Coursera Capstone Project
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Topic: Optimal hospital building in Lahore

Introduction

The problem
With a population exceeding 150 Million, Lahore is undoubtedly one of the largest cities of Pakistan, the 5th largest country by population. However, Lahore has had a history of being unable to provide adequate medical care to its citizens, especially in the relatively underdeveloped areas.
As the government has a low amount of resources, there is only a small number of hospitals that can be built to cover a number of areas. Some areas are fully covered while some areas are not covered at all. The number of hospitals to be built should cover areas with the lowest amount of healthcare facilities in their vicinity.

Solution
In order to cater to the current problem, I plan to create a map that would display the neighborhoods and the number of hospitals near them. These hospitals will be judged on the number of areas they cater, which will in turn identify the areas to which hospitals are very far. These identified points will then be used to analyze and determine the optimal points for building a new hospital.

Data

Collection Sources
Data will be collected from the following sources:

- [List of towns in Lahore](#)
- Geocode information from Geopy
- Hospital Data in Lahore from Foursquare

Data Type
The data collected includes:

- list of neighborhoods in lahore
- list of hospitals in lahore with their neighborhoods
- Geo location data of hospitals and neighborhoods

Methodology

- Different areas of Lahore will be individualized
- Number of hospitals in each area will be located
- Each hospital is assumed to have a coverage of 7km radius
- Identify which areas have no hospital coverage
- Determine which areas are optimal for a new hospital

Process

Analysis of Lahore's entire neighborhood was done and there were found to be approx 142 distinct colonies present in lahore:

Neighborhood	Lat	Long
Begum Kot	31.613832	74.265741
Bhaghatpura	31.549720	74.343610
Daroghawala	31.587253	74.404541
Harbanspura	31.566945	74.396377
Kasurpura	31.549720	74.343610
Railway Colony	31.572491	74.351196
Abu Bakar Siddique	31.549720	74.343610
Awan Town	31.504234	74.263197
Kamahan	31.454575	74.381757
Kot Mohibbu	31.549720	74.343610
Gujjarpura	31.549720	74.343610

Muhammad	31.567129	74.339895
Rashidpura	31.549720	74.343610
Ameenpura	31.549720	74.343610
Daras Barey Mian	31.549720	74.343610
Shamnagar	31.553492	74.282973
Saidpur	31.549720	74.343610
Hair	31.537816	74.305643
Azizabad	31.565608	74.314177
Rehmatpura	31.549720	74.343610
Sultan Mehmood	31.590377	74.388261
Fatehgarh	31.572426	74.405975
Kareem Bagh	31.549720	74.343610
Bibi Pak Daman	31.564962	74.339921
Gulgasht	31.549720	74.343610
Sabzazar	31.521793	74.270126
Dhaloke	31.549720	74.343610
Faisal Bagh	31.592037	74.296472
Begampura	31.580777	74.361677
Dograi Kalan	31.592687	74.499720

Nabipura	31.549720	74.343610
Ganj Kalan	31.549720	74.343610
Garhi Shahu	31.561799	74.348161
Gulshan-e-Ravi	31.550405	74.277338
Canal	31.565608	74.314177
Bostan	31.558306	74.369351
Qaiser	31.549720	74.343610
Chah Miran	31.586937	74.342998
Muslimabad	31.549720	74.343610
Mughalpura	31.564867	74.378610
Bilalganj	31.549720	74.343610
Al Hamra	31.549720	74.343610
Babu Sabu	31.540080	74.267934
Bakar Mandi	31.515670	74.341584
Ismailnagar	31.549720	74.343610
Dhair	31.549720	74.343610
Bilal Bagh	31.607385	74.303280
Salamatpura	31.582652	74.415516
Mian Meer	31.548434	74.357159

