

Sacramento State Olli Experience – AV Perception, Opportunities, and Challenges

By

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Outline

- Background and Introduction
- The Olli Experience at Sacramento State
- Results of Student Survey

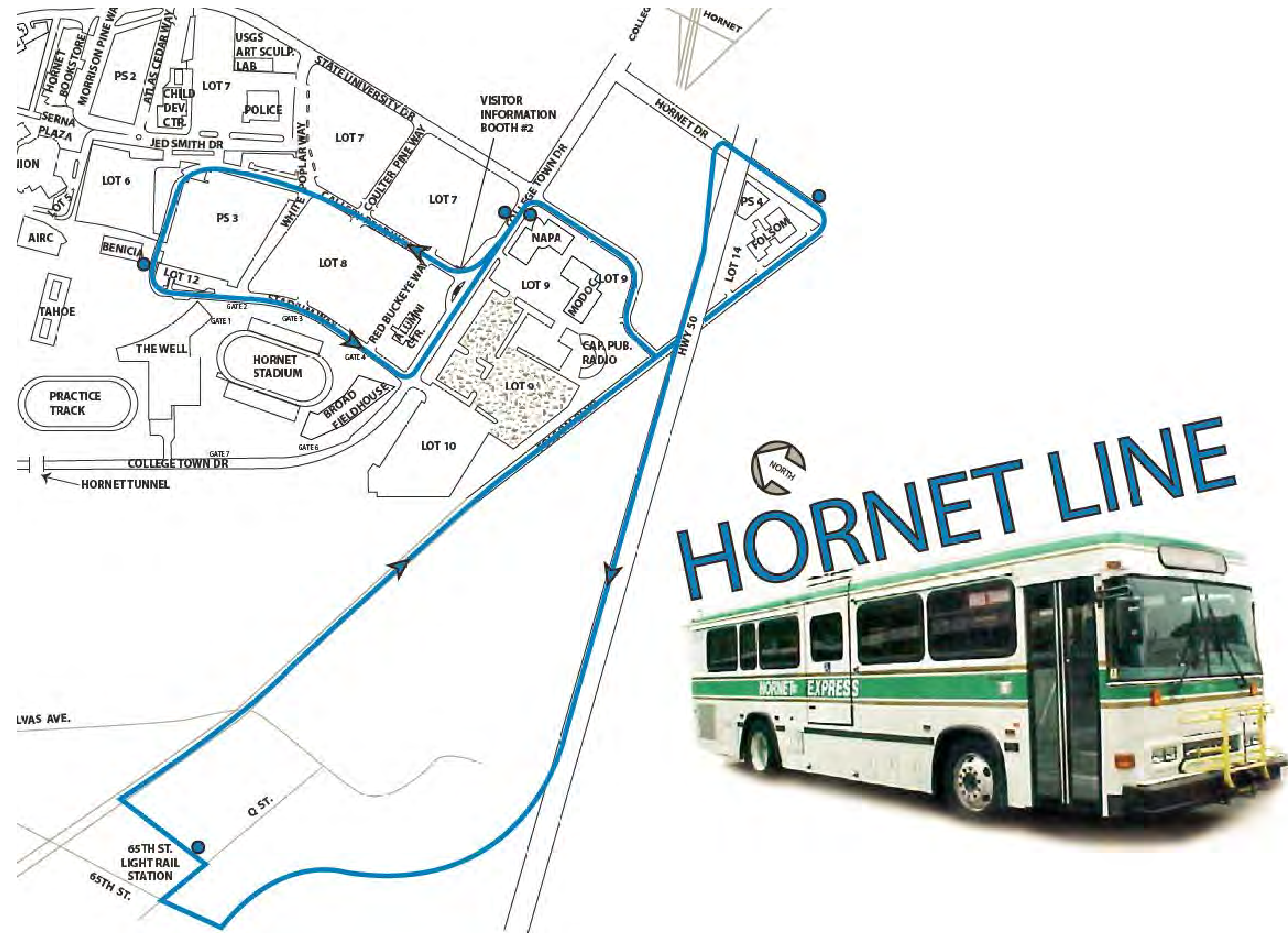
Background and Introduction

- Sacramento State
 - Greater than 40,000 students, faculty, and staff
 - Approx. 13,000 vehicles arriving on campus (based on parking permit data)
- Challenge: to diversify the mode share and promote alternative modes of transportation
- Reduce congestion and carbon footprint
 - University goal to reach full carbon neutrality by 2040



Background and Introduction

- Opportunity
 - Address the first/last mile problem
- Campus connectivity to the Sac RT 65th street light rail station
- Approx. 150 – 200 passengers per day
- Avg. route time - 15 minutes
- Sometimes up to 30 – 40 minutes during congestion/peak semester times



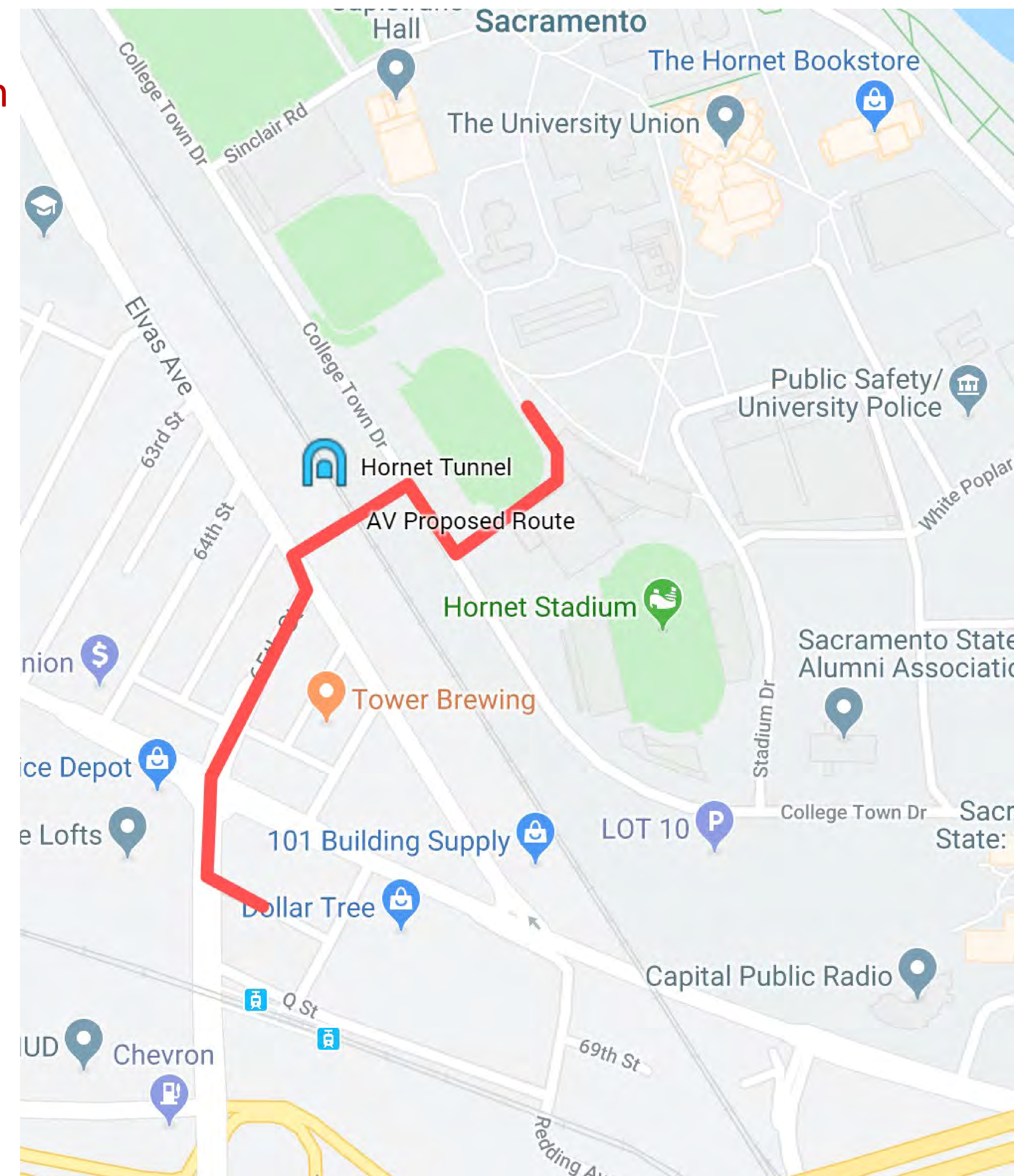
Background and Introduction

- Idea

- Fixed route connection to the 65th St. light rail station through the “Hornet Tunnel”
- Use AV to promote innovation and reduce carbon footprint
- Discussions with the City of Sacramento and participation in the SACOG Civic Lab Project

- Potential Outcomes

- Testing ground for autonomous, electric, and shared-vehicle technologies
- Demonstrate the effectiveness of AV technology
- Opportunity to learn about rider preferences and attitude towards AV
- Safety - Interaction with vulnerable road users
- Infrastructure needs and requirements



