

Producing Population-Level Estimates of Internal Displacement in Ukraine Using GPS Mobile Phone Data

Nearly 110 million people are forcibly displaced people worldwide. However, estimating the scale and patterns of internally displaced persons in real time, and developing appropriate policy responses, remain hindered by traditional data streams. They are infrequently updated, costly and slow. Mobile phone location data can overcome these limitations, but only represent a population segment. Drawing on an anonymised largescale, high-frequency dataset of locations from 25 million mobile devices, we propose an approach to leverage mobile phone data and produce population-level estimates of internal displacement. We use this approach to quantify the extent, pace and geographic patterns of internal displacement in Ukraine during the early stages of the Russian invasion in 2022. Our results produce reliable population-level estimates, enabling real-time monitoring of internal displacement at detailed spatio-temporal resolutions. Accurate estimations are crucial to support timely and effective humanitarian and disaster management responses, prioritising resources where they are most needed.