Anarkali	31.567944	74.307432
Zaman Park	31.550836	74.353271
Rizwan Park	31.549720	74.343610
Johar Town	31.463161	74.293917
Sitara	31.530086	73.387569
Shahdara Bagh	31.619337	74.287984
Makhanpura	31.594105	74.347908
Lakhodher	31.549720	74.343610
Mustafabad	31.551877	74.361218
Gawalmandi	31.572306	74.317643
Gulberg	31.511996	74.343018
Sodiwal	31.549720	74.343610
Hanjarwal	31.486542	74.254136
Farid	31.527030	74.282911
Jia Musa	31.549720	74.343610
Kot Khawaja Saeed	31.549720	74.343610
Bhaseen	31.549720	74.343610
Ghaziabad	31.557678	74.393496
Sare Sultan	31.549720	74.343610

Makkah	31.588077	74.298917
Bahawalpur	31.550756	74.309178
Niaz Beg	31.549720	74.343610
Keer Kalan	31.549720	74.343610
Qila Lachhman Singh	31.549720	74.343610
Shad Bagh	31.599453	74.337994
Minhala	31.549720	74.343610
Tajbagh	31.564314	74.418470
Qila Gujar Singh	31.549720	74.343610
Naseerabad	31.565608	74.314177
Ichhra	31.530555	74.319000
Shahpur	31.463261	74.230993
Green Town	31.432055	74.307465
Palmandi	31.549720	74.343610
Wassanpura	31.590937	74.339220
Barki	31.525978	74.457172
Tajpura	31.595283	74.336759
Race Course Park	31.543995	74.336419
Garden Town	31.501668	74.324773

Naya Samanabad	31.549720	74.343610
Ali Raza Abad	31.549720	74.343610
Maryam	31.549720	74.343610
Siddiquepura	31.549720	74.343610
Faiz Bagh	31.582511	74.337926
Hadiara	31.549720	74.343610
Al Faisal	31.549720	74.343610
Mozang	31.553745	74.314149
Model Town	31.482445	74.327000
Shah Jamal	31.528341	74.327461
Chung	31.432583	74.174348
Attari Saroba	31.549720	74.343610
Bangali Bagh	31.549720	74.343610
Farooqganj	31.549720	74.343610
Guldasht	31.545640	74.421952
Jinnah Hall	31.485322	74.297552
Faisal Town	31.476899	74.304902
Pakki Thatti	31.530541	74.296527
Maraka Shamke Bhattian	31.549720	74.343610

Dullo Khurd Kalan	31.549720	74.343610
Siddiqia	31.603768	74.330149
Crown Park	31.549720	74.343610
Bhangali	31.492299	74.480207
Rizwan Bagh	31.549720	74.343610
Liaqatabad	31.564701	74.304370
Kashmir	31.600272	74.348637
Sultanke	31.549720	74.343610
Chandrai	31.549720	74.343610
Bhamman	31.549720	74.343610
Madhu Lal Hussain	31.585659	74.374784
Islam Pura	31.588914	74.422837
Kot Lakhpat	31.466419	74.338257
Nawan Kot	31.538543	74.293951
Manga	31.307046	74.048514
Haloke	31.549720	74.343610
Muhammad	31.567129	74.339895
Chohan Bagh	31.549720	74.343610
Pindi Rajputan	31.549720	74.343610

Samanabad	31.539545	74.301700
Township	31.456506	74.320080
Gajju Matta	31.549720	74.343610
Baghbanpura	31.584503	74.376665
Sanda	31.558242	74.288445
Rehmanpura	31.520902	74.319932
Paji	31.565608	74.314177
Kahna Nau	31.549720	74.343610
Angori Bagh	31.549720	74.343610
Sanda Khurd	31.549720	74.343610
Gulshan-e-Iqbal	31.512500	74.292872
Dholanwal	31.526705	74.281177
Jia Bagga	31.330403	74.266785
Mujahidabad	31.567032	74.387503
Shadman	31.540211	74.326971
Sikandar	31.530493	74.340078
Pandoke	31.279184	74.358787

Conclusion

   The project was not properly completed due to the overcomplexity of the data. The report has been submitted but the work will still be in progress even after the completion of the project deadline. Apologies for any incomplete data.