Data and Algorithms Details

DB Tables: All the tables are exported as ***accessibility\_2015-07-22.sql*** . The detailed information of each table is listed as follows:

* ctu: stores all cities and counties information in MN.
  + If you want to extract all cities in MN, please use the following command: “*select distinct place from ctu where type='City' and place not like '%historical%'*”
  + If you want to extract all counties in MN, please use the following command: “*select distinct county from ctu*”
* hospital: stores all hospitals in MN and the score. Please use column “overall\_rating” as default score at this moment
* house: stores all low-rent apartments in MN and the score. Please use column “hud\_score” as default score at this moment
* metro: stores metro service in MN. Please use column “percentage” as default score. You may need to transfer the percentage into a 1-100 score range.
* crime: stores crime rate in MN. Please use column “score” as default score
* census\_tract: census tract geocode in MN.
* zipcode\_city: all zipcodes in MN.

Mobility Score: two types of scores are computed for mobility and the final mobility score = ½ walkability score + ½ metro score.

Walkability score: The REST API is provided in the following website.

<https://www.walkscore.com/professional/api.php>

Metro score: please refer to table ‘metro’. Use ‘city’ to query the table.

Hospital Score: given a geolocation, find all hospitals in the same county (ideally, we can compute all hospitals in the state but I think restricting to the same county may reduce the computational time), and within 5 miles (by default) using google map distance API, or alternative user-defined functions to avoid API request limit (<http://stackoverflow.com/questions/1502590/calculate-distance-between-two-points-in-google-maps-v3>), then use the maximum score within the distance circle as the final score. The geolocation and score information are provided in table ‘hospital’.

House Score: The computation is almost the same as Hospital score, the only different is the data source. The geolocation and score information are provided in table ‘house’

Safety Score: given a city, check ‘score’ from table ‘crime’. If the city is not found in the table, please use corresponding ‘County Total’ score. For instance, ‘Clinton’ is city in ‘Blue Stone’ county, but is not found in table ‘crime’. Then we can use the score corresponding to ‘Blue Stone County Total’.

Community Score: Here we need to use CitySDK library. It is just a Javascript library and easy to use. The library github page is:

<https://github.com/uscensusbureau/citysdk>

The following resources provide detailed guidance:

<http://uscensusbureau.github.io/citysdk/gettingstarted.html>

<http://uscensusbureau.github.io/citysdk/guides/censusModule.html>

And this is a concrete example:

<http://uscensusbureau.github.io/citysdk/guides/censusModule/queryBuilder.html>

Specifically, we want to query two variables given a geolocation, one is total population (i.e. B01003\_001E) and the other is population with disability status (i.e. B18101\_001E). A typical request should be like the following:

var request = {

"lat": 40.7127,

"lng": -74.0059,

"level": "blockGroup",

"variables": [

" B01003\_001E ",

" B18101\_001E "

]

};

Once we have disabled population and total population, we can compute a ratio of disabled population and use it as community score.