Local Motors - Olli Fleet Challenge

- Olli - Local Motors AV Shuttle
 - 3D printed electric AV
 - Seats 8 people
 - “Autonomous glass-topped toaster on wheels”
- Olli Fleet Challenge Competition
 - “What would you do with a fleet of AV?”
 - 3-month deployment - Multiple shuttles
 - \$88,000 from SACOG



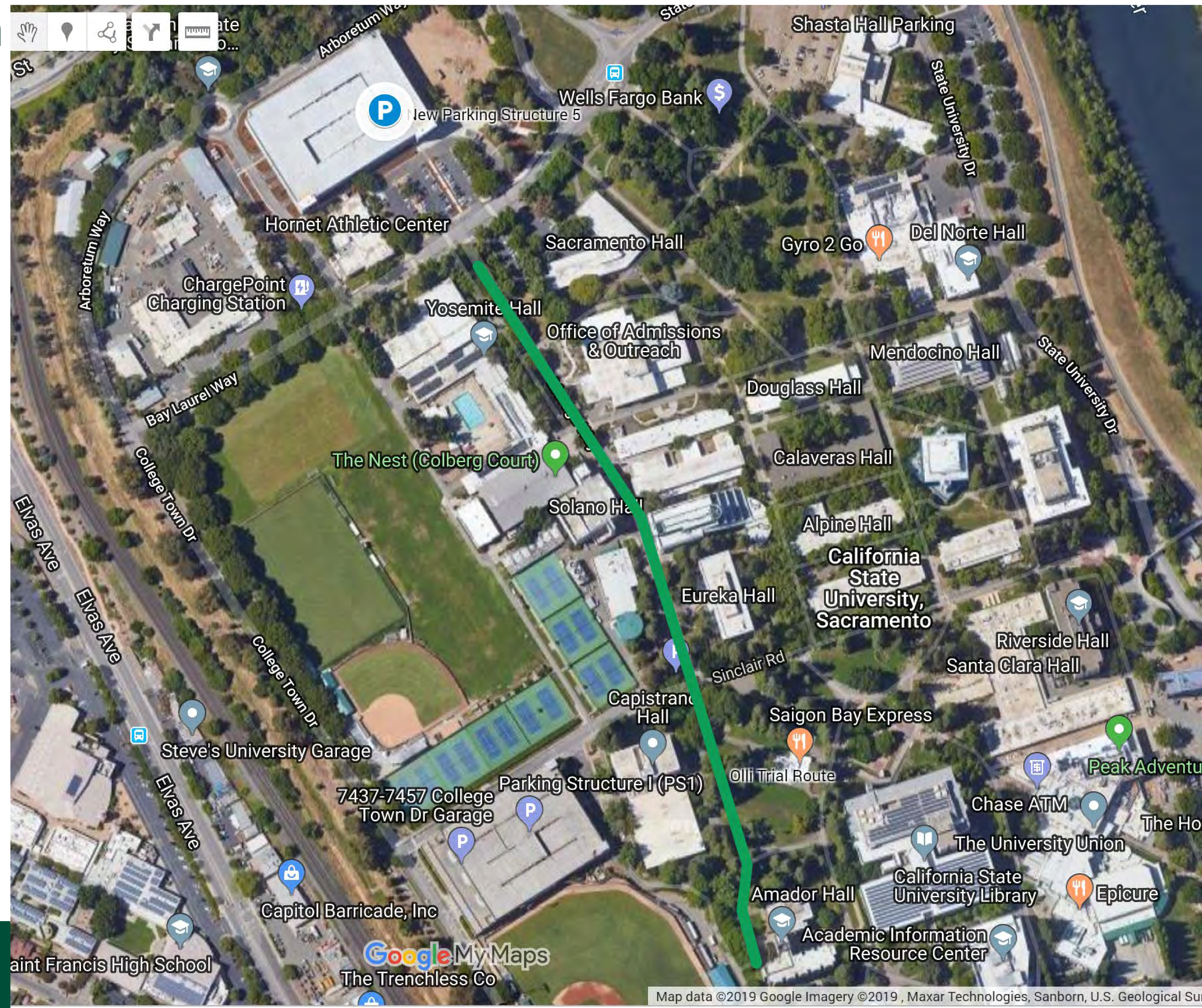
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Sacramento State – Olli Trial

- Trial Route - Moraga Way – Spring 2019
 - From near new Parking Structure 5 to Amador Hall
 - Approx. 0.3 miles one-way route
 - ADA Accessibility
 - Multiple stops along the route



Sacramento State – Olli Trial

- Olli Operation – Spring 2019
 - On-board steward
 - From 9:30 AM – 4:00 PM with a 1 hour break
 - Approx. 5 – 10 mph speed



Sacramento State – Olli Trial



Sacramento State – Olli Trial



Sacramento State – Olli Trial

- Olli Operation – Spring 2019
 - 992 total rides
 - Rider registration required for liability reasons

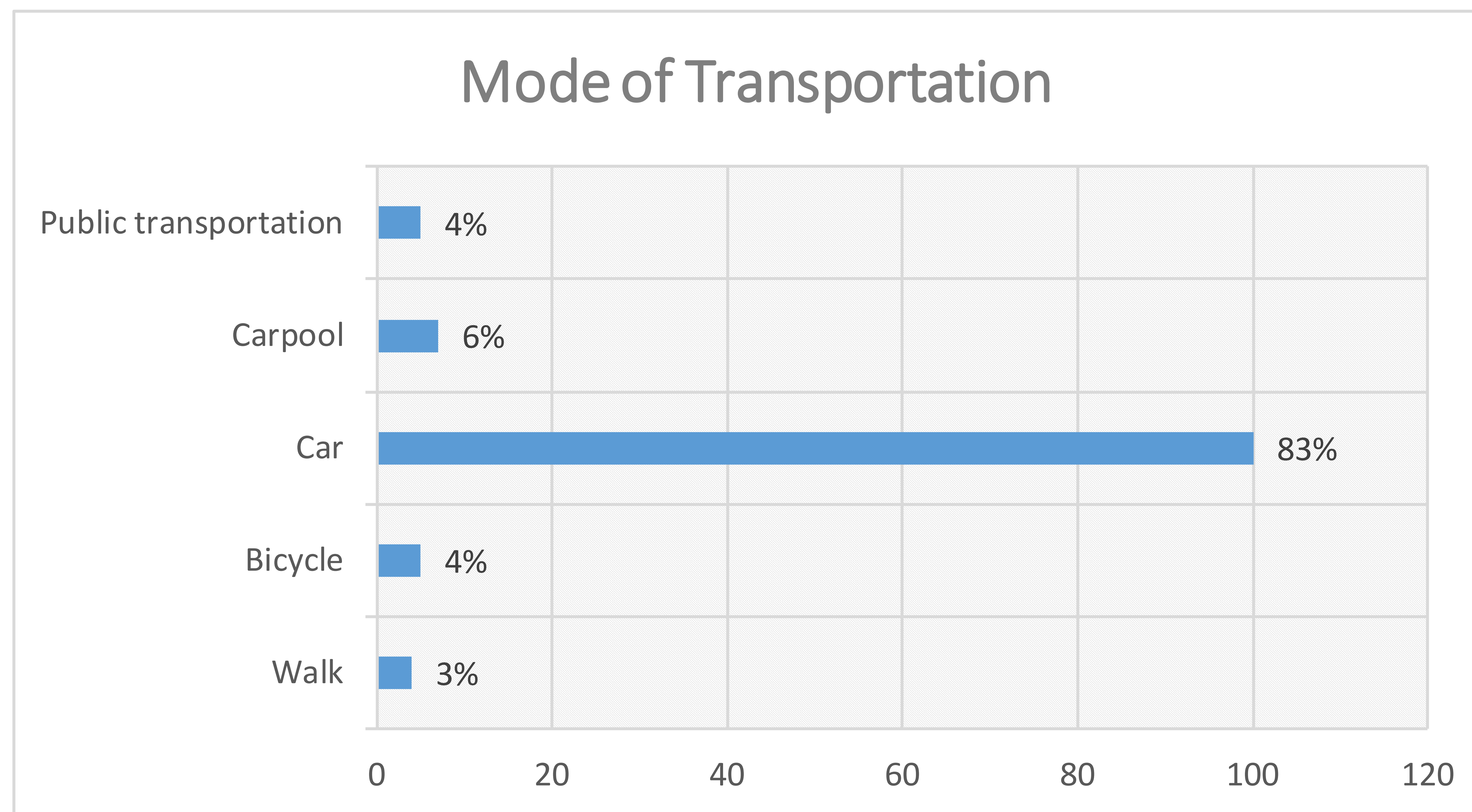


Olli Trial – Participant Survey

- 43 Survey Questions
- 122 participants
- AV Survey Details
 - General Participant Information
 - General Use and Preferences Regarding AV
 - Olli Specific Questions
 - Olli Perception
 - Overall Safety Perception
 - Other Issues/Concerns with AV

