

Development of More Health-Care Service Providers in the City of Johannesburg

Background

The City of Johannesburg is South Africa's most populous city and contributes the greatest to the country's GDP compared to all the other cities or towns.

The city attracts migrants from other areas of South Africa and also immigrants from other countries all over the world (mainly African countries) who move thereto to look for or exploit economic opportunities.

The special high concentration of residents in this region therefore requires the design and execution of special health care services to ensure that the residents have access to free primary health care wherever they reside. The health of the residents in this region (who are the main economic labourers) are the health of the hub's economy and consequently, that of the nation by virtue of the significant contribution the city makes to the country's GDP.

Case Problem

In this economic hub of the country, free healthcare providers are not sufficiently distributed across the city to ensure that residents receive access to primary healthcare. Most healthcare services in the region are private, unaffordable to and not easily accessible by ordinary residents in the city.

Ideal areas therefore need to be identified in which to build centres build centres that are evenly and sufficiently distributed across the city to ensure that residents have easy access to free basic healthcare services.

This research will be of use to the department of health, the municipal council and other non-profit organisations to determine the ideal places to build the abovementioned centres.

Data to be Used

For this project, data will be sourced from Wikipedia to identify the key suburbs or areas in the City of Johannesburg. Foursquare will be used to identify health care providers and the distribution thereof in the various communities so as to determine the ideal locations for the establishment of new centres.

Methodology

The list of the various suburbs in the City was was obtained from [Wikipedia](#) and using BeautifulSoup, the data was scraped. The GPS coordinate of the suburbs were then sourced using Geocoders.

Using Foursquare, clinics and hospitals were searched in a sample of carefully selected suburbs to determine the concentration of healthcare service centres.

Data Cleaning

The few suburbs that could not be picked up by Geocoder (ie None types) were removed from the list and those areas will be evaluated on the basis of the results of the nearest neighbours.

Of the 51 suburbs obtained, three were removed from the list as they yielded nonetypes when the code was run. This represented 6% loss of the data.

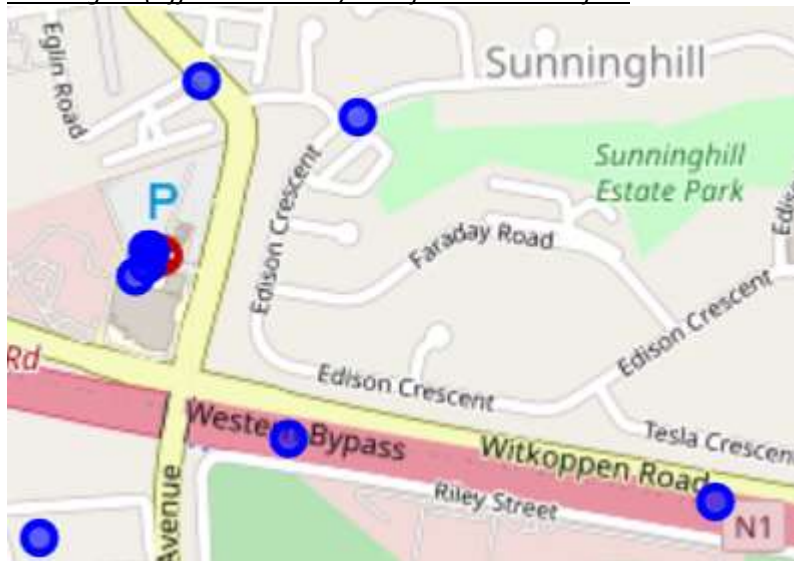
Results

We analysed the results from the distribution of the healthcare centres and noted some uneven distribution. Healthcare centres seem to be in high concentration in economic hubs or hotspots. These areas are, by virtue of the proximity to other facilities, generally affluent suburbs.

