

---

---

# Perception of pedestrian safety based on type of visualization

Group 14

---

# Motivation

1. Public spaces and streets are designed
2. Citizens should be part of the design process (Gooch et al. 2018)
3. There is software that can help them do that (Kwon et al. 2019)

---

Press F11 to exit full screen

24 m width Add location July 4

Drive lane

Remove

↓ ↑ - 2.7 m +  
🚗 🚲 🚌 🚚 🚛 🚏 👤



Screenshot of <https://streetmix.net/-/1878602>



Press F11 to exit full screen



VR

Screenshot of <https://github.3dstreet.org/#https://streetmix.net/-/1878602>

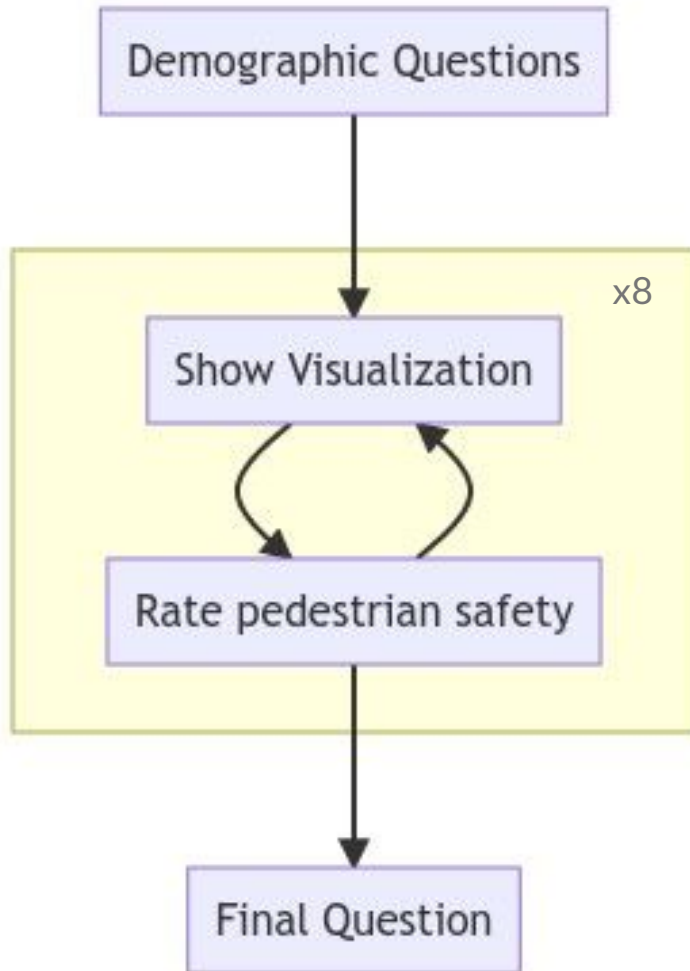
—

Main Question

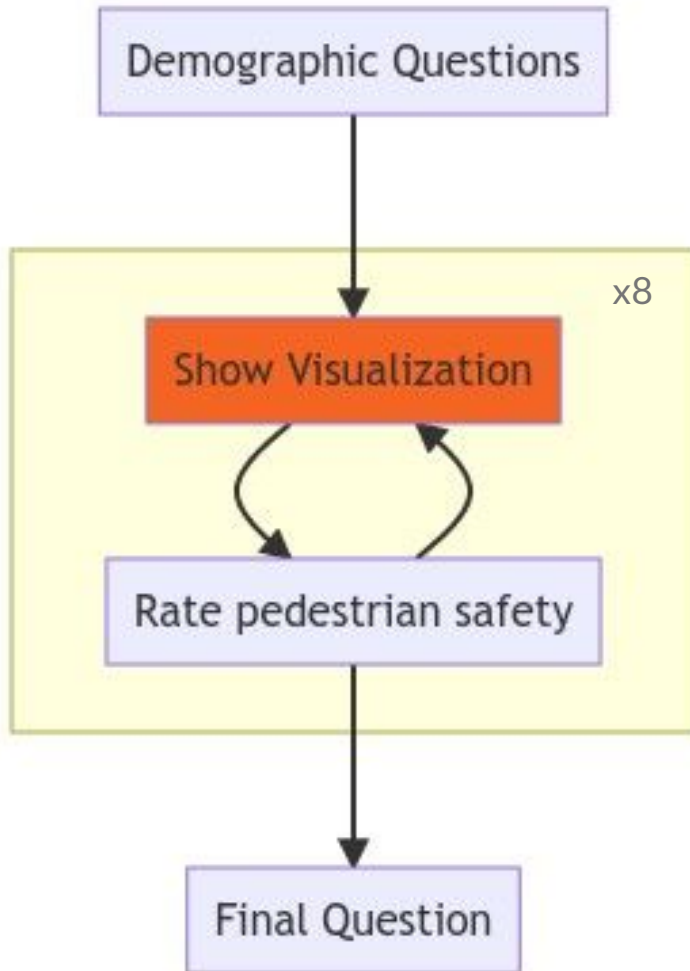
**How should software  
be designed to allow  
citizens to design  
streets and public  
spaces?**