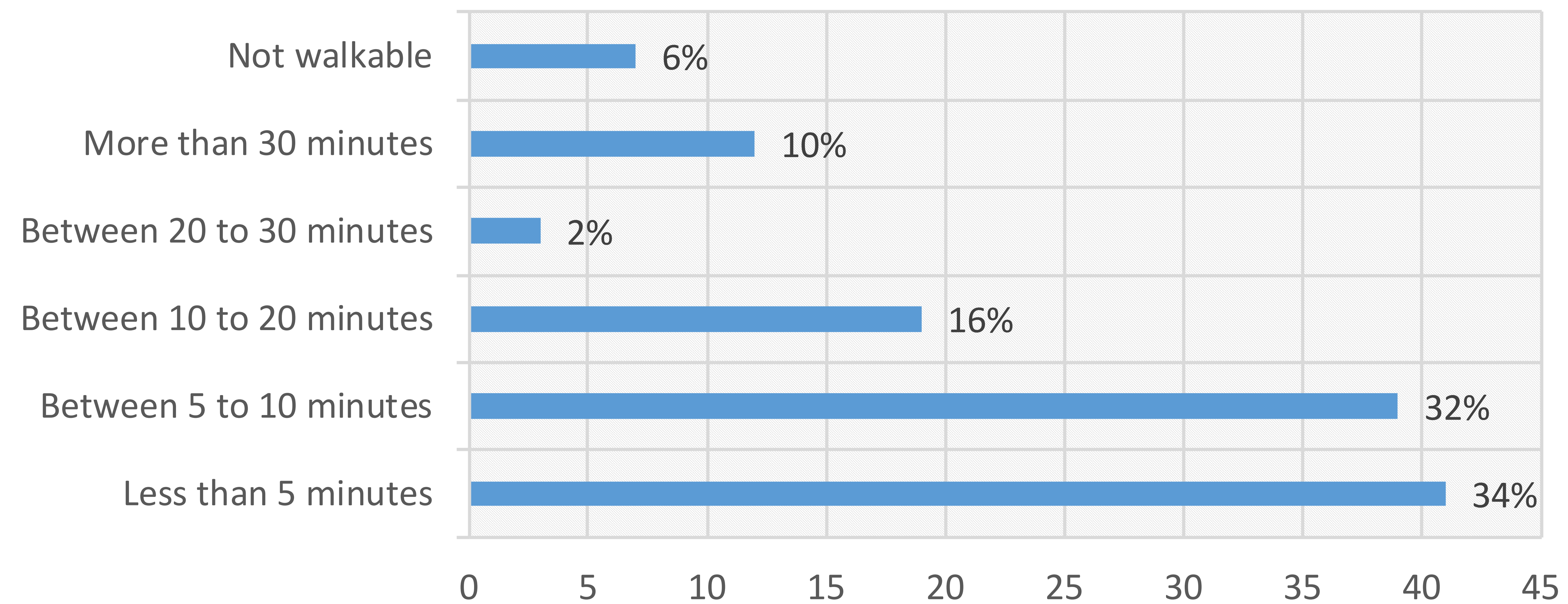


Olli Trial – Participant Survey

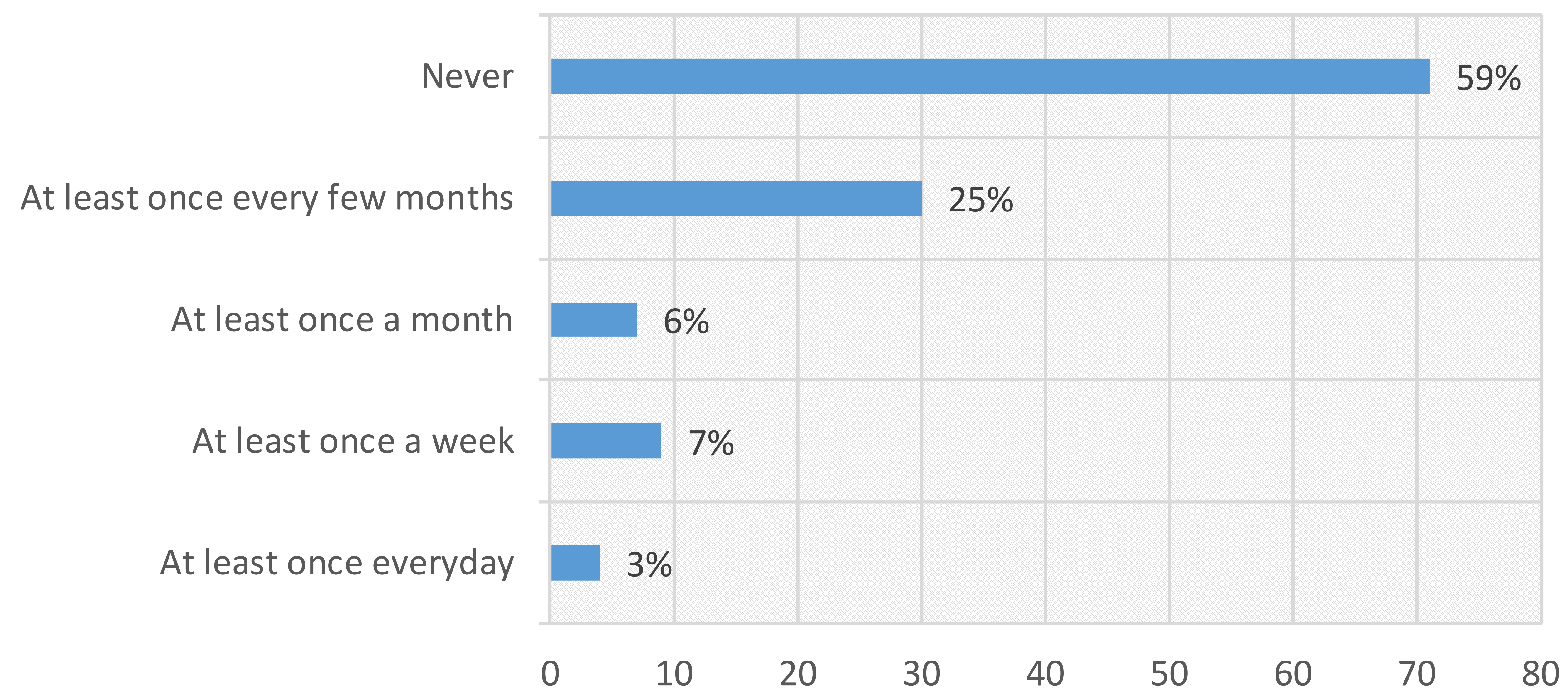


Olli Trial – Participant Survey

Time to walk from home to a nearest public transportation stop?

