Understanding Representativeness in Crowdsourced Apps Data for Bicyclists and Pedestrians

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Background

Crowdsourced Mobility Data

Activity logs from apps like Strava, offering fine-grained insights into active mobility patterns.

Value: Providing valuable data where traditional methods (e.g., surveys, manual counts) are impractical.

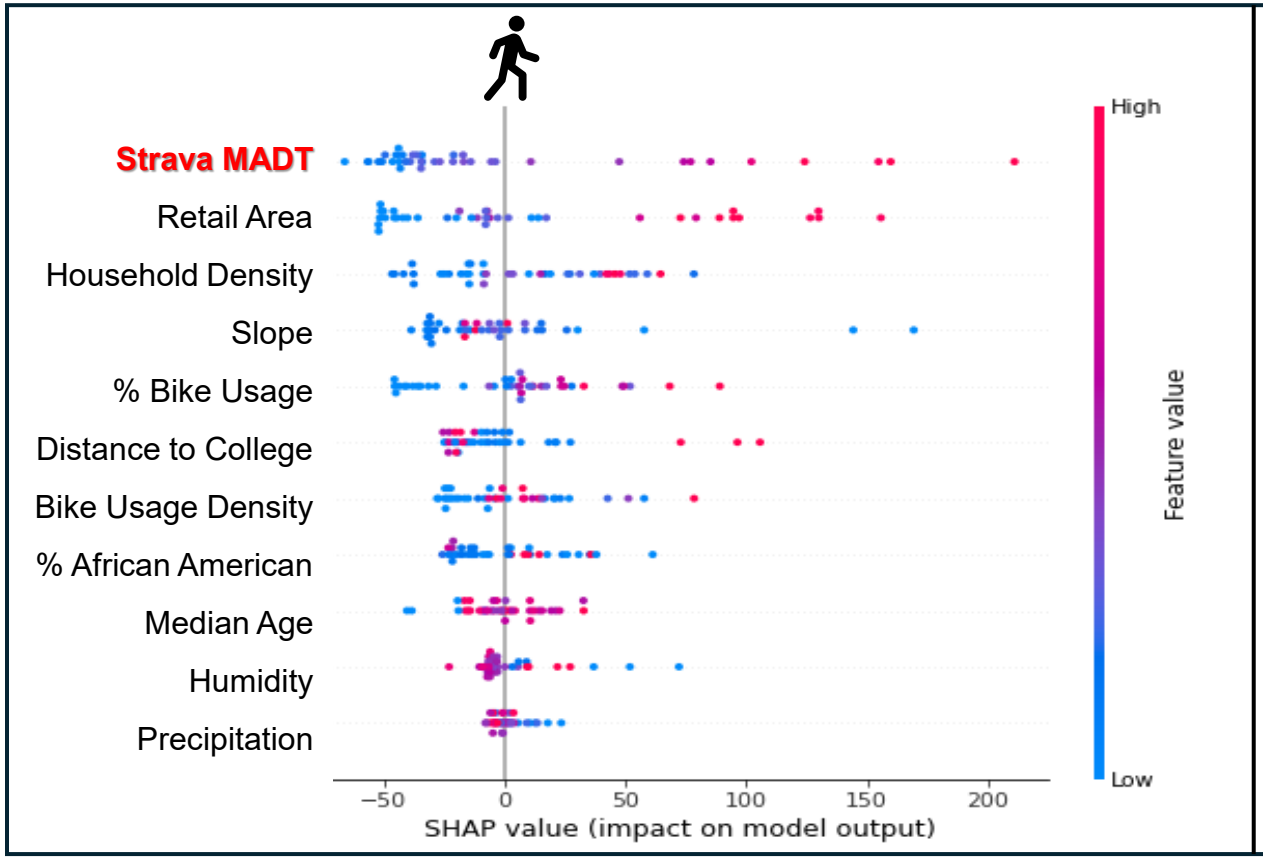
Application in Exposure Models

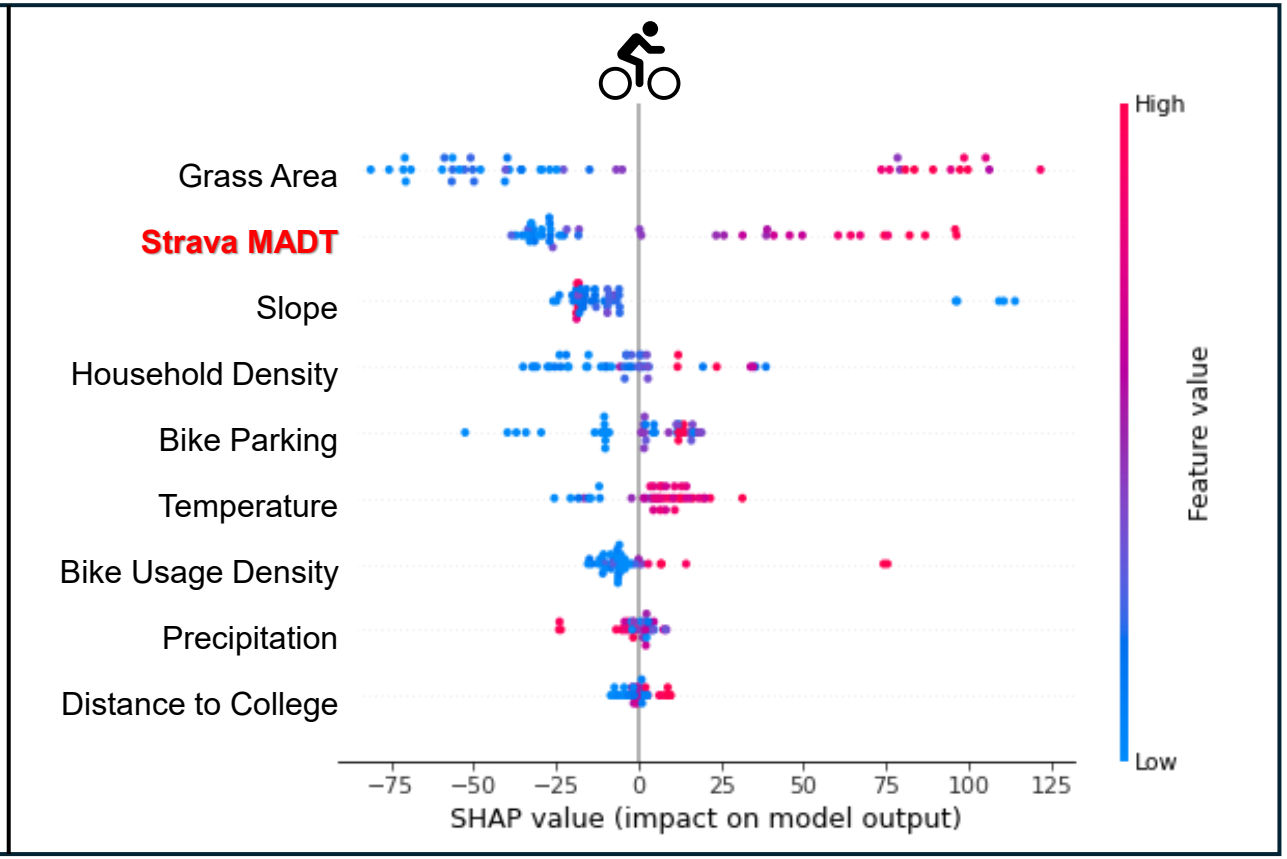
Analyzing crowdsourced data reveals detailed routes and high-usage corridors for bicyclists and pedestrians.

Significance: The models inform planners where to invest in infrastructure to mitigate risks and improve safety for active travelers.

Insights from Previous Research: SHAP Plots

Our previous research: *"Capturing Panel Effect in Exposure Models Using Crowdsourced Data"*
Case study: **Michigan**
Key factors driving **bicycling** and **pedestrian** exposure





Key factors influencing walking (left) and bicycling (right) in Michigan.