—  
Our Question

**Does the perception of  
pedestrian safety  
change based on type  
of visualization?**



# User study



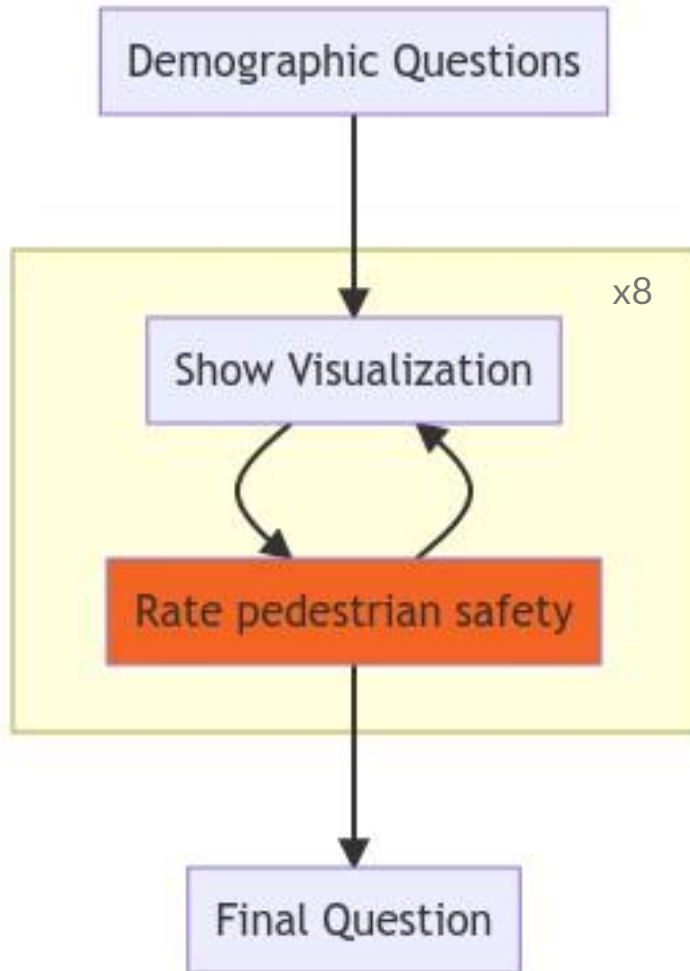
4 Street designs

2 Types of visualization

8 Repetitions

Latin Square





5 Questions on Likert scale

1 Not at all – 5 Absolutely