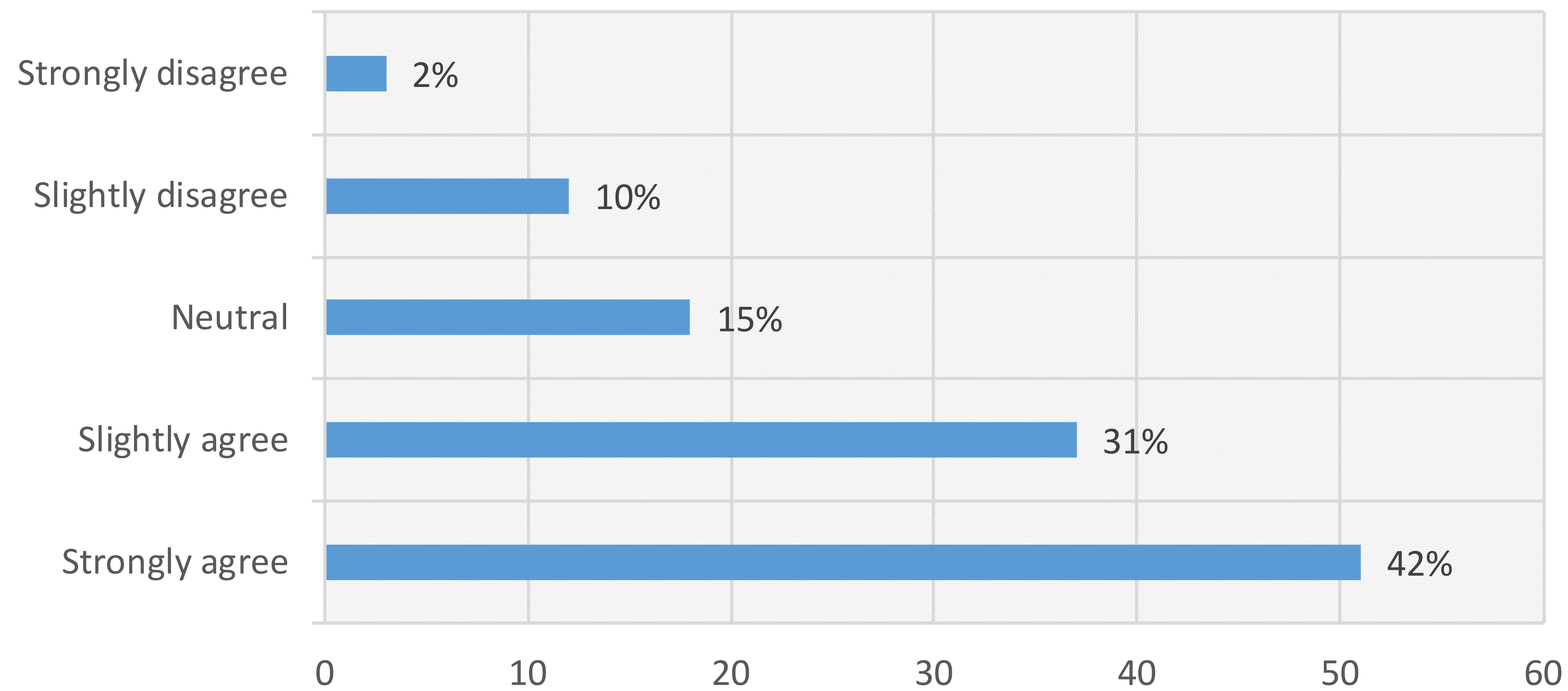


Public Transportation Use

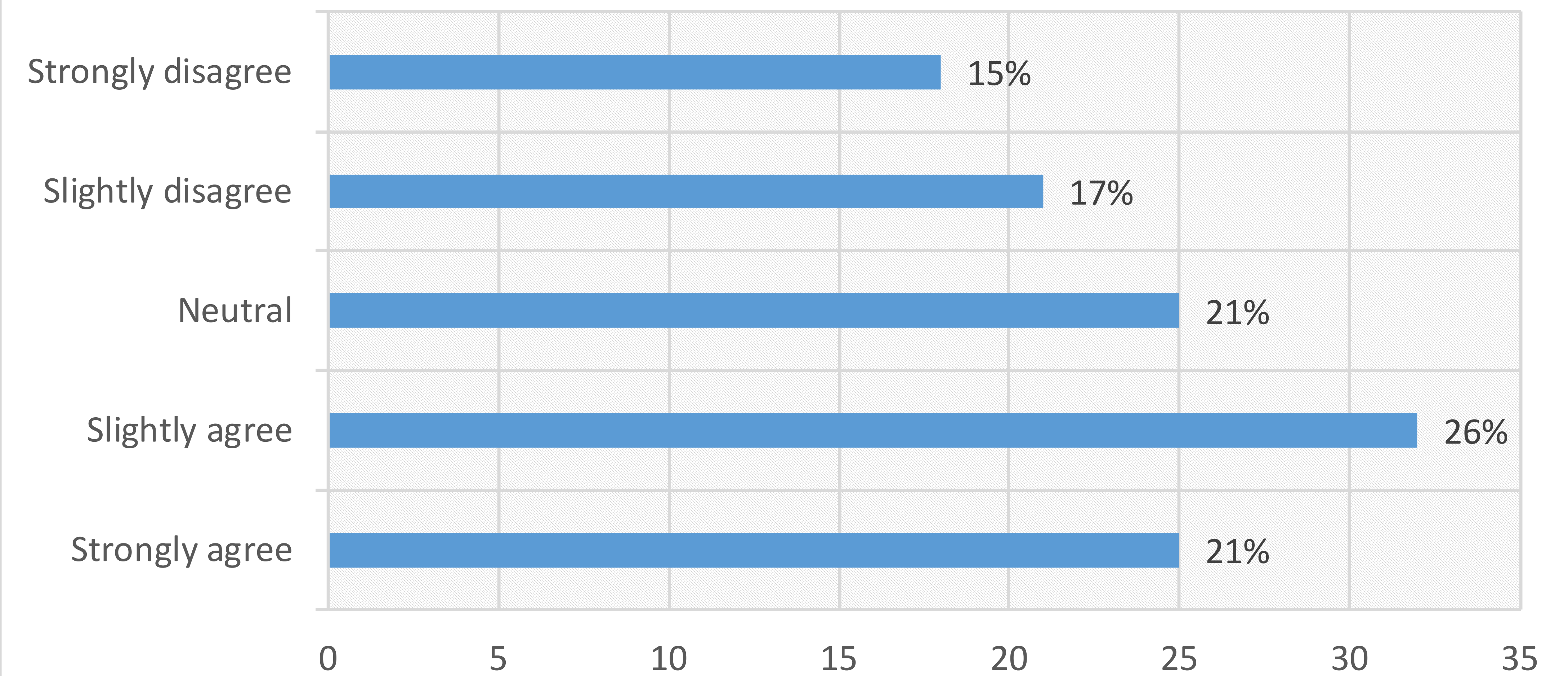


Olli Trial – Participant Survey

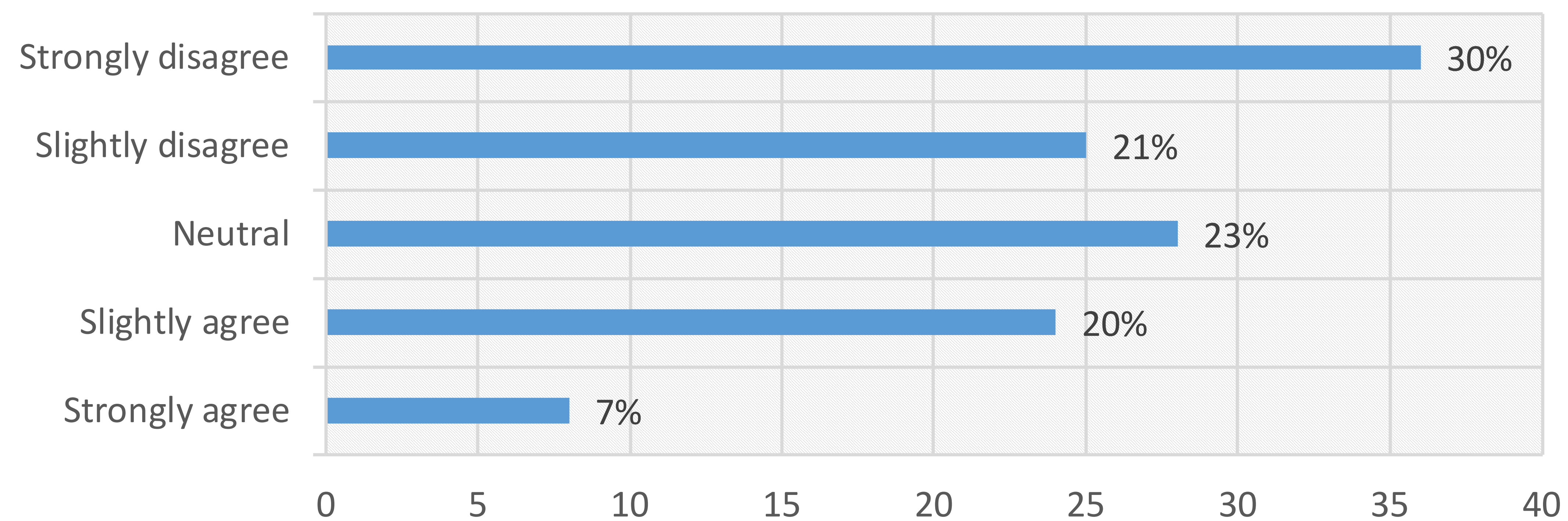
I felt completely normal riding in Olli Shuttle



