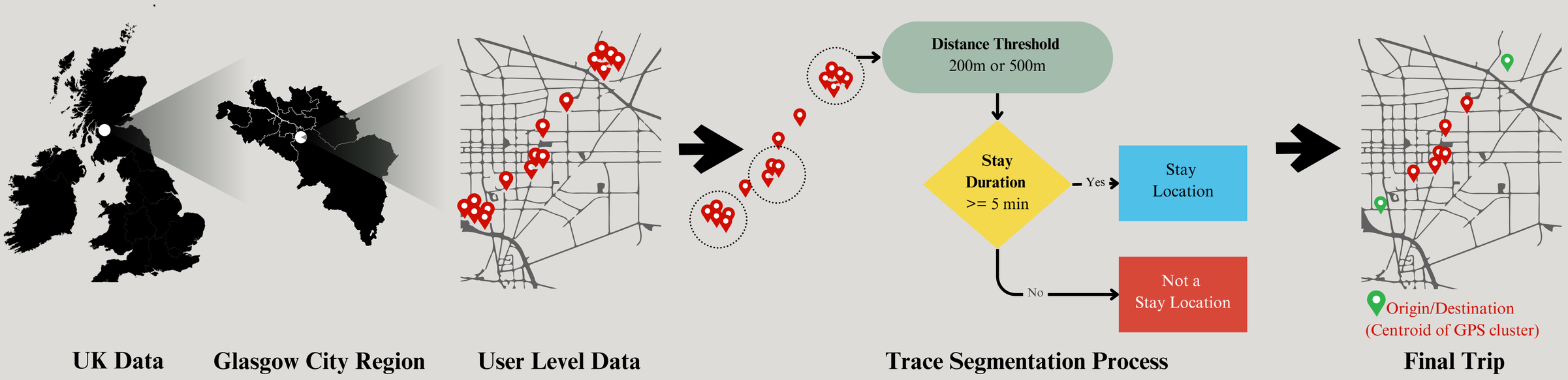
Mobile App Data and Stay Detection: Distance Threshold Analysis

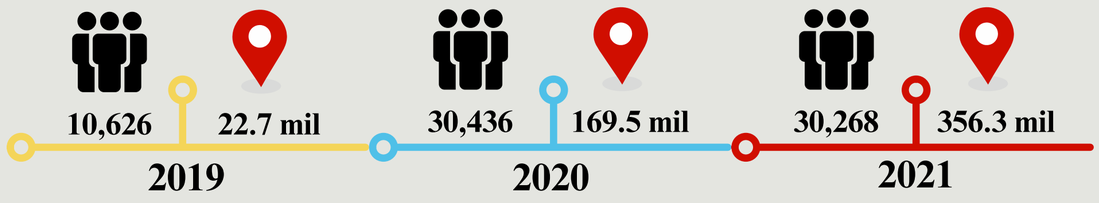
Varun Raturi & Faraz Malik Awan
Urban Big Data Centre, University of Glasgow