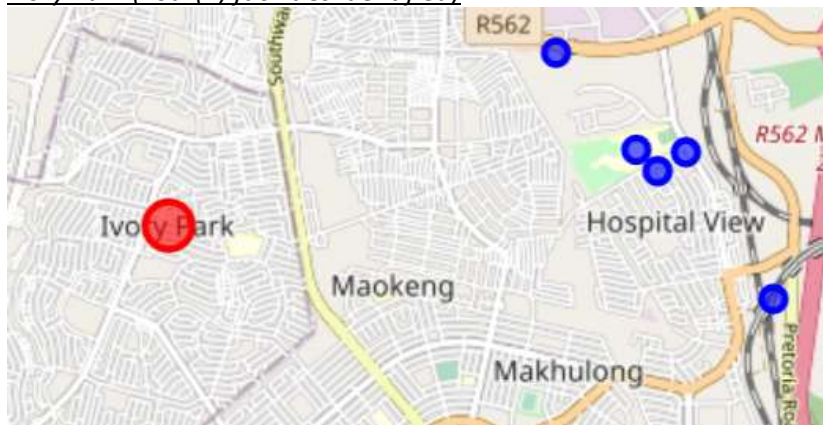
There is thus an intended consequence that less affluent suburbs which are generally distant from these hubs do not have easy access to the health care facilities.

Even though some affluent suburbs seemed to have low numbers of centres, the suburbs were nevertheless generally close to the areas with the high concentration of the facilities.

Sunninghill (Affluent Suburb) – 24 facilities identified



Ivory Park (Four(4) facilities identified)



Conclusion

From the results, it is evident that healthcare facilities are not equally distributed across the City of Johannesburg. The high concentration of these in affluent suburbs has an intended consequence of the residents in less privileged areas not having easy access to healthcare facilities. These are also mainly private institutions whose service comes at a high cost that the average South African cannot afford.

Even if the existing facilities were to be equally distributed, they would still not be accessible by the average resident in the city who earns relatively less income to afford such services.

Due to the widespread of private facilities, these institutions should consider partnering with the government to provide basic and emergency services to whoever needs them, free of charge. These gestures will also help the image of the concerned facilities in being perceived as responsible institutions that place the health of the nation first and above profits.

Annexure

List of Suburbs

	Suburbs	Latitudes	Longitudes
0	Barbeque Downs	-26.009429	28.075756
1	Barbeque Downs Business Park	-26.009429	28.075756
2	Bloubostrand	-26.025833	27.968056
3	Blue Hills, Gauteng	-25.938216	28.104366
4	Broadacres, Gauteng	-26.000187	27.982335
5	Buccleuch, Gauteng	-26.055278	28.110833
6	Carlswald	-25.983215	28.099116
7	Chartwell, Gauteng	-26.167513	28.052286
8	Country View	38.051527	-78.627517
9	Crowthorne, Gauteng	-25.974898	28.085058
10	Dainfern	-25.993149	28.004047
11	Diepsloot	-33.946275	18.378914
12	Ebony Park	-26.009429	28.075756
13	Erand	-26.009429	28.075756
14	Farmall, Gauteng	-26.025833	27.968056
15	Glen Austin	-25.938216	28.104366
16	Halfway Gardens	-26.000187	27.982335
17	Halfway House Estate	-26.055278	28.110833
18	Headway Hill	-25.983215	28.099116
19	Houtkoppes	-26.167513	28.052286
20	Inadan (city)	38.051527	-78.627517
21	Ivory Park	-25.974898	28.085058
22	Kaalfontein	-25.993149	28.004047
23	Kya Sand	-33.946275	18.378914
24	Kyalami Agricultural Holdings	-26.009429	28.075756
25	Kyalami Business Park	-26.009429	28.075756
26	Kyalami Estates	-26.025833	27.968056
27	Mall of Africa	-25.938216	28.104366
28	Maroeladal	-26.000187	27.982335
29	Midrand	-26.055278	28.110833
30	Midridge Park	-25.983215	28.099116
31	Millgate Farm	-26.167513	28.052286
32	Nietgedacht	38.051527	-78.627517
33	Noordwyk	-25.974898	28.085058
34	North Champagne Estates	-25.993149	28.004047
35	Paulshof	-33.946275	18.378914
36	Rabie Ridge	-26.009429	28.075756
37	Randjesfontein Agricultural Holdings	-26.009429	28.075756
38	Randjespark	-26.025833	27.968056
39	Salfred	-25.938216	28.104366
40	Sunninghill, Gauteng	-26.000187	27.982335
41	Sunrella	-26.055278	28.110833
42	Trevallyn, Gauteng	-25.983215	28.099116
43	Trojan, Gauteng	-26.167513	28.052286
44	Vorna Valley	38.051527	-78.627517
45	Waterval City, Midrand	-25.974898	28.085058
46	Willaway	-25.993149	28.004047
47	Witkoppen	-33.946275	18.378914