Answered on paper

—

---

# Data Analysis

---

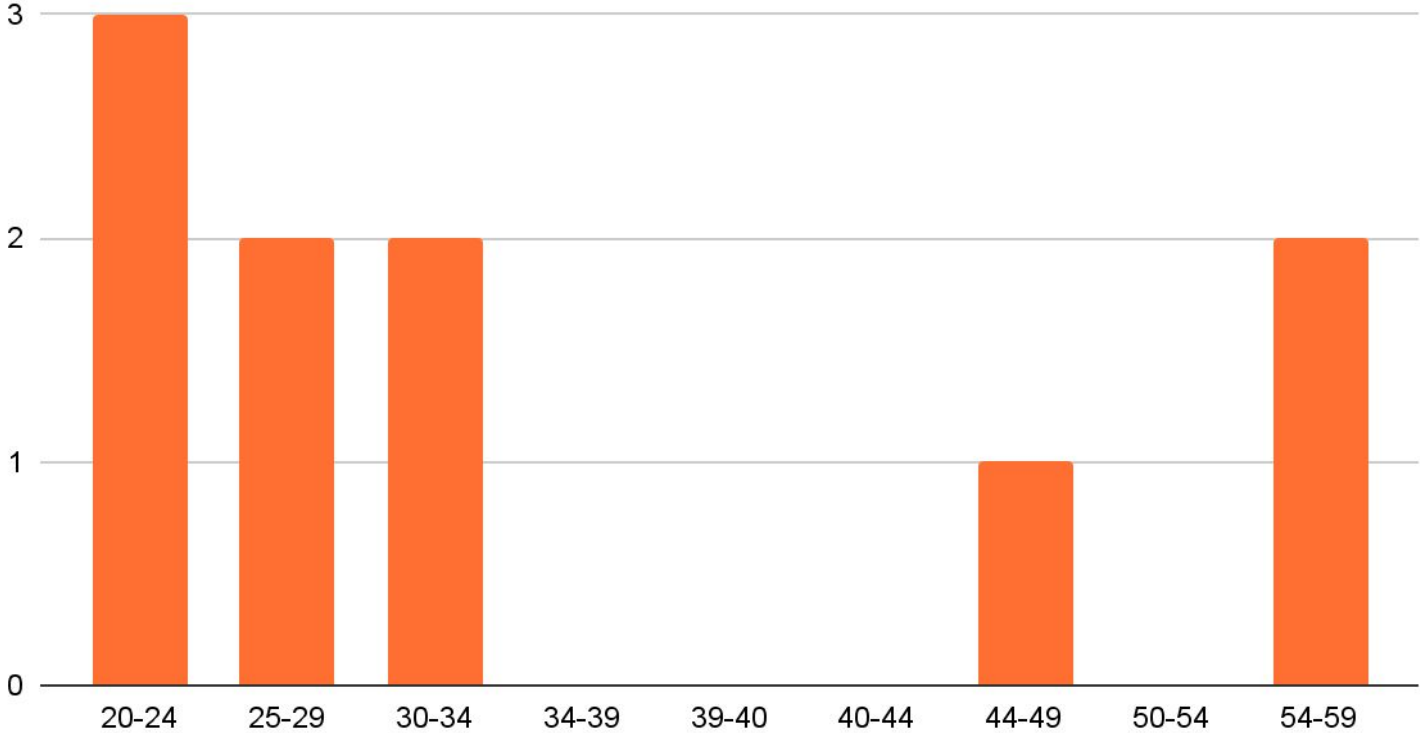
—  
Hypothesis

**The change between two-dimensional and three-dimensional visualization of street sections designed with Streetmix has a significant effect on users' perception of pedestrian safety.**