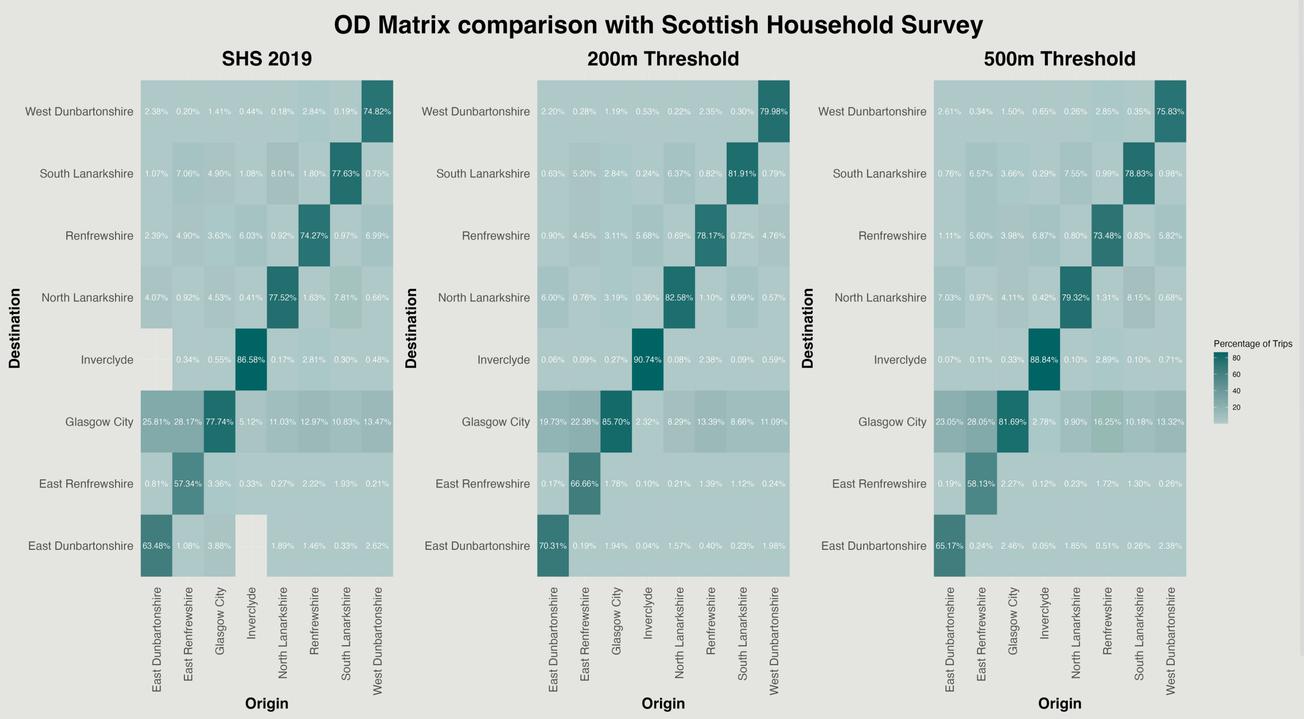
Introduction & Methods

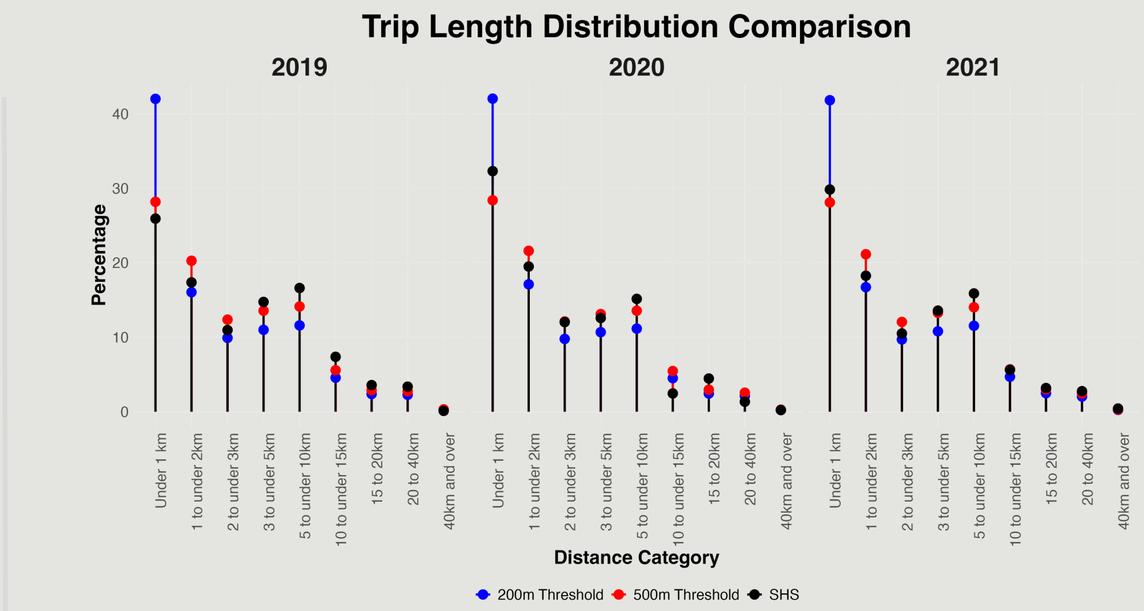
- Using **mobile phone app data** from Huq.io to determine **stay locations** of users.
- A **stay** is identified based on the device's lack of movement beyond a **predefined distance** over a **specified duration**.
- We compared two distance threshold: **200m & 500m**.

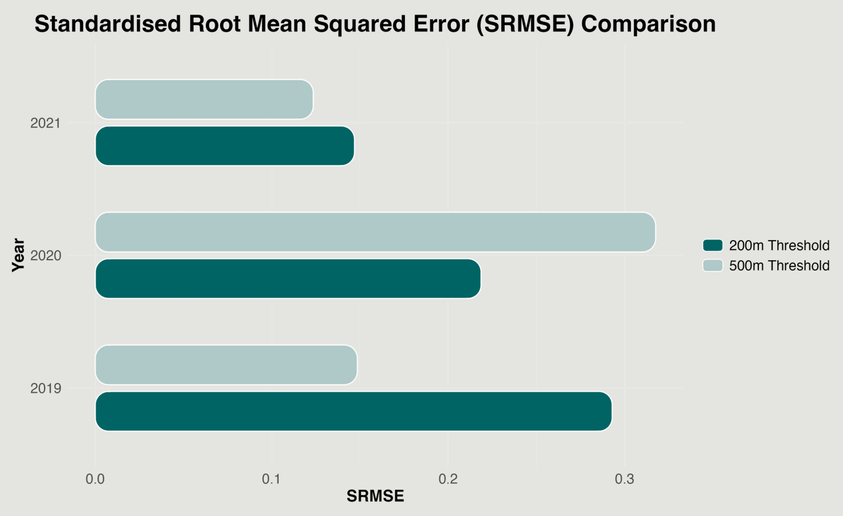


Data & Results









Discussion

Which threshold more accurately captures mobility patterns?

- 200m threshold detects more **short trips** & can be useful for analyzing short trip behavior.
- Surveys generally **underestimate** shorter trips.
- Mobile data underestimates **longer trips** compared to SHS data.
- 500m threshold **aligns more closely** with survey values.
- SRMSE values show **500m threshold** is closer to survey data.
- 200m threshold SRMSE values are not too high & **remain useful.**
- Variations in data collection policies over time can complicate **longitudinal comparisons.**

Conclusion

- **200m Threshold:** Effective for detecting and analyzing short trips, if surveys are underestimating shorter trips.
- **500m Threshold:** Provides results closely aligned with survey data, making it suitable for general travel analysis.
- **Mobile App Data:** The spatio-temporal richness of mobile app data provides valuable insights for various mobility studies.

Dr. Varun Raturi: varun.raturi@glasgow.ac.uk

UK Research and Innovation
Urban Big Data Centre
Economic and Social Research Council
University of Glasgow