Olli operates too slowly to be useful

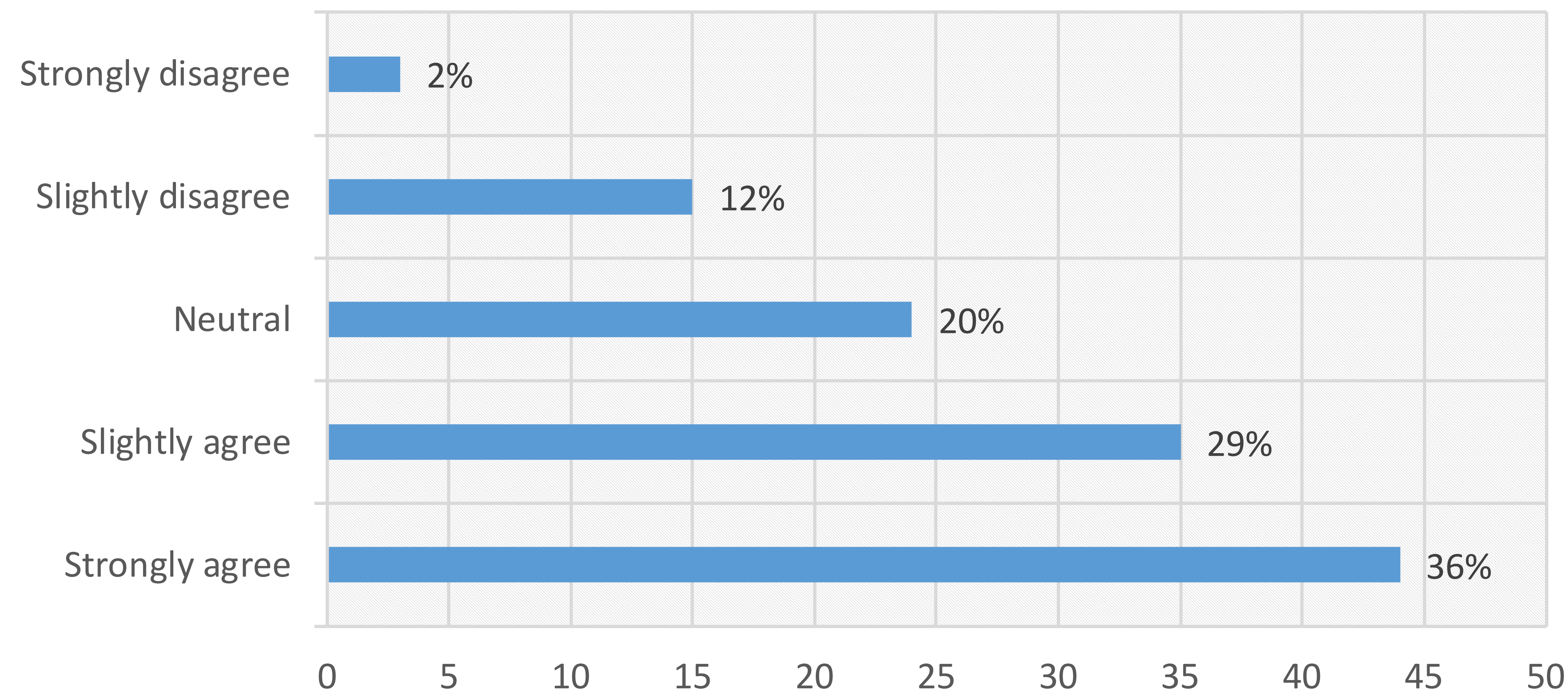


I have concerns with the way Olli was operating while interacting with pedestrian, bicyclist, and other traffic

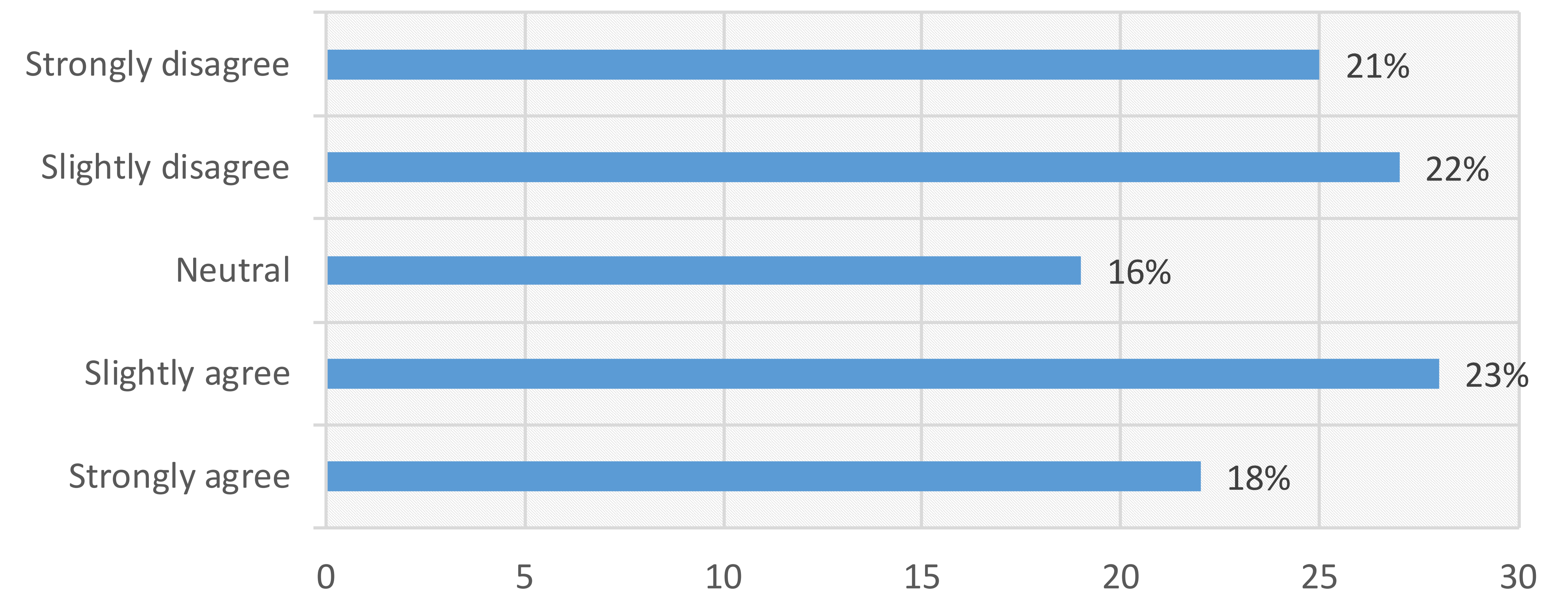


Olli Trial – Participant Survey

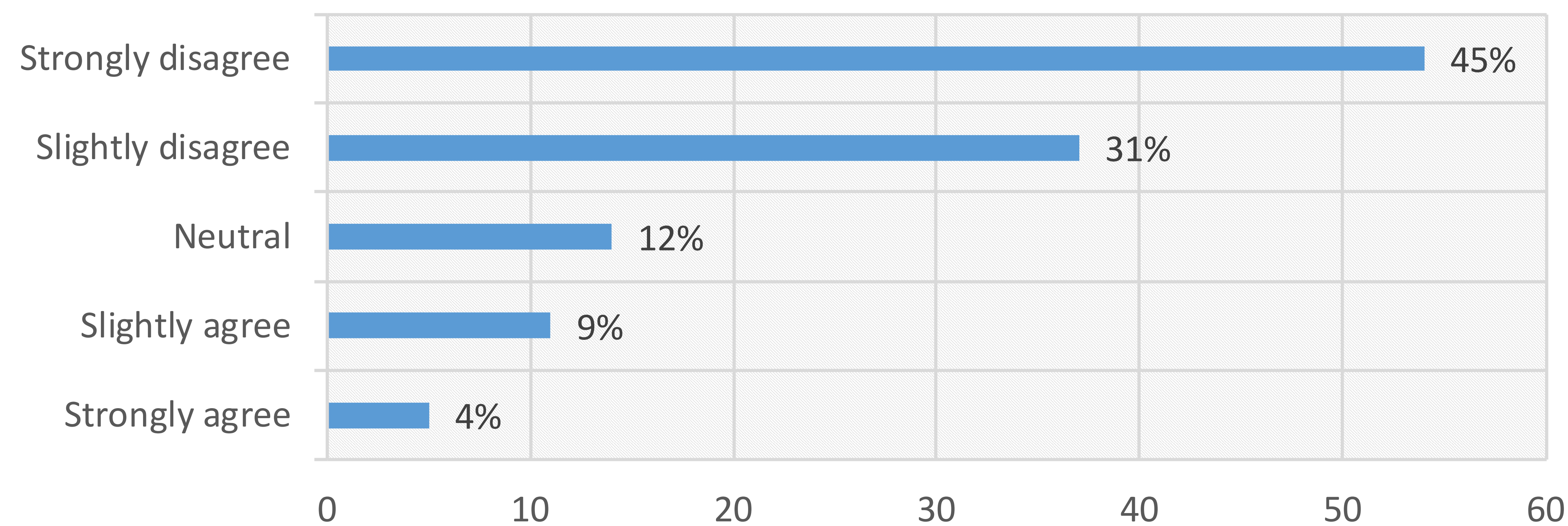
I felt comfortable with the way Olli accelerates



