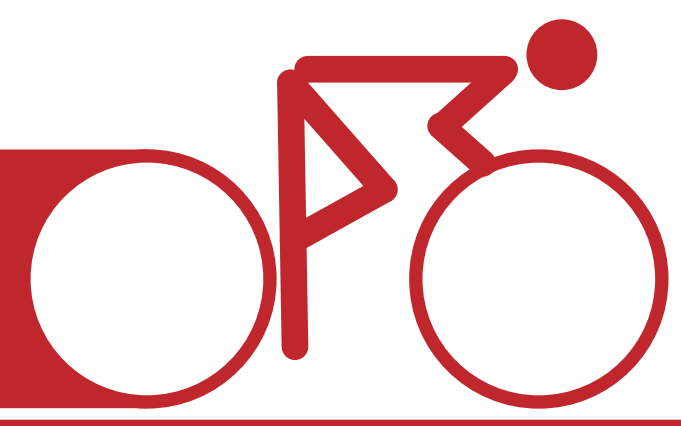
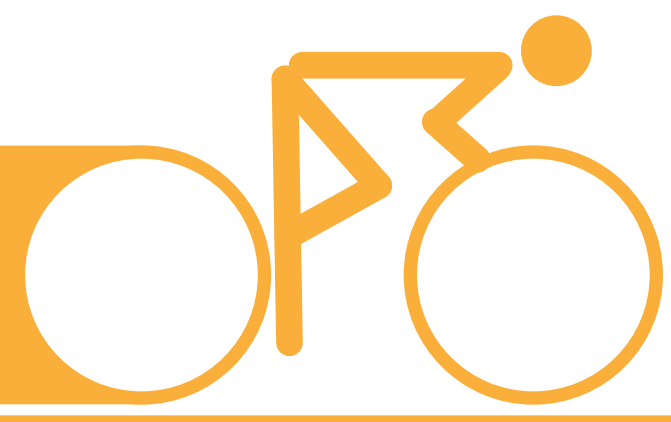


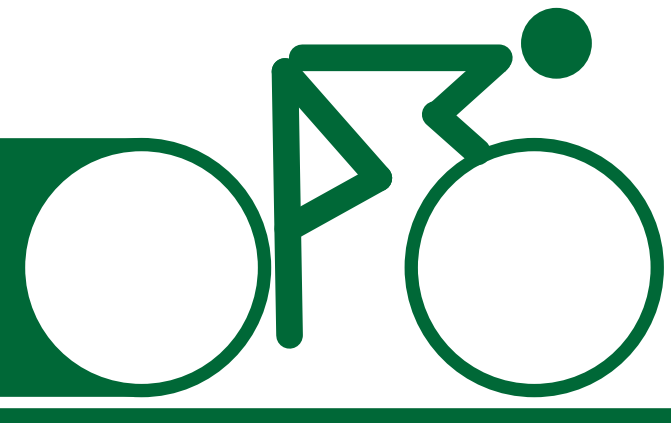
# Pedal the Old Pueblo



## A Naturalistic Study on Bicycling in Tucson, AZ



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### Introduction

Understanding how people bicycle in a city is poorly understood because re-searching how people interact with their transportation system is rarely investigated (Cresswell, 2010). We tend to think of people with respect to their mode choice- a cyclist, a pedestrian, a driver- and forget about the actual human. By focusing on how the built environment influences cycling route choices, we can shift our design policies to reflect how people ride.

### Literature Review

Collecting data, such as GPS and video, from bicycle rides is a relatively new method, pioneered largely in Europe. 10 studies have been conducted on naturalistic data collection for bicycles.

