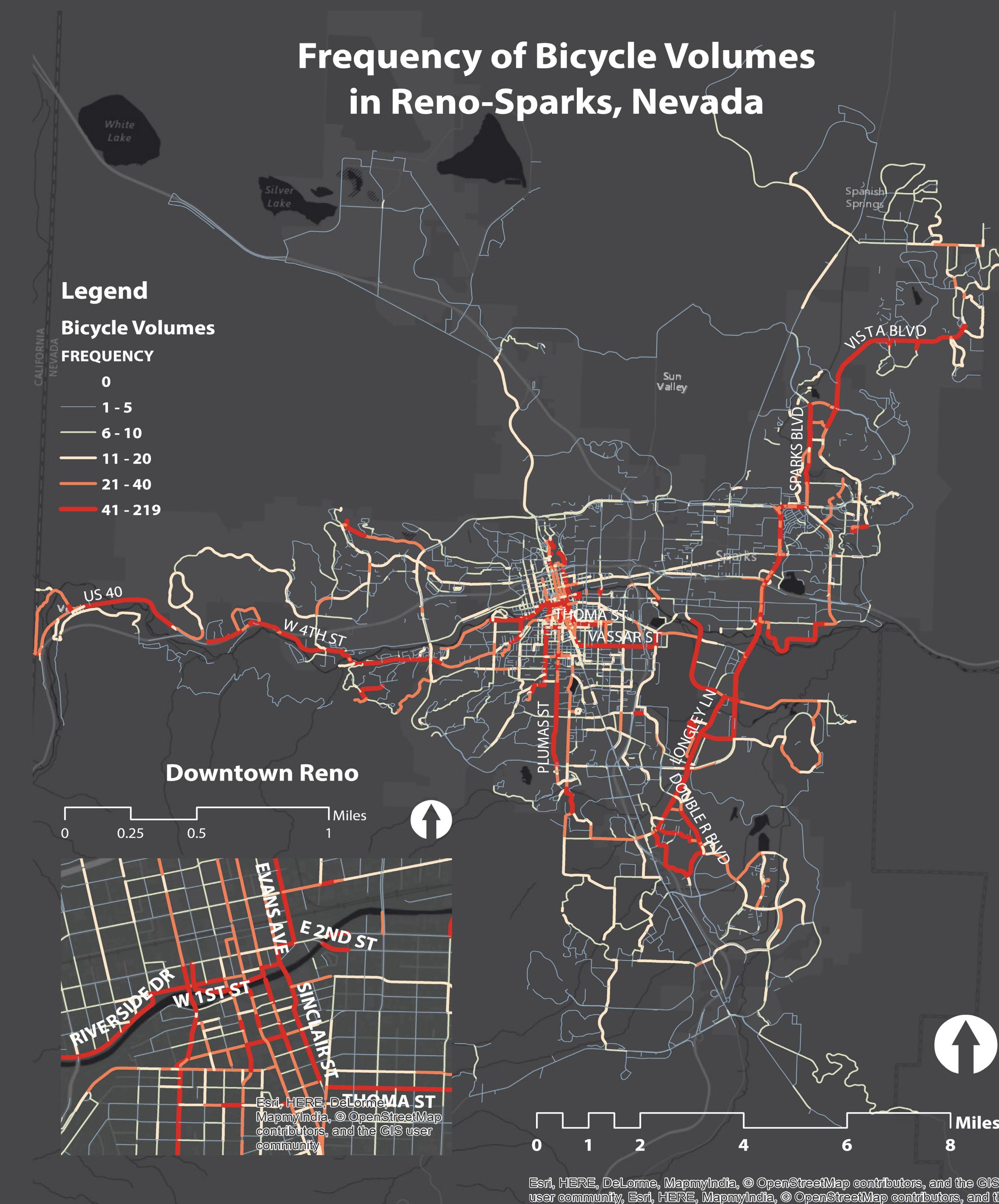
This analysis reveals certain tracks collected by the app do follow existing Popular Rides (portions of the Verdi Loop, Arlington-Plumas north-south route). However there was a significant finding of a great volume of north south tracks taking place along regional roads in the eastern Truckee Meadows (Double R, Longley, Rock, McCarran, Baring, Sparks, Los Altos, and Vista)

