

## Final Project Summary

**Projection Name:** What affect the Airbnb price

**Author:** Yuqi Shi

**Motivation:** Airbnb usually provides a better choice than hotels for young customers. Rooms on Airbnb are usually full furnished, equipping kitchenware, and more likely as a home rather than hotel room. However, since the rooms on Airbnb are usually posted by private and hosts, the price of Airbnb rooms will be easier affected by environment than hotels. Using the Airbnb data in Chicago can help to find what elements give the most influence on the price of Airbnb rooms based on the given variables. The analyze can also present how different variables affect the price, and how the price changed spatially.

**Required Data:** “AirBnB”, from GeoDa Data and Lab ([https://geodacenter.github.io/data-and-lab//airbnb\\_Chicago-2015/](https://geodacenter.github.io/data-and-lab//airbnb_Chicago-2015/)) This data includes 20 variables and 77 observations. Exclude the unrelated variables such as name of community area, ID number and so on, there are 16 variables left. They are: response\_r, accept\_r, rev\_rating, price\_pp, room\_type, num\_spots, poverty, crowded, dependency, without\_hs, unemployed, income\_pc, hardship\_in, num\_crimes, num\_theft and population. The price\_pp will be used as dependent variable, and others will be used as predictors.

**Methods:** Using Multiple Linear Regression to indicate which variable (or which combination of variables) give the most effects on the price per person of Airbnb, and using Geographically Weighted Regression to indicate whether the price per person have spatial variation patterns.

### Result and Findings:

Multiple Linear Regression Test

1. The best combination among 15 variables is response\_r, rev\_rating, poverty, umemployed, income\_pc, and num\_theft. the R-squared value is 0.5505.
2. response\_r has the largest positive standardized regression coefficients (which is 0.723), it means that the response rate of Airbnb host has the largest positive effect on the price per person of Airbnb in Chicago.

Geographically Weighted Regression Test:

3. the price per person of Airbnb in Chicago has a spatial variation that the area closer to the downtown has higher price.

**Conclusion:** The price of Airbnb in Chicago is clearly affected by three factors, the response rate of Airbnb host, the per capita income of the region, and the location. The effects of other predictors whether are not strong enough or should be further analyzed.