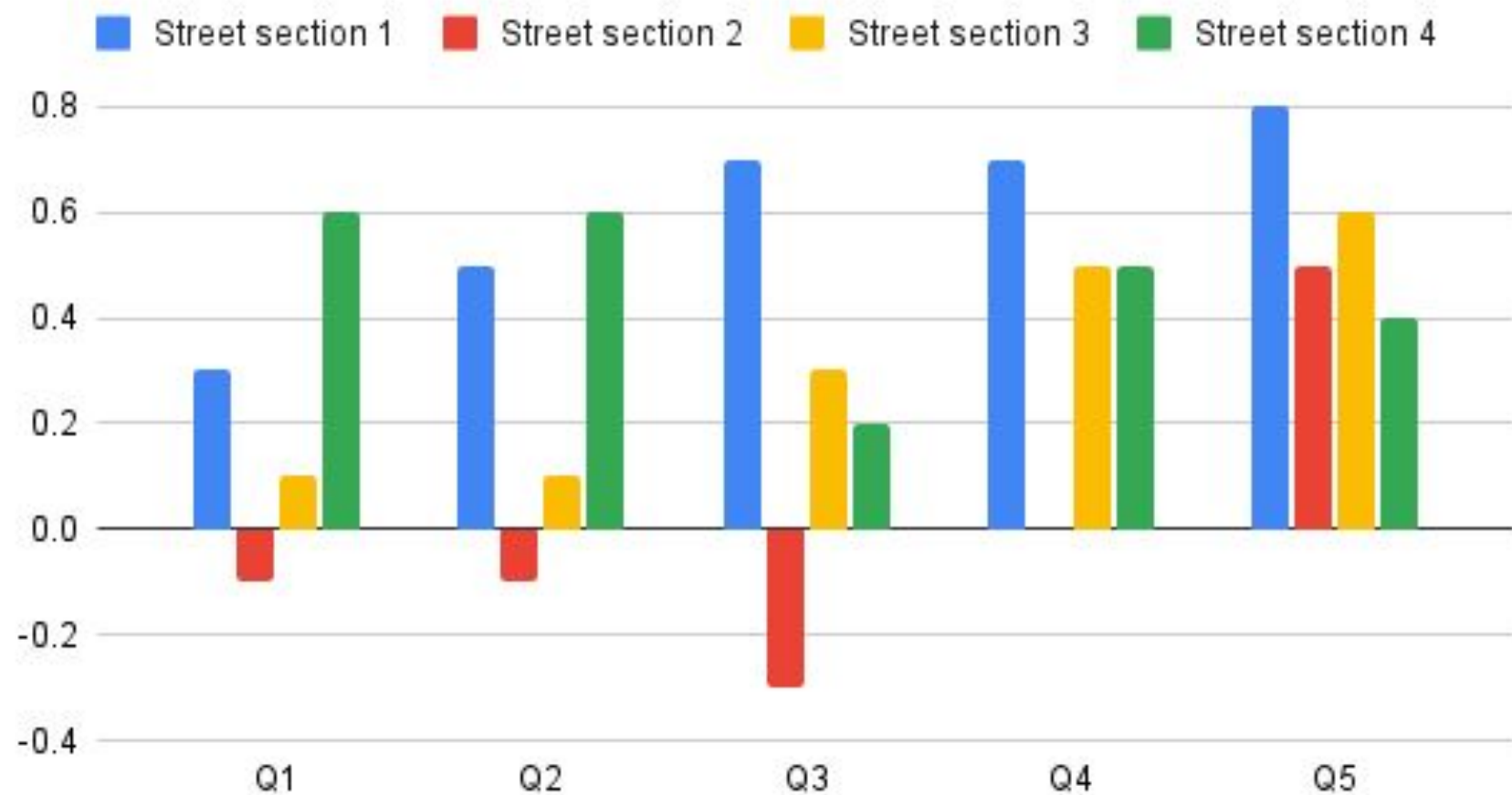
Null hypothesis

**The change between two-dimensional and three-dimensional visualization of street sections designed with Streetmix does not have a significant effect on users' perception of pedestrian safety.**

# Age



## Average difference between 2D and 3D visualization



# Results

Paired-t test

18/20 cases not significant ( $p > 0.05$ )

