Background

Healthcare accessibility, capacity, and quality are critical issues in Australia, where diverse population density, transportation infrastructure, and healthcare facilities impact healthcare outcomes. As an Australian healthcare company, we want to understand these factors and their interplay in strategic decision-making, healthcare delivery, and resource allocation. Due to the limitation of hospital admission data, we will focus on South Australia. If you are able to find data further than that, feel free to focus on more Australian regions. For the granularity, either state level, MB level, or SA2 level is acceptable. If you want more datasets, feel free to look them up yourself. You may choose any one of the research questions below to investigate.

Q1: Healthcare Accessibility in Relation to Population Density
How does the accessibility of healthcare facilities vary across regions with different population densities? Using data on hospital locations, travel distances, and population density, this question explores whether healthcare facilities are fairly distributed and accessible.

Q2: Impact of Transportation Distance/Time on Hospital Utilization
What is the relationship between transportation distance/time and hospital admissions or inpatient days? This question examines whether transportation time/distance affects hospital utilization rates, potentially providing insights into resource allocation and healthcare delivery.

Datasets

Population density

This is the population distribution in Australia in 2021. It is measured per state and is given in percentages. The file can be downloaded as an Excel file:
https://www.statista.com/statistics/608819/australia-population-distribution-by-state/

This is the population distribution in Australia in 2021. It is measured per SA2. It gives very brief information about the population distribution.
https://digital.atlas.gov.au/datasets/digitalatlas::abs-population-and-people-by-2021-sa2-beta/about

Transportation time/distance

This is the shortest travel time between Statistical Areas Level 2 (SA2s) and any hospital in Australia. The data source is a pickle document:
https://springernature.figshare.com/articles/dataset/Shortest_travel_time_between_SA2s_and_any_hospital_pkl_/8319752

This is the shortest travel time between Mesh Blocks (MBs) and any hospital in Australia. The data source is a pickle document:

https://springernature.figshare.com/articles/dataset/Travel_times_between_MBs_and_hospitals_pkl_/8319740/1

Hospital locations

The dataset contains Australian hospital statistics per public hospitals. It contains a lot of details like address and number of beds:
https://data.gov.au/dataset/ds-dga-88a95824-c0e7-4ec0-bb78-b36223dd16a8/details

The dataset contains all hospital IDs, names and coordinates in Australia. The file is in csv:
https://springernature.figshare.com/articles/dataset/Hospital_IDs_names_and_coordinates_csv_/8319737/1

Hospital admissions

The dataset contains Southern Australia (SA) Health Public Hospital Inpatient Admissions from Emergency Departments. It shows quarterly time series data per hospital between 2012 and 2018:
https://data.gov.au/dataset/ds-sa-e22a6f7c-81d8-4872-8dbe-725fc62690e7/details