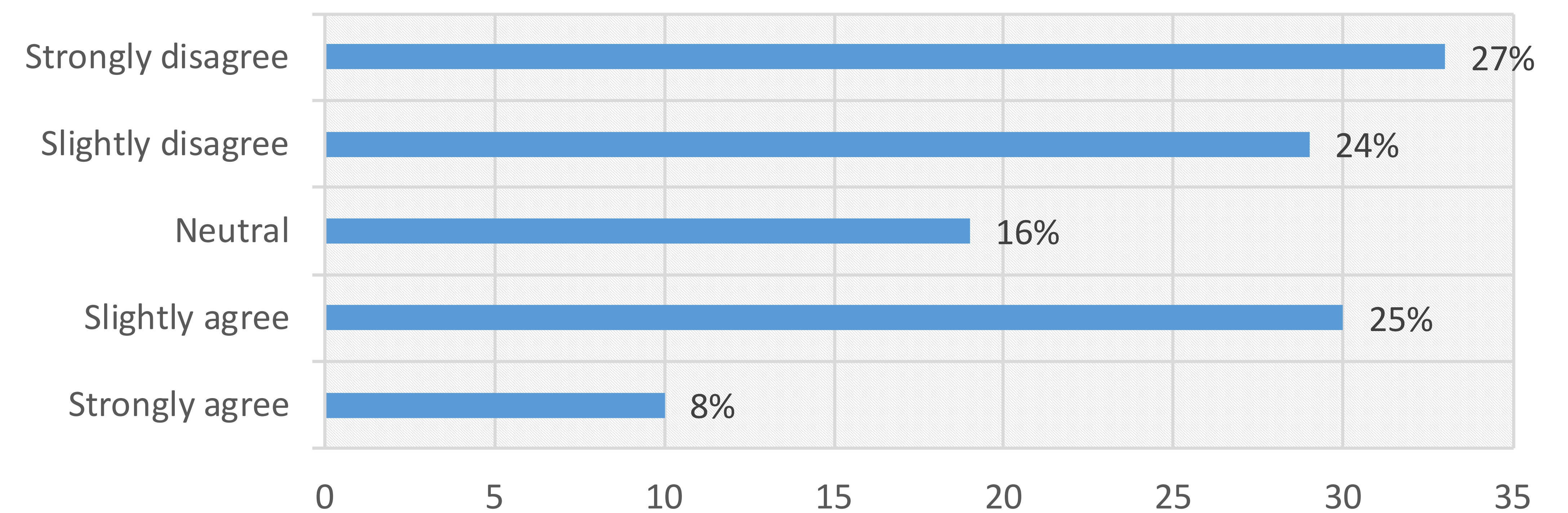
I felt comfortable with the way Olli decelerates/brakes



My concerns with the way Olli accelerates discourages me from using an autonomous vehicle

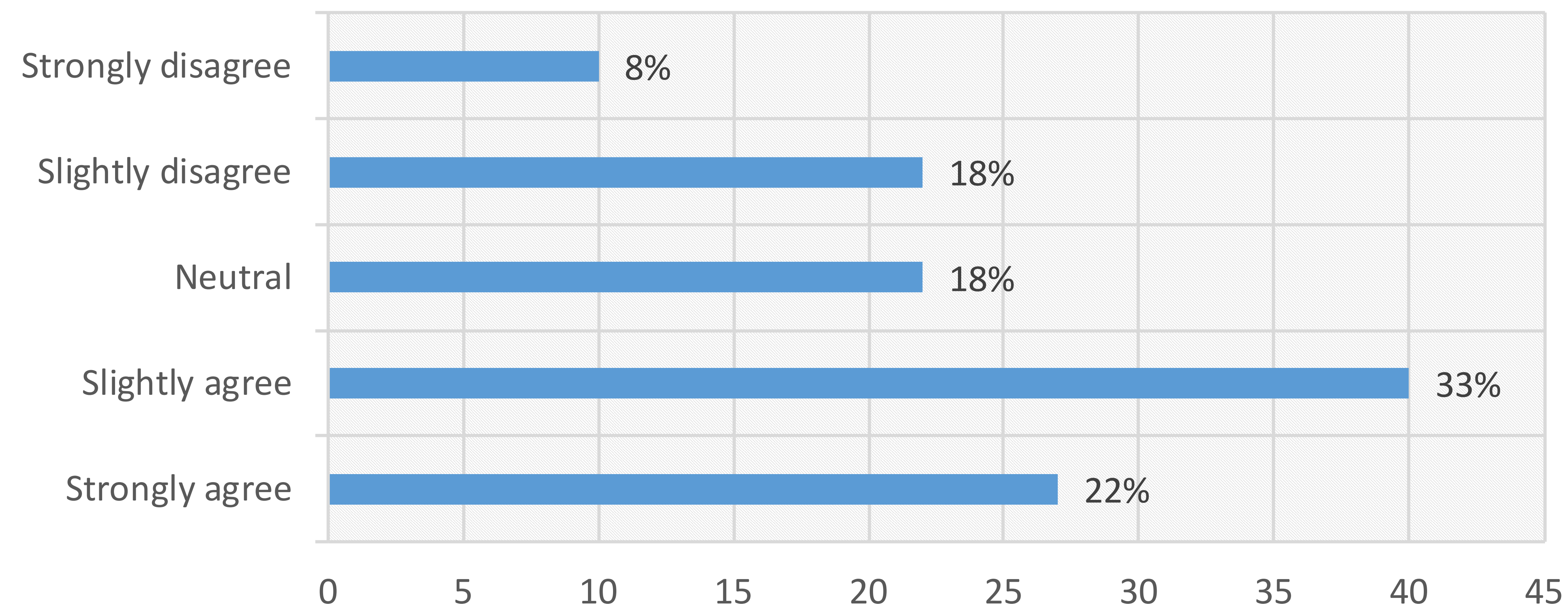


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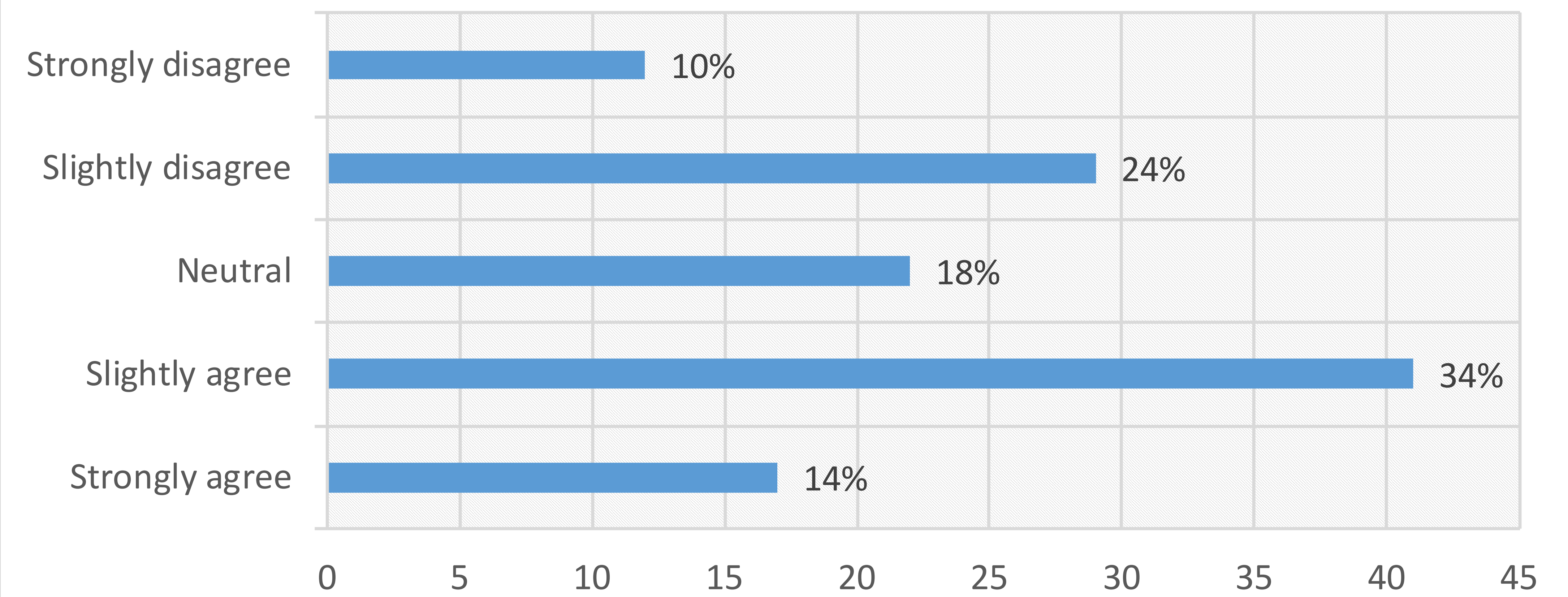


