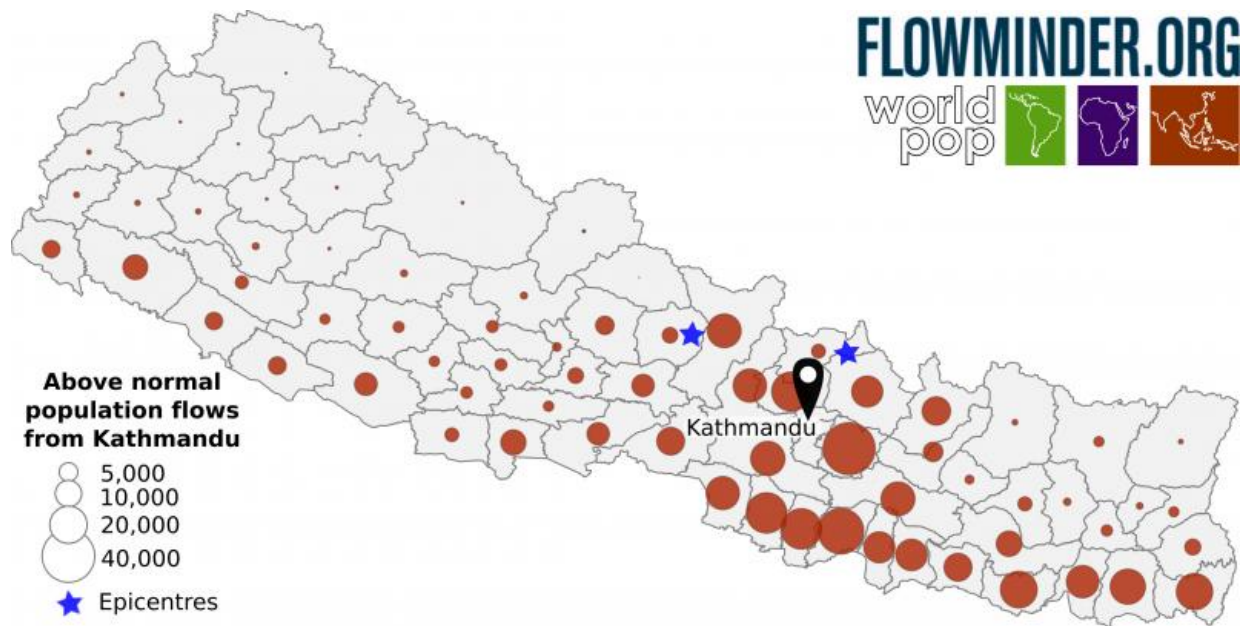


# Mobile phone data helps ongoing quake relief effort in Nepal

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Nepal quake outflows

Researchers from the University of Southampton are using mobile phone data to monitor the movement of people affected by the earthquake in Nepal and help with the continuing relief effort in the country.

Just a week after the disaster took place, the team, working as part of the WorldPop project and Flowminder Foundation, began daily monitoring of anonymised phone data to track the displacement of populations in

the affected areas. Five months on, they are continuing to supply accurate, up-to-date reports to the United Nations.

Flowminder Director and Professor of Geography at Southampton Andy Tatem says: "We had been planning to conduct a project of this kind in Nepal since 2014 and the Flowminder team was already in Kathmandu setting this up. As a result, when the quake struck, we were able to respond rapidly and were well-placed to help.

"Although we have used [mobile phone data](#) before to measure population movements, this is the first time we have used the method in an ongoing 'live' situation. By watching how the population moves on a daily basis, we have been able to help directly with aid efforts and the rebuilding of infrastructures."

Every time a person uses a mobile it sends information to a receiving tower and gives an approximate location of where they are. When this information is repeated multiple times, over millions of users, a detailed picture can be extracted of population density, movement and how it changes over time in a given area.

In Nepal, the researchers linked up with the largest mobile phone operator Ncell to analyse anonymised data from 12m mobiles across the country. By comparing information on the movement of these phones after the quake, with population distributions and movements before it hit, the team has established trends of where people are moving to and from. The work to monitor this continues.

The Nepal earthquake hit on 25 April 2015 killing over 9,000 people and injuring more than 23,000 - with a magnitude of 7.8Mw1. It was followed by more than 300 aftershocks. An estimated 500,000 buildings were destroyed or severely damaged. Economic losses have been estimated at \$7,065m.

Two weeks after the quake, the researchers' data showed that an estimated extra 500,000 people had left Kathmandu Valley (taking into account normal patterns of movement). Most went to the surrounding districts and the Terai areas in the south and southeast of Nepal - something which had previously been completely unknown. On a wider scale, across the country an estimated 1.8m people left their home district.

Latest analysis shows that of those people who left their homes soon after the disaster, most have now returned - with approximately four to 14 per cent still remaining elsewhere. Return rates have varied across districts of Nepal, with those from Kathmandu Valley the slowest to return. Kathmandu city centre has seen the largest inflow of population.

Dr Robin Wilson of Geography and Environment at Southampton, who led analyses of the phone data, comments: "Large population movements occur each time there is a natural disaster and there is often limited information to help understand where affected people move to—making it difficult to plan a response. The use of [mobile phone](#) data that we have pioneered has now proved to be invaluable in a real scenario—helping to get support to where it is needed in an effective way."

Provided by University of Southampton

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