Different Users, Different Needs

Gender Differences in Active Transportation

- Women ride shorter distances, prefer protected/off-road routes, and report higher safety concerns than men.
- Women walk more for errands and leisure but feel less safe in public spaces.

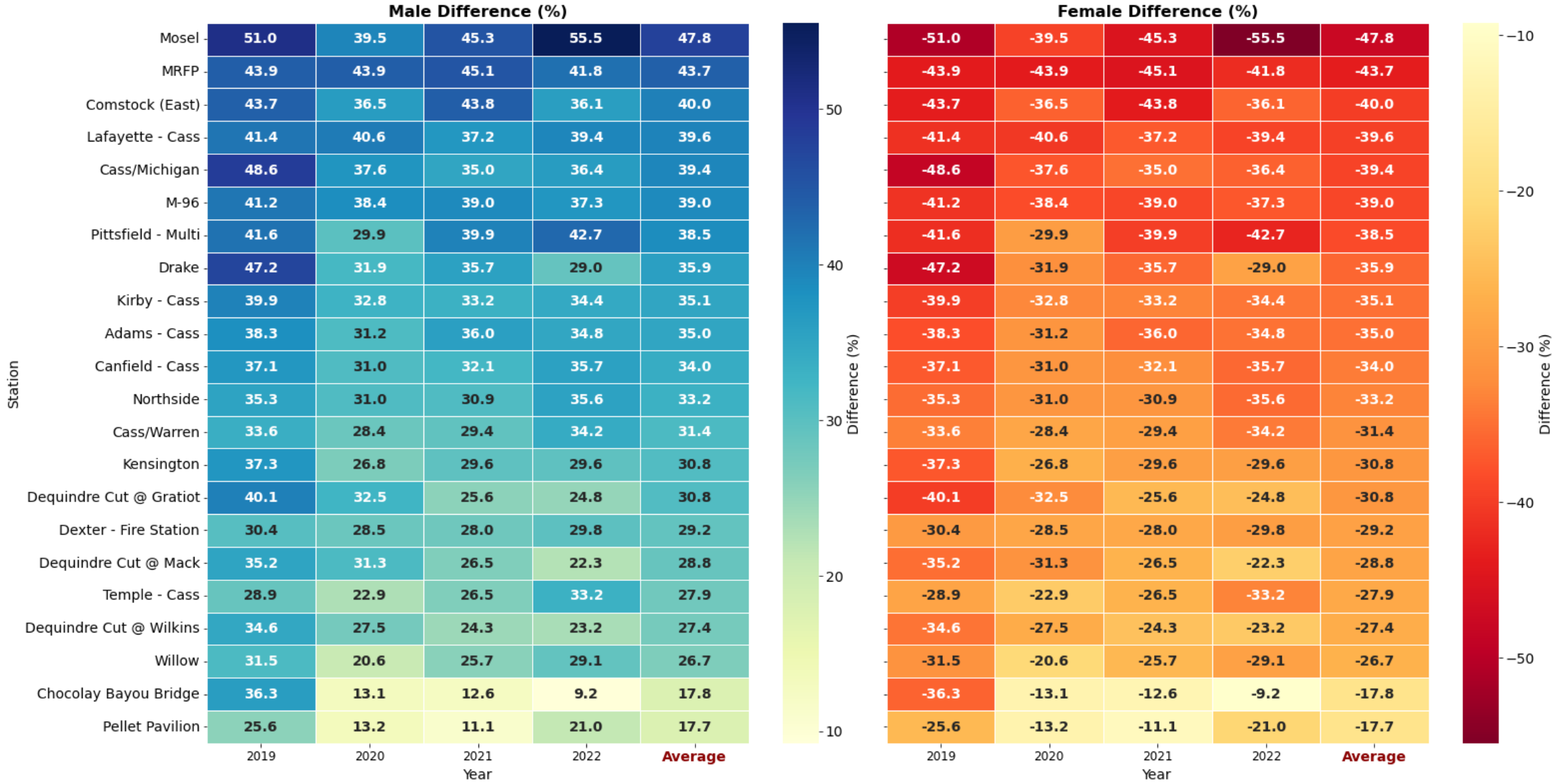
Bias in Crowdsourced Data

- Apps like Strava over-represent male, younger, and wealthier users.
- Women and older/low-income riders are undercounted.