Null hypothesis can't be rejected

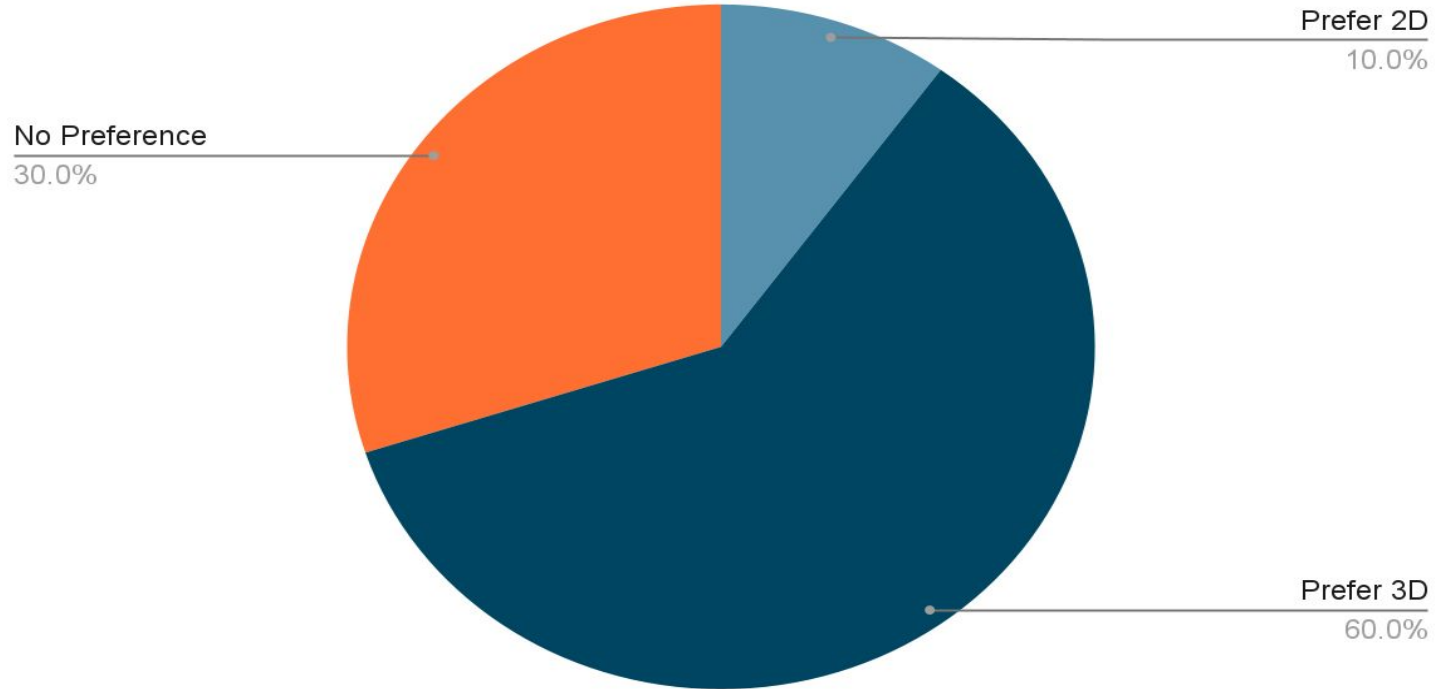
---

—

**The perceived  
pedestrian safety does  
not change with the  
type of visualization**



## Which visualization is preferred



# Conclusion

Pedestrian safety perception not influenced by type of visualization

Research needed to evaluate which factors change between visualizations

Research needed to evaluate how to use/improve the given tools for participatory design

---

---

# References

Daniel Gooch, Matthew Barker, Lorraine Hudson, Ryan Kelly, Gerd Kortuem, Janet Van Der Linden, Marian Petre, Rebecca Brown, Anna Klis-Davies, Hannah Forbes, Jessica Mackinnon, Robbie Macpherson, and Clare Walton. 2018. Amplifying Quiet Voices: Challenges and Opportunities for Participatory Design at an Urban Scale. *ACM Trans. Comput.-Hum. Interact.* 25, 1, Article 2 (January 2018), 34 pages.

<https://doi.org/10.1145/3139398>

Saebom Kwon, Mark Lindquist, Shannon Sylte, Gwen Gell, Ayush Awadhiya, and Kidus Ayalneh Admassu. 2019. Land.Info: Interactive 3D Visualization for Public Space Design Ideation in Neighborhood Planning. In *CHI Conference on Human Factors in Computing Systems Extended Abstracts (CHI'19 Extended Abstracts)*, May 4–9, 2019, Glasgow, Scotland UK. ACM, New York, NY, USA, 6 pages.

<https://doi.org/10.1145/3290607.3312967>