Decoding population flow

The Asian Demographic Research Institute is advancing research on migration patterns.

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Social media metadata provides insights into migration phenomena.

As the most populous city in China and a financial hub in Asia, Shanghai has long topped the list of most attractive Chinese cities for expats and was an obvious location in which to build a population research institution.

The Asian Demographic Research Institute (ADRI) at Shanghai University (SHU) was founded in 2015 with the help of the School of Sociology and Political Sciences. ADRI researchers are looking beyond national boundaries and are applying data analysis to identify population patterns and migration flows in Asia, the world's most populous continent.

Guy Abel, a group leader at the ADRI and a professor of sociology, characterizes and forecasts population and migration patterns using modern statistical demographic methods.

"International migration is becoming an ever more important component of population growth, and a driver for socio-economic change in many countries," says Abel. However, little is known about the specific patterns and contributing factors. This has motivated efforts to develop methods to estimate migration flows.

For years, Abel has been developing approaches to estimate global levels of international migration flows by extending data sets published by the United Nations. Migration flow data is generally not available for many countries, but is an important component of population change.

In his most recent paper on the topic, Abel observed that two estimation methods based on a closed demographic assumption (where all people in the world either move, do not move, are born or die in the same set of countries) outperformed other methods when compared to reported migration statistics published in a number of countries.

Another barrier to tracking the latest international migration patterns is that published census data tends to lag by around two years — and even longer recently, because of the pandemic. Abel, however, overcame this obstacle to some extent and explored demographic changes in real-time by using of metadata from social media platforms. These 'geo-referenced' digital traceable data, including cell phone call detail records from open data sources and geo-tagged social media updates, serve as a novel tactic in Abel's flow model to provide timely insights into migratory patterns and complex migration phenomena.

"This trendy method can be useful but it's not thorough. We made great efforts in handling social media metadata complexity caused by noise and overlap, and then combined it with traditional data such as census data," says Abel.

"We will carry that forward and adjust the model accordingly in our estimations."

Abel is proud of ADRI's gathering of world-class experts and ambitious young scientists, who have established close relationships with the International Institute of Applied Systems Analysis, at the National University of Singapore, and the National Center for Atmospheric Research, at the Australian National University.

"With our global outlook and extensive regional collaborations, I'm confident we will further advance research on Asian and global demography," says Abel. ■

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