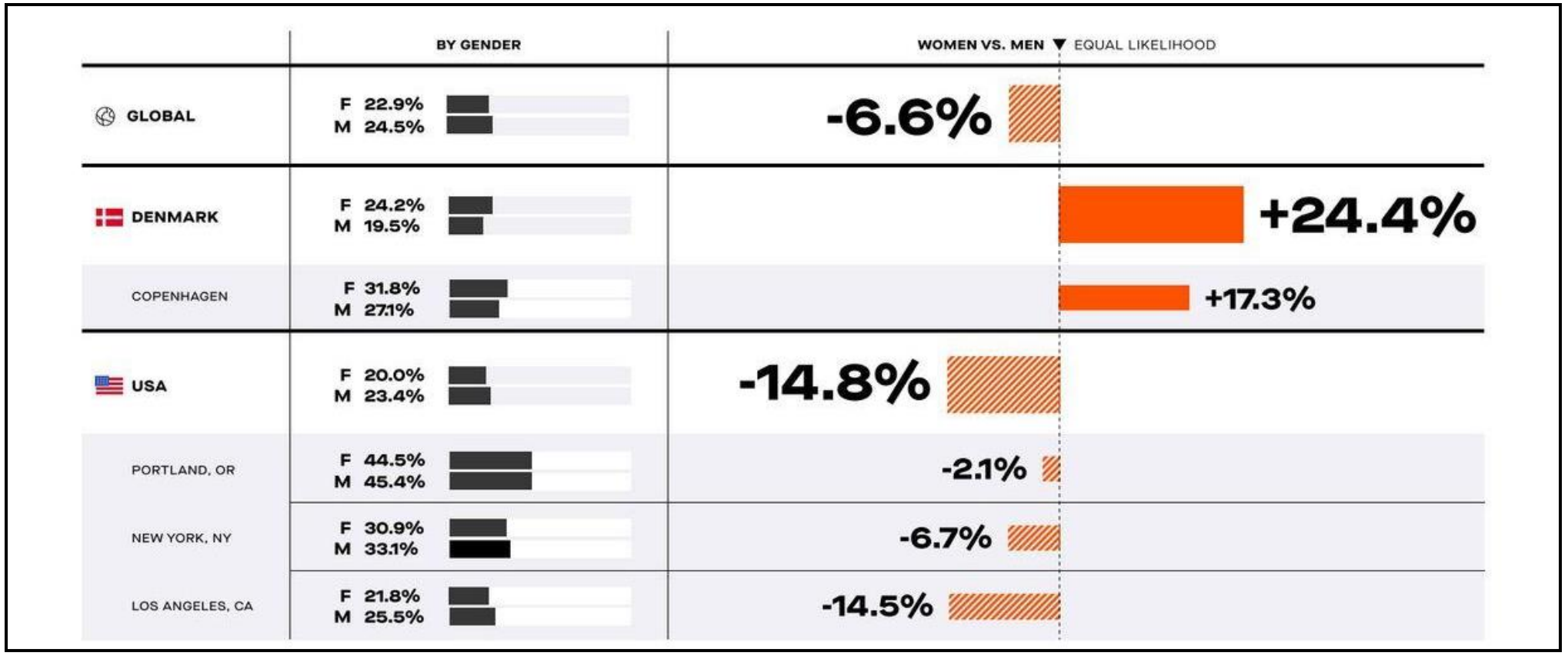
Why It Matters for Planning

Infrastructure decisions based on biased data **risk under-serving women and other underrepresented groups**.

Gender Differences in Bicycle User Ratios in Michigan: Strava VS. Census (2019-2022)



Final Thoughts



Likelihood to commute by bicycle by gender (Strava, 2019; CycleVolta).

Thank you

Questions?

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