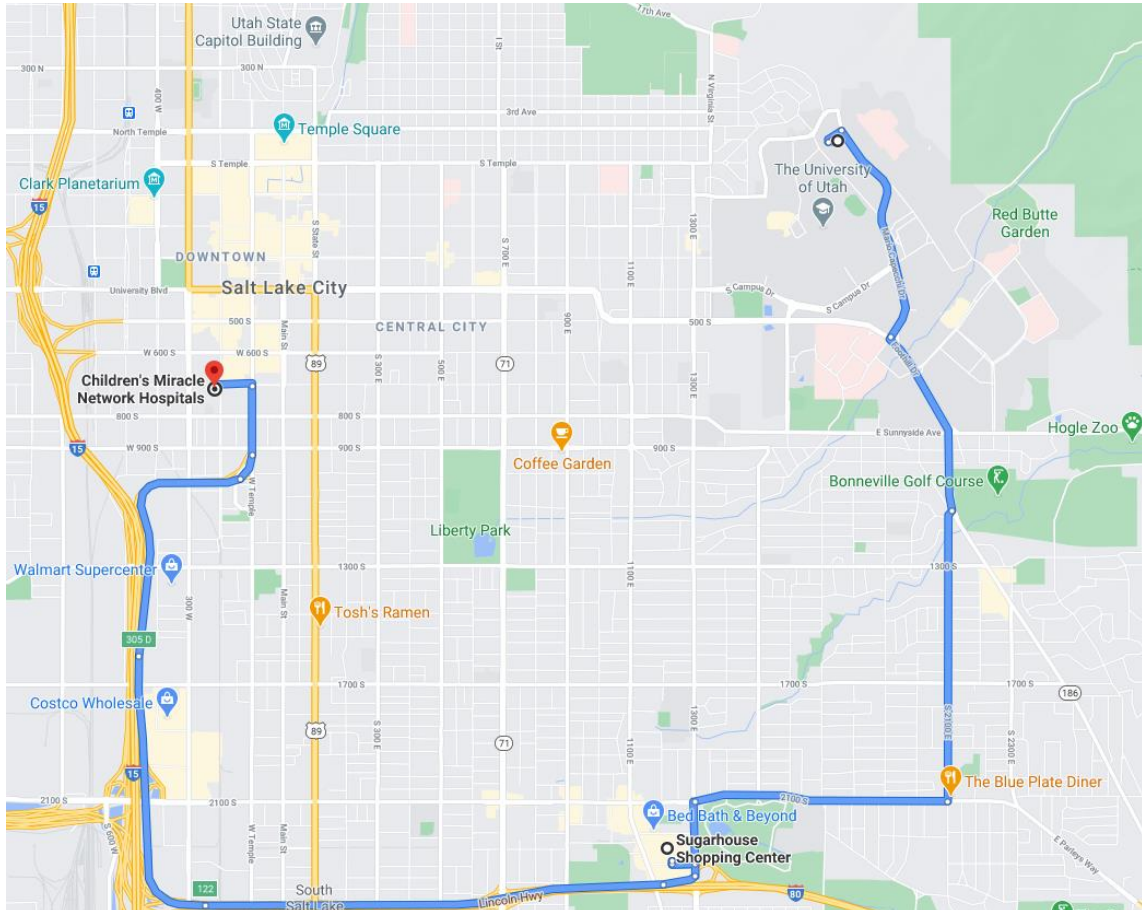# GEOG 1180 Introduction to Geo-Programming

*Assignment 9  Gravity Model and its Application*



When people select a hospital for their children, both the service quality and distance to/from home is important. Assume there are 4,089 households with children in the Sugarhouse neighborhood. Two children's hospitals that Sugarhouse residents may consider include Children's Miracle Network Hospital and Primary Children's Hospital. Assume that the service quality score of Primary Children's Hospital is 4.9, and Children's Miracle Network Hospital is 4.7 (i.e. a measure of attractiveness).  The distance between Sugarhouse and Primary Children's Hospital is 5.1 miles, and the distance between Sugarhouse and Children's Miracle Hospital is 5.9 miles. The distance between the two hospitals is 4.7 miles.

Download "Assignment9.py" and following these steps:

1) Apply the gravity model ($k = 1, a = 2$) to calculate the spatial interaction between Sugarhouse and Primary Children's Hospital. Print the result. (Hint: The number of households with children in Sugarhouse will be $P_i$, and the attractiveness of the hospital is 4.9).

2) Apply the gravity model using these parameters ($k = 1, a = 2$) to calculate the spatial interaction between Sugarhouse and Children's Miracle Network Hospital. Print the result.

3) Identify the break point between these two hospitals using the equation from the lecture slides. (Hint: The distance between the two hospitals should be used to calculate the break point. Also, the attractiveness of both hospitals is represented by their service quality scores.)

Please submit a python script named "Assignment9.py" to Canvas.