

## Mapping Malaysia's Public Health System EforEffect

Entry for 2019 mapathon by HERE maps

# Description of our idea

Public health institutions are the primary source of affordable healthcare for Malaysians. However, it has acquired a reputation for long queues, heavy workload on hospital staff, and declining standard of care [1] [2]. These drawbacks will have a larger effect over time as our population ages.

Our idea is to map the healthcare resources available (staff, infrastructure) by state v.s. the number of potential patients. The benchmark is the global averages established by the World Health Organisation (Ex: [Number of patients per doctor](#)). Deficiencies identified can thus be addressed by adjusting allocations in the upcoming national Budget.

The data we intend to show with our map are:

1. Quantity of health resources available: Pharmacies, nurses, general staff, general practitioners (GP), dentists, specialists (e.g. psychiatrists, cardiologists)
2. Coverage (km from major population areas) of clinics, hospitals, specialist centers
3. Available beds in outpatient wards and intensive care units (ICU)

# Data used for our map

We will use public datasets in .csv and .xlsx format from Malaysia's open government data portals [data.gov.my](https://data.gov.my) and [dosm.gov.my](https://dosm.gov.my). The data will be presented in the map to show the connection between public healthcare resources and patient requirements.

Dataset	Examples
Medical professionals per state	<ul style="list-style-type: none"><li>• <a href="#">Dentists and dental specialists</a></li><li>• <a href="#">Medical staff and specialists</a></li></ul>
Beds available per state by ward type	<ul style="list-style-type: none"><li>• <a href="#">Number of available beds</a></li></ul>
Public healthcare facilities per state	<ul style="list-style-type: none"><li>• <a href="#">List of cluster hospitals in Malaysia</a></li><li>• <a href="#">Number of registered government medical facilities</a></li><li>• <a href="#">List of hospitals with radiography equipment and radioisotope storage</a></li><li>• <a href="#">List of medical facilities with mammography equipment</a></li></ul>

# Features of our map

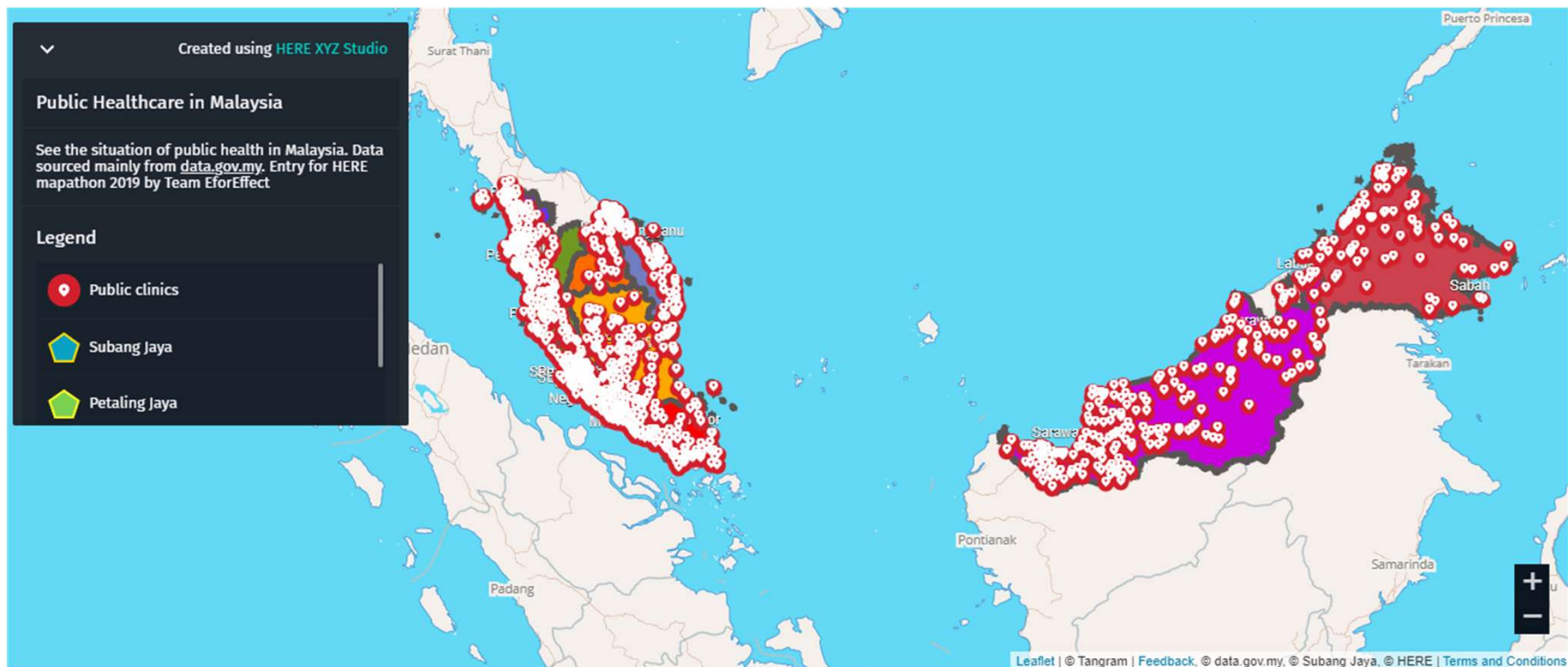
Our map aims to represent the situation for both patients and healthcare providers as of 2019. This covers each of Malaysia's 13 states and 3 federal territories. We aim to use Tangram together with XYZ Spaces to generate a map. Its layers can be shown/hidden to aid comparison. Here are a few features we plan to include:

Feature	Description
Individual states	Borders of each state to be determined by a shapefile. A muted gray outlines the borders
Healthcare resources per state e.g. doctors, clinics, hospitals	<p>Choropleth to show areas where public healthcare falls short of demand vs WHO global average.</p> <ul style="list-style-type: none"><li>• State with values closer to the average are more green. States with missing resources are coloured white</li></ul> <p>Markers on the map identify the location of each healthcare resource by latitude-longitude</p>
Patient outcomes per state e.g. maternal deaths, death rate of premature newborns, rates of hospital acquired infections, deaths by preventable chronic diseases	<p>Choropleth to compare vs WHO global average</p> <p>States with values further from the average are more red to convey urgency. Those closer to the average are more white.</p>

# Features of our map

Draft of planned map made using XYZ studio:

(Try demo at [https://xyz.here.com/viewer/?project\\_id=df2b02ca-75cf-414e-957c-5ff9b6da04b9](https://xyz.here.com/viewer/?project_id=df2b02ca-75cf-414e-957c-5ff9b6da04b9) )



# Impact of our idea

10% of Budget 2018 was allocated to public healthcare. This MYR [26.58 billion](#) provides MYR 831 to each one of 31,982,197 [Malaysians](#).

The data to be used in our map is already publicly available at [data.gov.my](#) and [dosm.gov.my](#). By visualising it with our map, it can guide the planners of Budget 2020 to provide public healthcare funding where it is most needed. This helps:

1. Improve access to affordable healthcare. [40% of Malaysian households earn less than MYR 3000 \(USD 714\) per month](#). With the average household size at [4 people](#), private healthcare is out of reach for most families. For reference, a typical visit to a private clinic costs MYR 100.
2. Reduce death and disabilities by disease. [Adult Malaysians are not reaching the expected life expectancy](#) for our level of development. Those that do fund their healthcare out-of-pocket
3. Patch gaps in public healthcare coverage to reduce distance from patients and provide required healthcare services
4. Counter effect of [brain drain in public health sector](#). Medical staff in public health sector currently prefer better-paying private and overseas practices



# Presentation of our team



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The personal data collected about the participants is obligatory for the treatment of their participation in the contest. In the absence of communication of these data, your participation could not be taken into account. They are exclusively intended for Agorize, responsible for processing. In accordance with the Data Protection Act, you have the right to access and rectify your data, as well as a right to object for legitimate reasons with Agorize, 34 rue du Faubourg Saint Antoine, 75012 Paris, by mail accompanied by a copy of any signed identity document.