Legend

- RenoTracks Popular Rides
- RTC Popular Rides

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Tracks on Maps

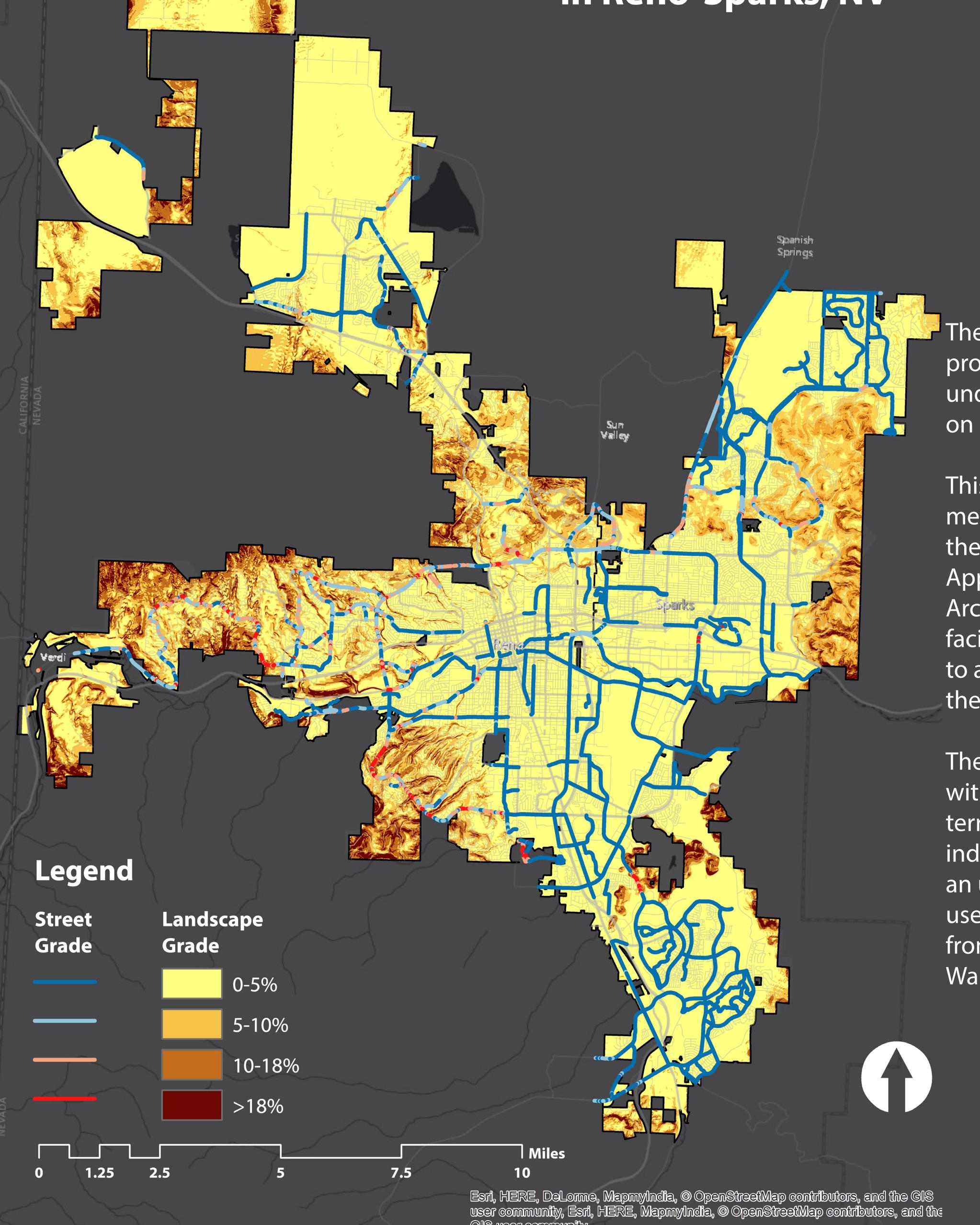


The frequency of bicycle volumes was an analysis based on a query to better understand where people are riding in the Truckee Meadows, sourced from the data generated from RenoTracks app users between January and August 2014.

This map divides the data analyzed into five classes; the blue showing the lowest volumes (1-5) and the red lines boasting the highest (41-219). The streets that exhibit the highest volumes are labeled for reference. Peak volumes are observed in the downtown Reno area on the road segments of East 2nd Street from Evans Avenue to Lake Street. Bicycle volumes are also high in the Startup Row vicinity.