Olli Trial – Participant Survey

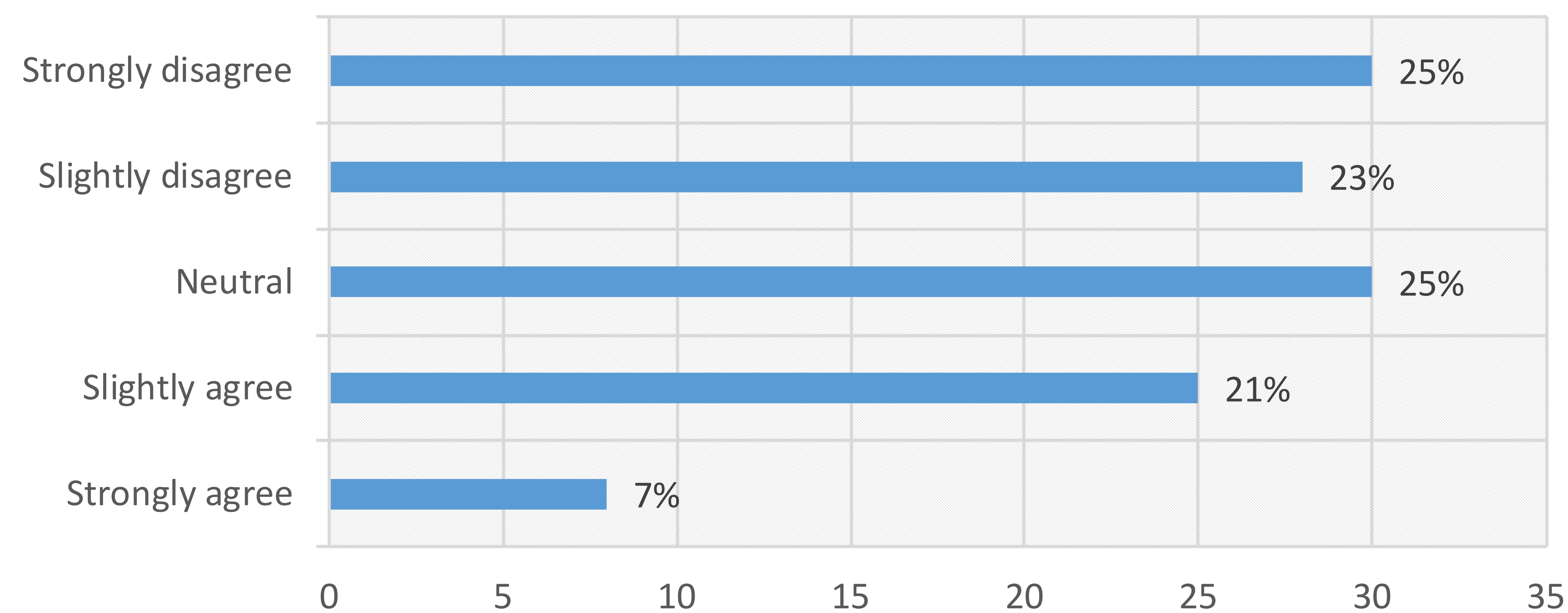
I trust that a driverless vehicle can drive without assistance



I would not use a driverless vehicle because technology can sometimes fail



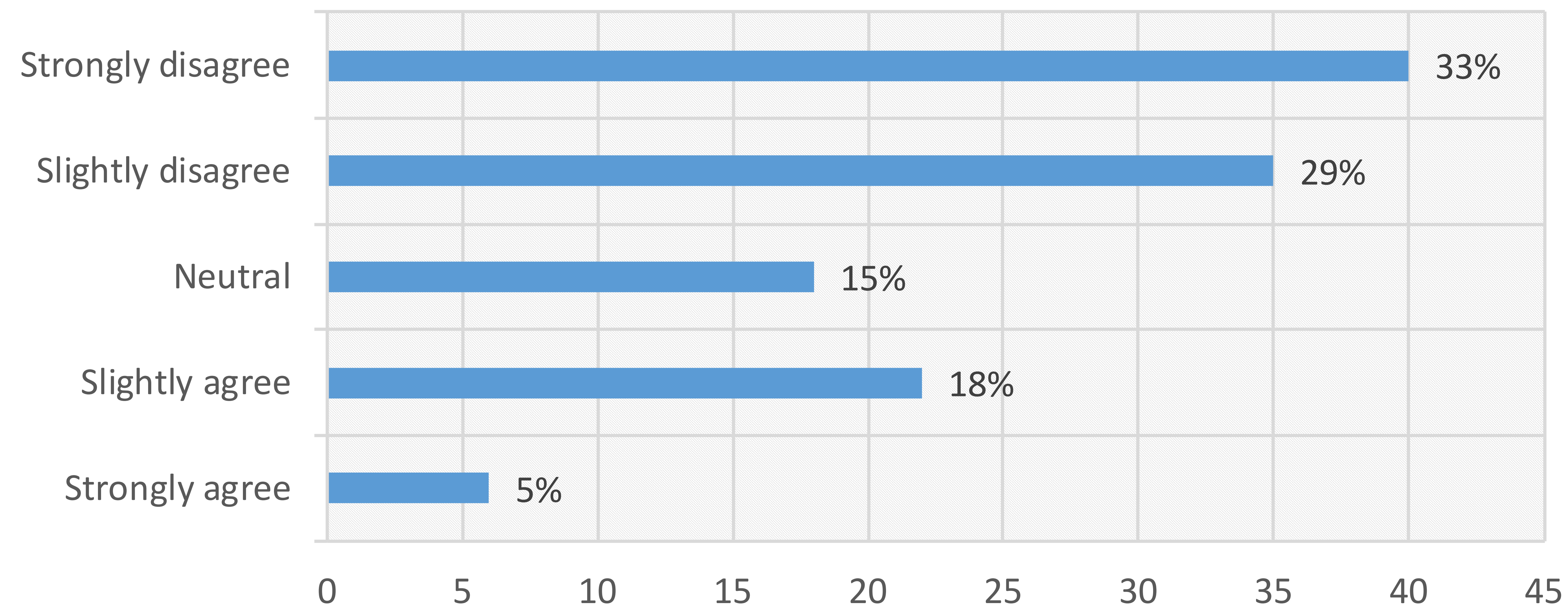
I would feel comfortable in a driverless vehicle with controls (wheel, gas or brake pedals)



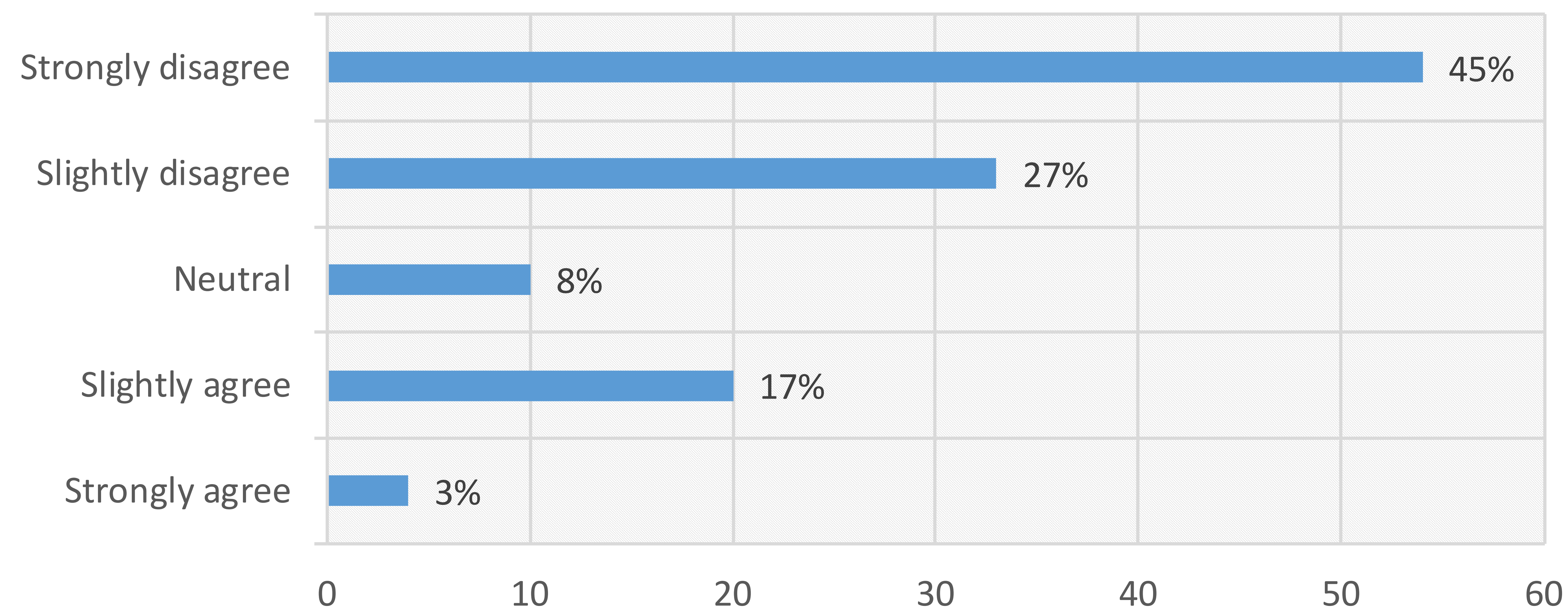
SACRAMENTO
STATE

Olli Trial – Participant Survey

I would trust the driving skills of a driverless vehicle more than my own driving skills

