

DERIVING HOSPITAL CATCHMENT AREAS USING MOBILE PHONE DATA

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Catchment areas of medical facilities provide insight into the reach, quality and utility of healthcare provision. While different approaches exist to calculate such catchment areas, each one differs according to the context in which a hospital catchment area is defined. These approaches make a significant number of assumptions about a hospital's patients by relying on census data, travel impedance or gravity models.

Mobile phones have blurred the concept of spatial barriers by eliminating the absolute need for physical proximity in order to use a service. This thesis uses anonymized mobile phone and landline data (CDRs) to derive hospital catchment areas. It does so by weighing user location in a cell, modeling its relation to other cells and identifying spatial influence between cells. By doing so, it is possible to identify the geographic areas in which people actually use a hospital's services. These areas help us to identify the revealed and potential accessibility of a hospital providing new insights into health-care provision and access, without relying on hospital administrative data or demographic factors.