Another high peak is observed in the eastern portion of the Truckee Meadows on McCarran Boulevard where volumes are highest south of the Mill Street intersection.

Slope of Existing Bike Lanes and Shared Use Paths in Reno-Sparks, NV



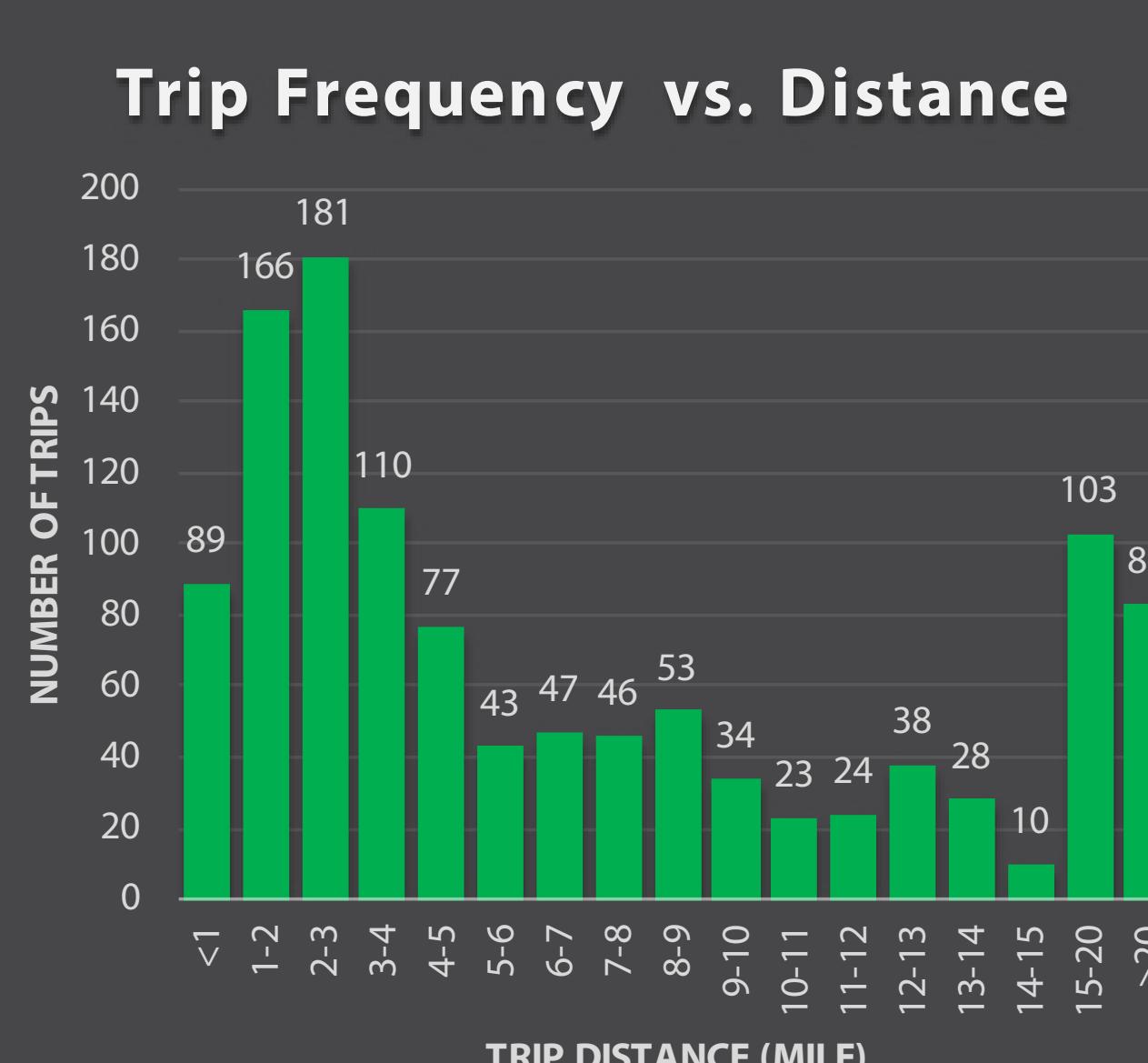
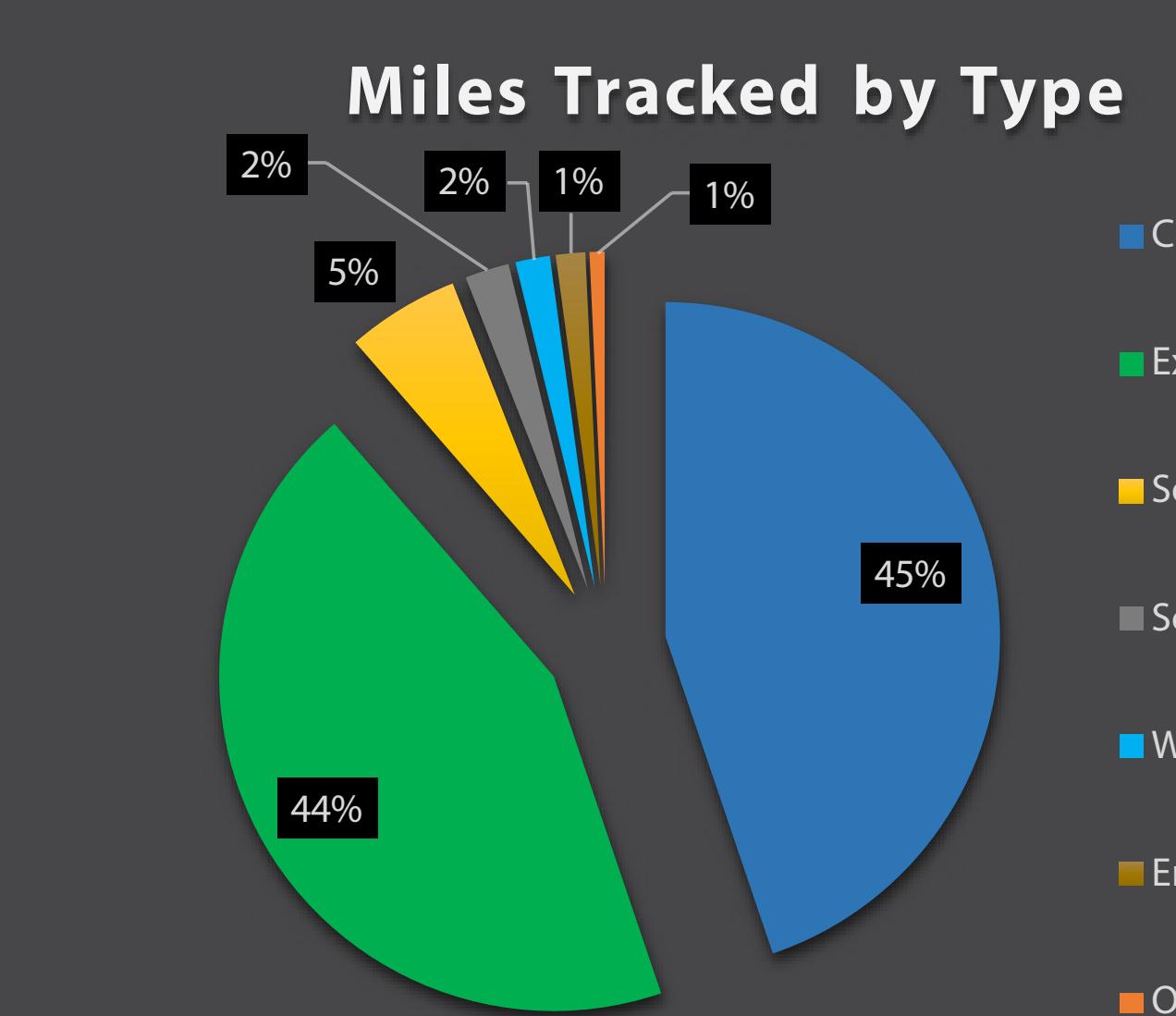
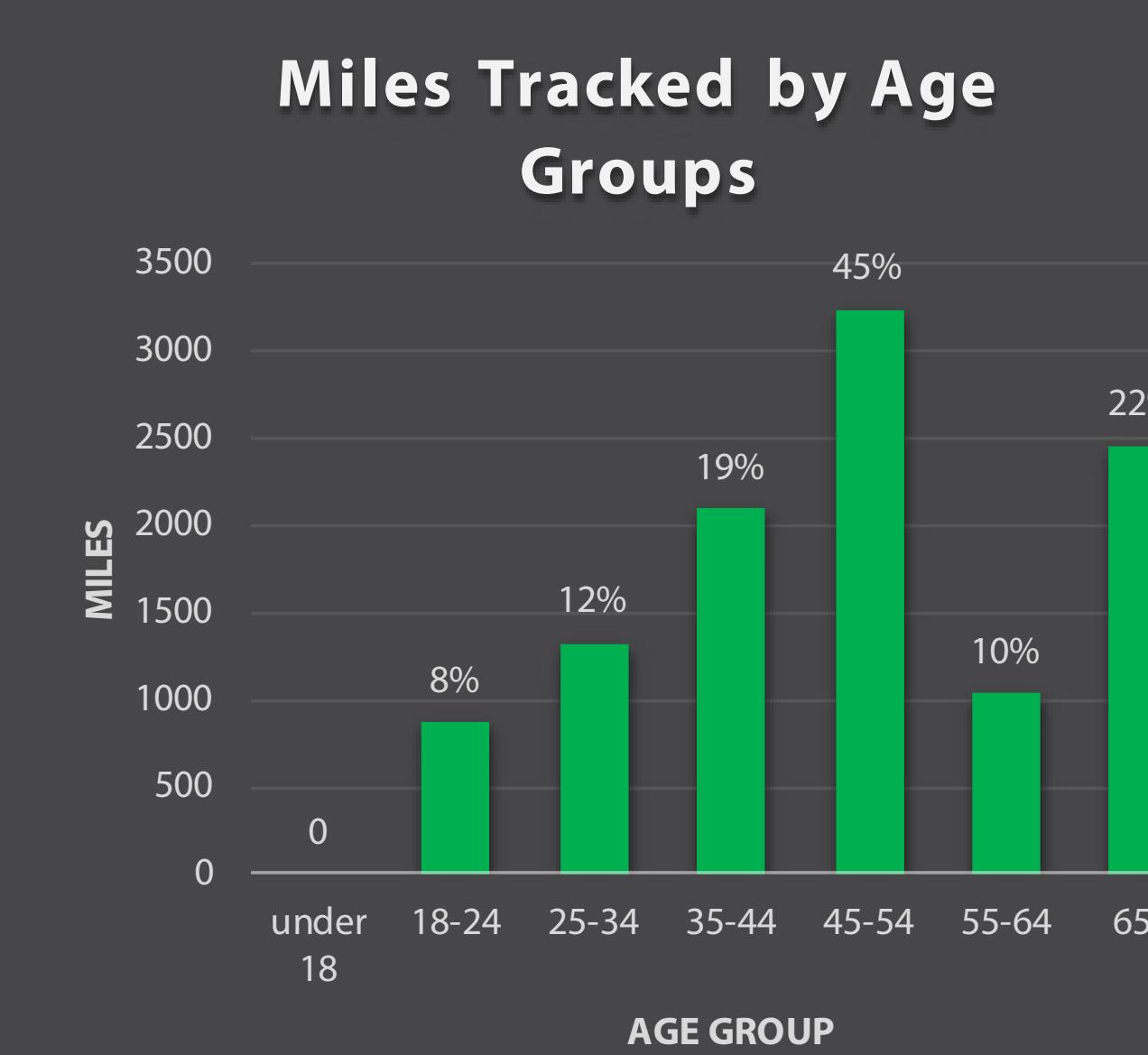
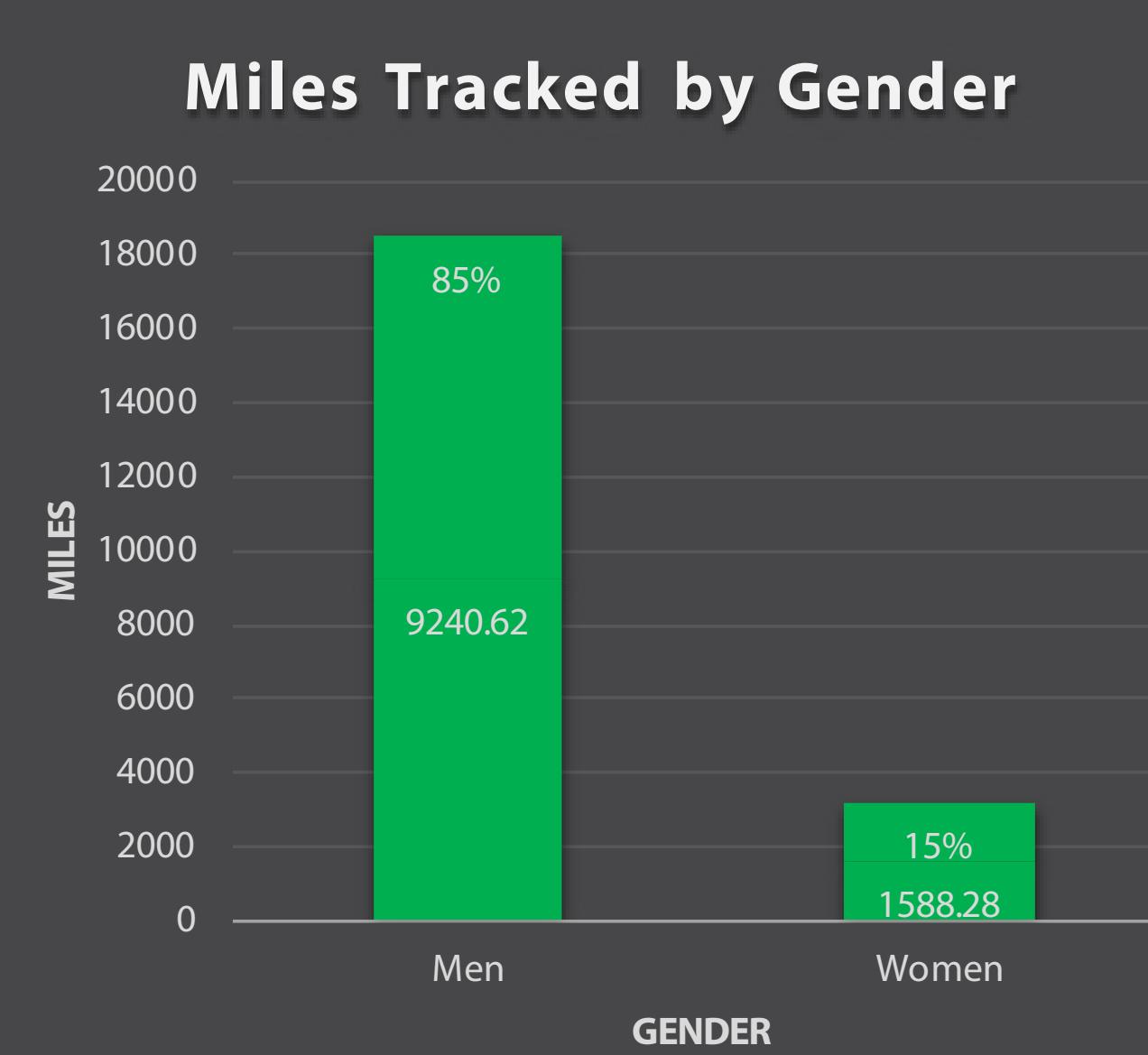
The bicycle facility slope map was produced to give cyclists a better understanding of the slope anticipated on existing bike lanes and paths.

This map was developed from a 10 meter digital elevation model providing the slope data necessary for analysis. Applying the extract by mask tool in ArcMap yielded the slope data on bicycle facilities. That data was then converted to a percent grade value by calculating the rise over run.

The output here is the street grade with blue facilities demonstrating level terrain while facilities highlighted in red indicate grades over 18% and potentially an uncomfortable ride depending on the user. Grade classification was gleaned from 2014 San Francisco Bike Map & Walking Guide.

Demographics

Demographic data was sourced from the RenoTracks 'tallies' webpage. Here we get a quick **snapshot** of the RenoTracks app user which tells us who is riding and for what purposes. In summary, **more men than women** are riding by a large margin, **almost half of all riders are late Boomers, early Gen X** (45-54 age group), and **commuters just beat out fitness based trips by 1%**. We also observe the **majority of trips** taken are **2-3 miles** in length.



THROUGH CARTOGRAPHIC EXPRESSION OF CROWD SOURCED DATA AFFORDED BY GIS ANALYSES, THE RENOTRACKS DATASET IS NOW MORE ACCESSIBLE TO MEMBERS OF THE COMMUNITY AND MAY LATER QUANTITATIVELY INFORM REGIONAL BICYCLE PLANNING.

References

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Data sources

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About

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