

Population mapping helps measure access to surgery in Africa

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Credit: NASA

Research examining pressure on surgical units in sub-Saharan African countries estimates nearly 300 million people have a need for surgery in the region, placing a heavy burden on hospitals.

The study by researchers from the United Nations Population Fund (UNFPA), WorldPop at the University of Southampton, the Technical University of Munich, Kenya Medical Research Institute, Wellcome Trust and Harvard Medical School, assessed access to [surgical treatment](#) for people in 47 African countries.

The team sourced information from satellite imagery, government statistics, charitable organisations, surveys and census. This enabled them to help work out where people live and in what numbers, the location and number of hospitals with [surgery](#) provision, the nature of the road infrastructure and the shape of the landscape.

By compiling and combining all this data, the researchers were able to create detailed, layered, geospatial maps (1 by 1km grid square level) giving insights into [population](#) density and the burden of surgical needs on medical centres – extremely valuable information for infrastructure planners.

The researchers found that an estimated 257 to 294 million people (of all ages) have a need for surgery in sub-Saharan Africa, out of a total population of just over one billion. The estimated need in children under 15 years was 115 to 131 million (distributed over similar geographical areas to the 'all ages' group).

The study, published in *BMJ Global Health*, also shows the majority (approx. 93 per cent) of the population live in areas within two hours of a major [hospital](#) that could theoretically carry out three basic surgical procedures – laparotomy, caesarean section and open fracture treatment. In most countries, 80 per cent of children were within the two hour window, with the exception of Angola and Eritrea. However, the authors stress that the research doesn't examine the surgical capability of individual hospitals and that further assessments would be needed to establish their capacity to provide timely, safe and affordable surgery.

Director of WorldPop, Professor Andy Tatem of the School of Geography and Environmental Science at the University of Southampton, says: "An estimated five billion people around the world don't have access to basic, safe, surgical care. Based on the case of sub-Saharan Africa, we have used geospatial mapping techniques to provide

a precise picture of the pressure facing hospitals to provide this kind of access for local populations. We hope our research can now help policy and decision makers to plan for the future and improve surgery provision in places where it is most needed."

More information: Sabrina Juran et al. Geospatial mapping of access to timely essential surgery in sub-Saharan Africa, *BMJ Global Health* (2018). [DOI: 10.1136/bmjgh-2018-000875](https://doi.org/10.1136/bmjgh-2018-000875)

Provided by University of Southampton

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