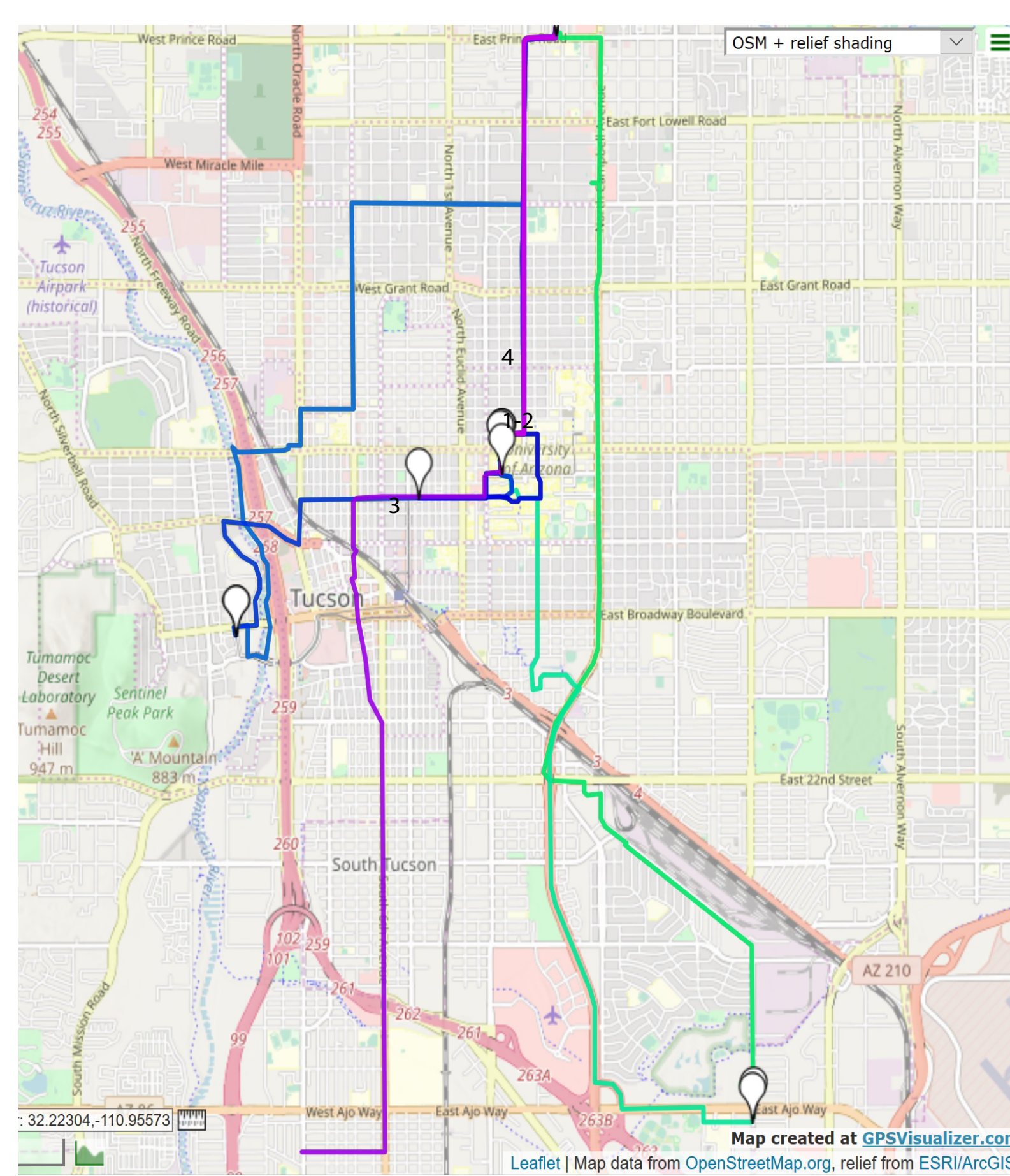
All naturalistic bicycle studies, save for Gustaffson and Archer (2013), lacked stakeholder engagement from departments of transportation, planning departments, and city/regional governments.

All naturalistic studies either give participants a special bicycle or attach a large custom camera to their bicycle. This limits the type of rider, distance, and data that can be collected. The image is an example for Lin et al. (2017).



### Results and Discussion

#### Video and GPS



1. 10/16 Helen and Mountain at 4:53 PM



2. 10/21 Helen and Mountain at 5:12 PM



3. 10/17 8:45 AM University Blvd- car blocking lane



4. 10/27 Mountain and Linden at 8:14 AM- car blocking lane

#### Interviews

Major concerns:

"Safety is the primary concern. Lack of funding to build more connected bike networks. The sort of culture push back, the car culture, push back we get around taking parking spots and narrowing travel lanes." -Tucson planner

"I know that just a lot of people in our community... don't feel safe or comfortable riding, even people who are riding now" - Tucson lead planner

Collaboration with the UA happens frequently with the Tucson DOT- almost to the extent that it is too much for the department to manage.

### Research Questions

- 1.) How do riders interact with the built environment? What types of risky behaviors, such as running stop signs, are performed?
- 2.) Where are the problem areas with motorists for cyclists?
- 3.) How can I collaborate with the city in order to improve cycling education, engineering, enforcement, encouragement, and evaluation? Collaboration with local decision makers helps ensure the results are usable and meaningful.

### Methodology

#### Video recordings

Bicyclists will be observed, via GPS and onboard cameras, riding routes of their choice on their bicycle for a period of three to four weeks.