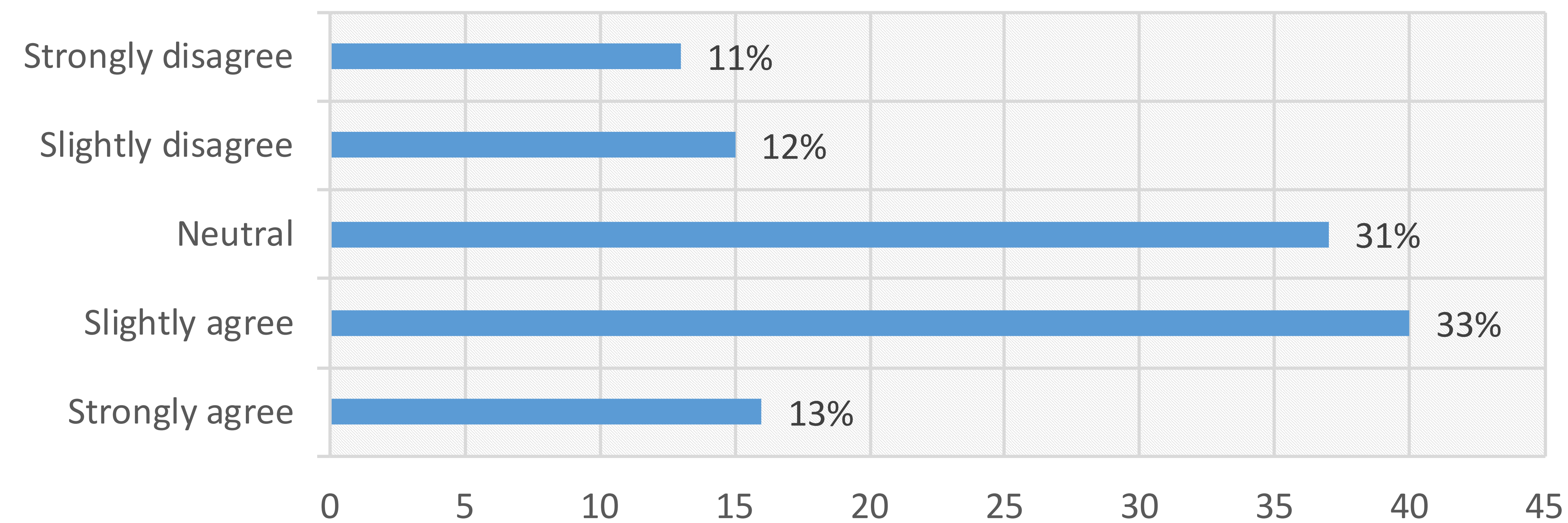


A careful driver can prevent any accident on the road

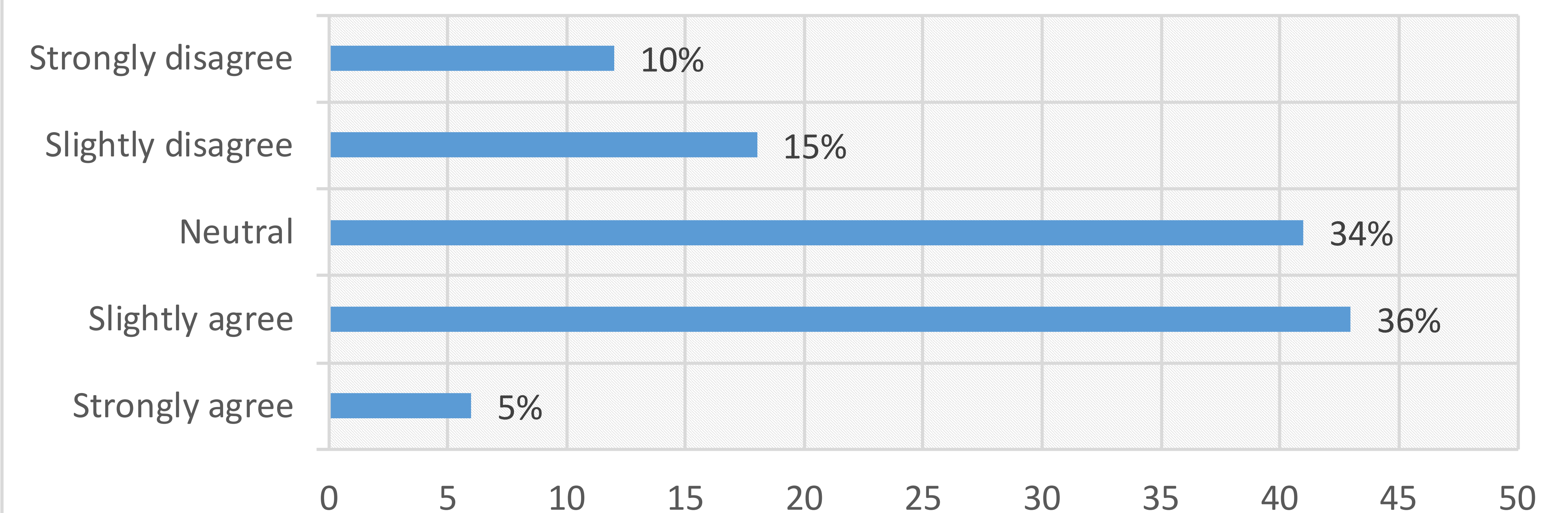


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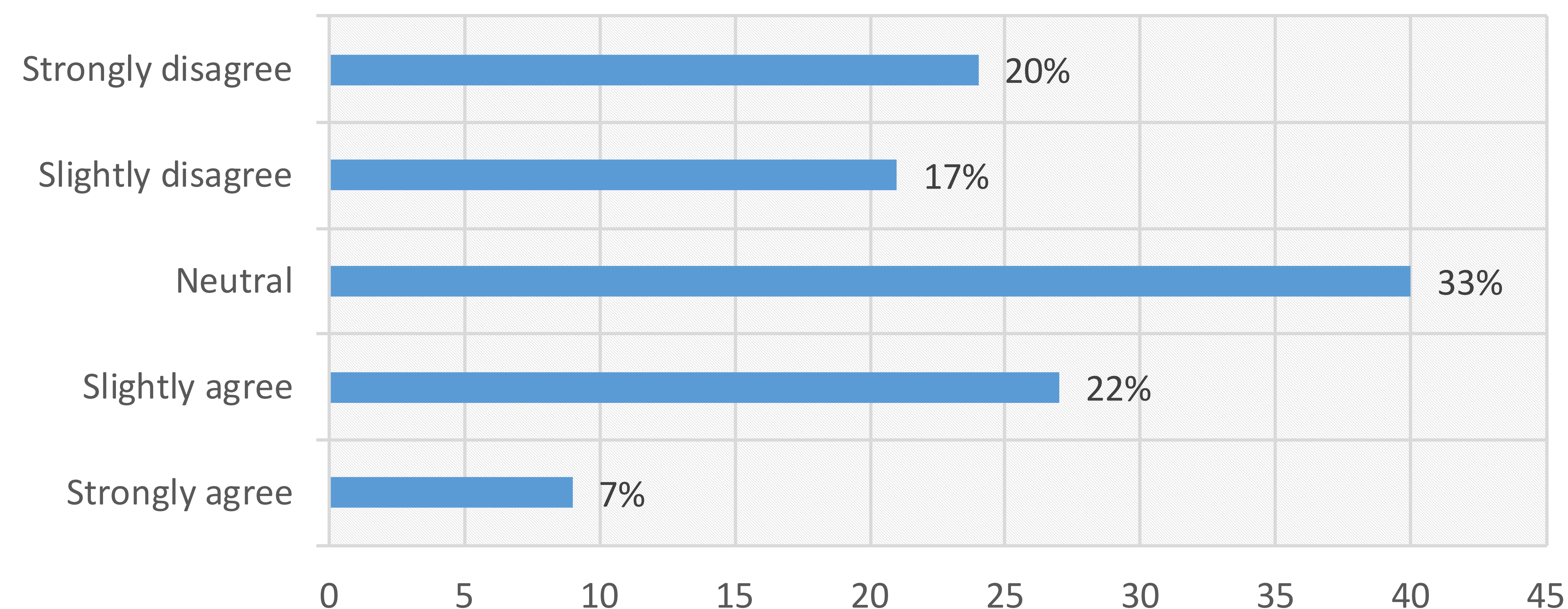
Riding Olli has changed my general perception of AV, i.e. I did not think AV were useful but now I think they are



Riding Olli has changed my perception of AV in terms of safety, i.e. I was concerned with the safety of AV but I have changed my mind now



I would have never considered using an AV but after riding Olli, I have changed my mind



AV – Challenges and Opportunities

- Challenges
 - Short route, slow speeds
 - Novelty Factor
 - Dedicated routes for AV shuttles to improve mobility
 - “The loss of the joy of driving and the feeling of being in control”
- Opportunities
 - “A Classroom on Wheels”
 - Potential for AVs to serve the public transportation needs of local communities
 - Understanding user issues, factors, concerns, through real-world AV trials
 - Strategizing AV deployment opportunities
- Study Limitations
 - On-going research
 - Sample bias, e.g. age etc.

Acknowledgements

- James Corless and SACOG
- CSUS Academic Affairs
- CSUS University Transportation and Parking Services (UTAPS) Staff

Questions

