Dimension	Variable	Bias explanation	Description
Demographic	Household size	Large households may share devices, lowering per-capita ownership and digital visibility. Shared phones reduce stability of inferred home locations.	Households with ≥6 people (share of all households).
	Female	Gendered differences in app use and daily routines can alter detection of trips and stays. If women carry or use devices differently, inferred home location can be biased.	Residents who are female (% of populatior
	Age bands	Smartphone ownership and location-service use vary sharply by age. Older groups show lower adoption and usage intensity, leading to under-representation.	Population by 10-year bands: 0–9, 10–19, 70+.
Socioeconomic	Socioeconomic classification	NS-SEC correlates with income and job conditions, shaping handset quality, data plans, and app usage. Lower classes face affordability constraints and intermittent connectivity.	Population by NS-SEC categories.
	Qualifications	Education relates to digital literacy and intensity of technology use. Lower qualifications tend to associate with lower adoption of location-enabled services.	Population by highest qualification (e.g., n Level 4+).
Resource accessibility	Deprivation	Higher deprivation implies barriers to devices and data plans, reducing digital visibility. Prepaid SIM churn may degrade longitudinal tracking of home locations.	Households not deprived in any dimension
	Car ownership	No-car households proxy lower material resources and different mobility modes. They often have lower device affordability and different app ecosystems, affecting capture.	Households with no car (%).
	Home ownership	Owners have higher income stability and better digital access, improving persistent device presence and home inference. Renters show higher SIM churn and instability in traces.	Owner-occupied households (%).
	Central heating	Lack of central heating is a deprivation proxy linked to lower digital access. Housing quality can also affect indoor signal conditions, increasing missingness.	Households without central heating (%).
Mobility	Non-UK born	Foreign operator SIMs, language settings, and app ecosystems can reduce inclusion in domestic panels. Roaming and multi-SIM use complicate home/work inference.	Residents born outside the UK (%).
	Recent migrant	Short residence duration implies unstable addresses and higher SIM turnover, lowering longitudinal representativeness. Temporary housing can degrade location inference.	Residents in UK <2 years (% of population)
	Commuting	Work-from-home reduces observable trips and alters diurnal patterns used for home/work inference. Mode and route choices also affect signal continuity and coverage.	Residents working mainly or only from hor (%).
Geographic	Population density	Dense urban areas have better coverage but more multipath and building interference, distorting stay detection. Sparse areas suffer coverage gaps, undercounting movements.	Usual residents per km².
	Rural	Rural coverage is patchier and devices may be offline longer, increasing under-representation. Longer mast distances reduce spatial precision of traces.	Population living in rural areas (%).