#### Surveys

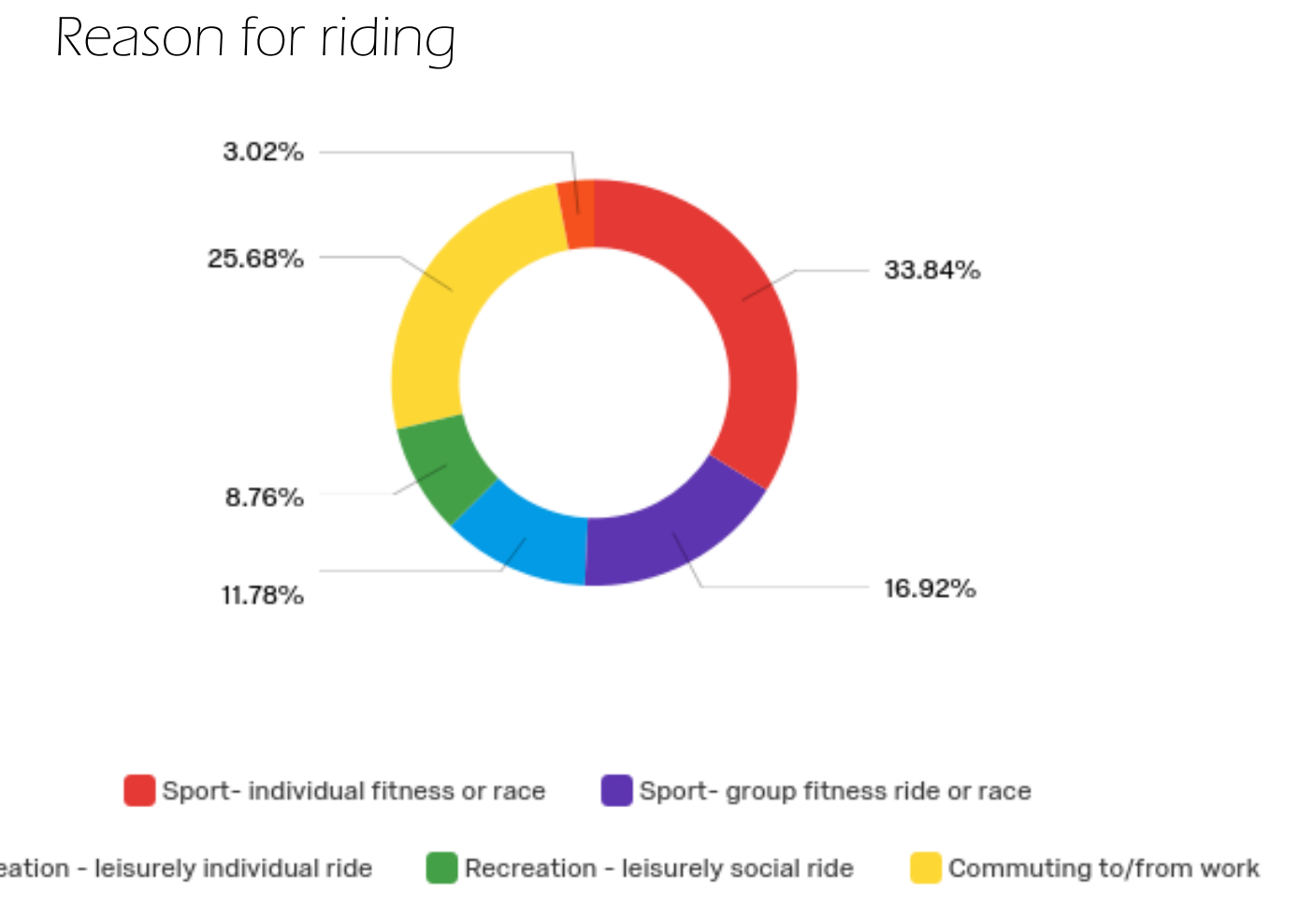
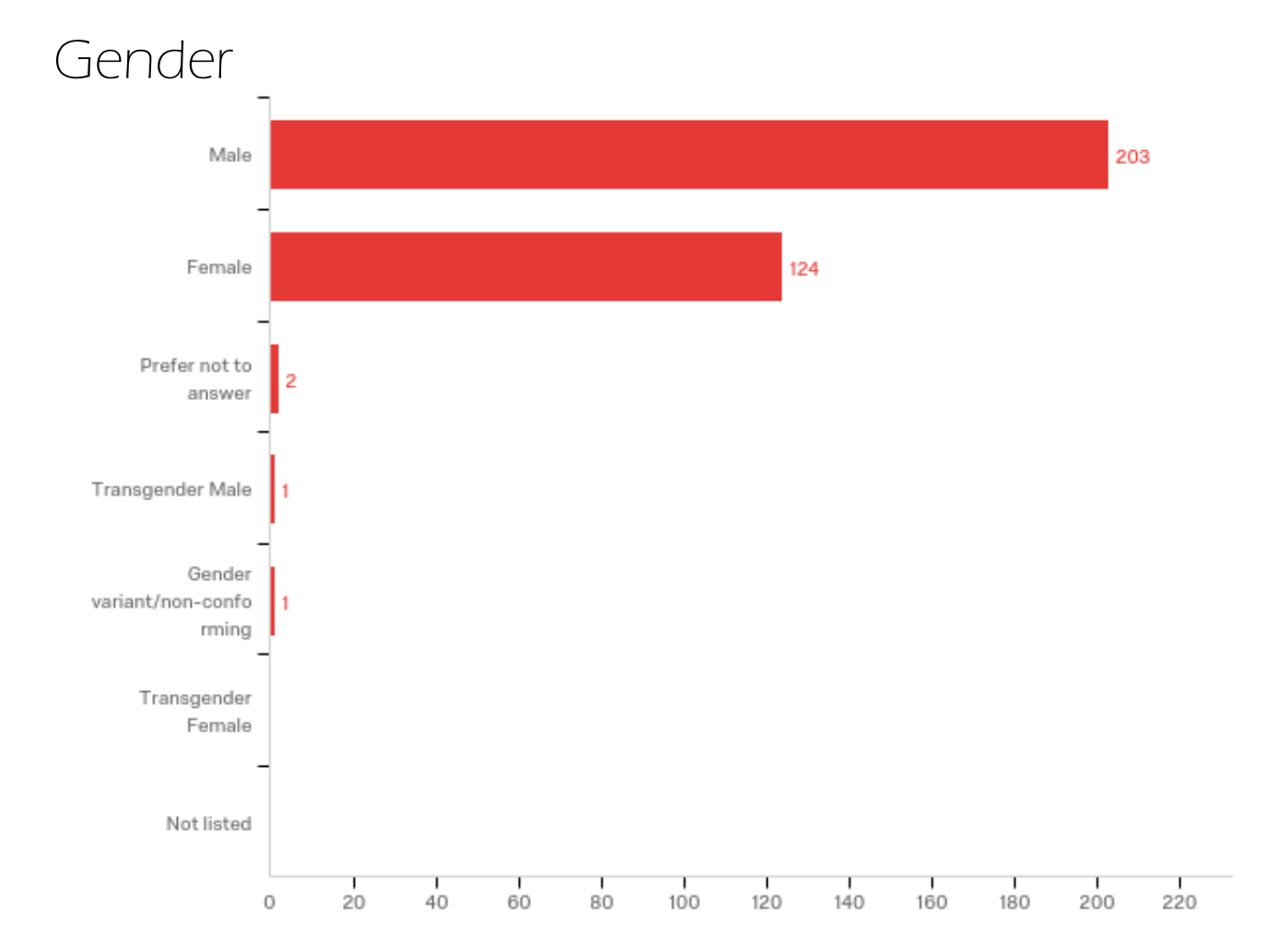
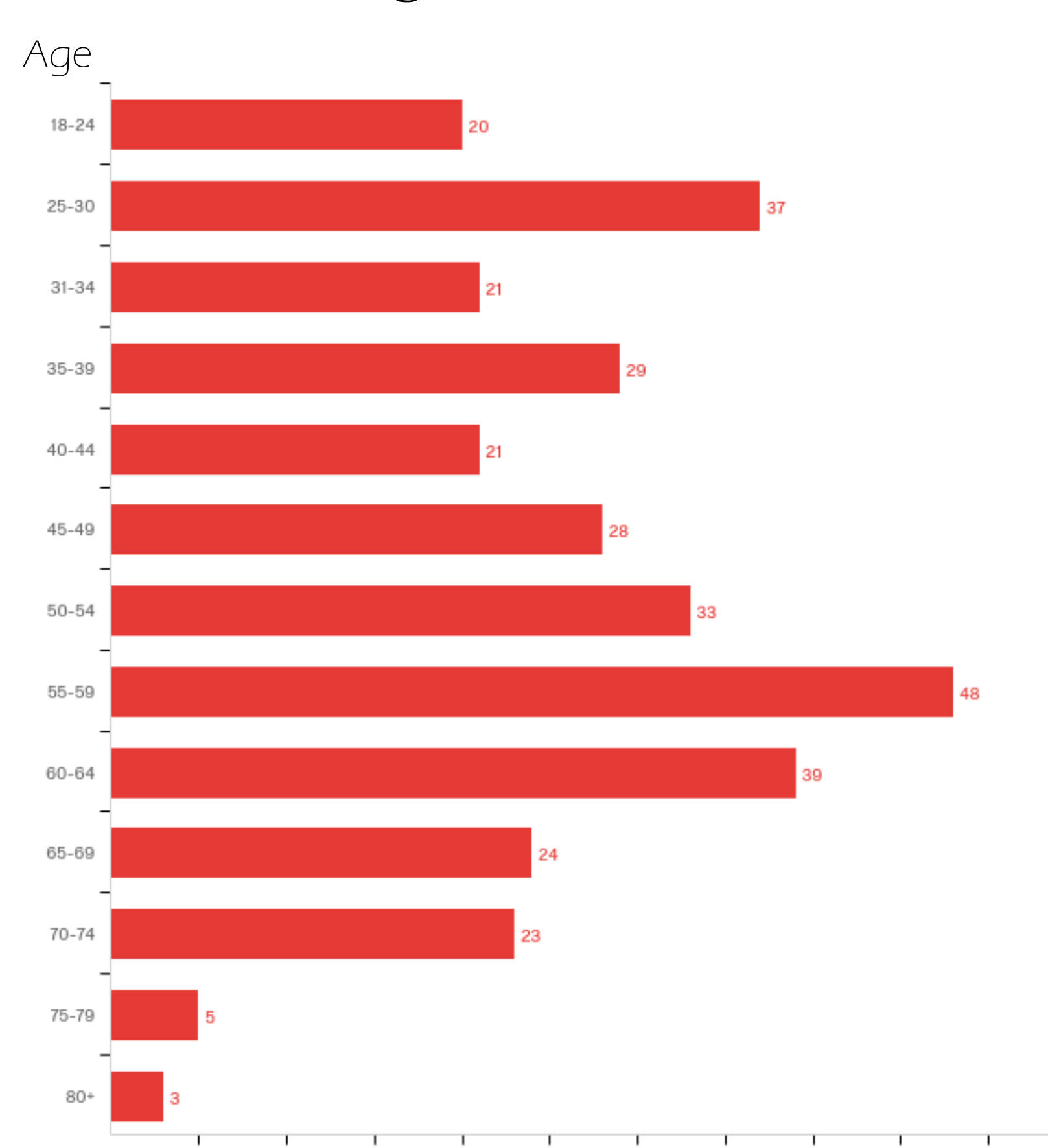
Participants will take a short survey at the start of the project. Questions focus on demographic data, history of riding (such as the type of riding, experience with crashing), risky personal behaviors (such as running stop lights, not yielding), and perceptions of risky behavior.

