Traditional mobility and traffic monitoring systems often have limited geographic and temporal coverage. Point-level app location data is an innovative source identified with the potential to offer broader and more dynamic insights (Zhang et al. 2023). Yet, its efficacy and the methods to process it for traffic volume estimation remain limited.

**RESEARCH QUESTIONS**

1. How can point-level app location data be extracted effectively to estimate the volume of traffic?
2. How can the heterogeneous character of app location data be controlled to estimate the volume of traffic?

**METHOD**

The app location data is sourced from Huq Inc. It includes records between 2019 and 2020 (N=1bn).

App data is compared to manual traffic counts in Glasgow, UK, collected by the Department of Transport (DfT).

A series of systematic buffers are designed to extract app location data:

![Example: Argyle Street buffers](image)

The following model is fitted by OLS:

\[
TrafficCount_i = \beta_0 + \beta_1HuqCount_i + \beta_2TypeRoad_i + \beta_3Year + \beta_4HuqCount_i \times Year + \epsilon_i
\]

Approximation (2) consistently improves the estimates.

Extending the buffer to adjacent roads improves the estimates if the app-location count is normalised.

**FINDINGS**

- Figure 4 shows a positive relationship for all cases.
- The ‘Null’ approach shows considerable under- and overestimation.
- Both the simplified approach and the pattern-based (1 and 2) improve the correlation, but some buffers are not able to capture enough information.

**CONCLUSIONS AND FUTURE WORK**

- App-location data demonstrates good potential for estimating traffic volumes.
- The processing of app location data is crucial for traffic estimates.
- Future work can focus on active travel.

**REFERENCES**