#### Interviews

Interviews with transportation department staff members. These interviews will help develop a strong relationship with the stakeholders to ensure the research provides useful outcomes (Jacobs et al., 2005; Cash et al., 2006).

#### Survey

331 responses across Tucson from social media and organizations such as LSA



#### Reason for riding and desired infrastructure

#	Field	Sport - individual fitness or race	Sport - group fitness ride or race	Recreation - leisurely individual ride	Recreation - leisurely social ride	Commuting to/from work	Shopping	Total
1	Paved trail not along a roadway	31.84% 57	11.73% 21	15.08% 27	13.41% 24	24.58% 44	3.35% 6	179
2	Sidewalk	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0.00% 0	0
3	Protected bikeway along a roadway	31.18% 29	20.43% 19	9.68% 9	2.15% 2	33.33% 31	3.23% 3	93
4	Bike lane	43.40% 23	24.53% 13	5.66% 3	5.66% 3	18.87% 10	1.89% 1	53
5	Travel lane	50.00% 3	50.00% 3	0.00% 0	0.00% 0	0.00% 0	0.00% 0	6

### Conclusion

We see dangerous riding conditions on primary bike routes, as captured by video. Survey results show that riders of all types want safer infrastructure. The interviews with planners say safety is a major concern. Infrastructure upgrades such as protected bicycle lanes may increase ridership. There is a desire from the city for more accurate information on where improvements are needed. Limited funding means selecting the highest used routes and most problematic areas are key to maximizing benefits.