

Analyzing Real-Estate Investment in Boston

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Introduction

Boston is a beautiful and convenient city to live in. Because half of the Boston population are students, the Boston population is fluid. People need to rent a house to live. Moreover, because more and more technology companies are coming to Boston, the labor populations will grow. Boston may become the next Palo Alto. Therefore, the housing market will bloom in Boston. The purpose of this project is to find the best spot in Boston to invest in real estate. We take education, natural environment, rent, transportation, social facilities and potential danger into consideration to get the best spot in Boston to live and invest in.

Datasets

- Boston Housing Rental Price
- Boston Colleges and Universities
- Boston Fire Incident
- Boston Garden
- Boston Hospital
- Boston Hubway
- Boston MBTA

Limitation and Future Work

There are many limitations and things we can improve in this project. Looking for a useful dataset is the biggest limitation we had. We take 5 factors in our consideration, because these datasets are accessible. Even though we find a dataset, some of data are not in a good quality. For example, in the average rent price dataset from Zillow, there are many blanks in certain zip code. To fill up the blank, our team calculate the average rent price in Boston and use the rent to run the tests. In the future, we should talk more factors in our calculation.

Analysis

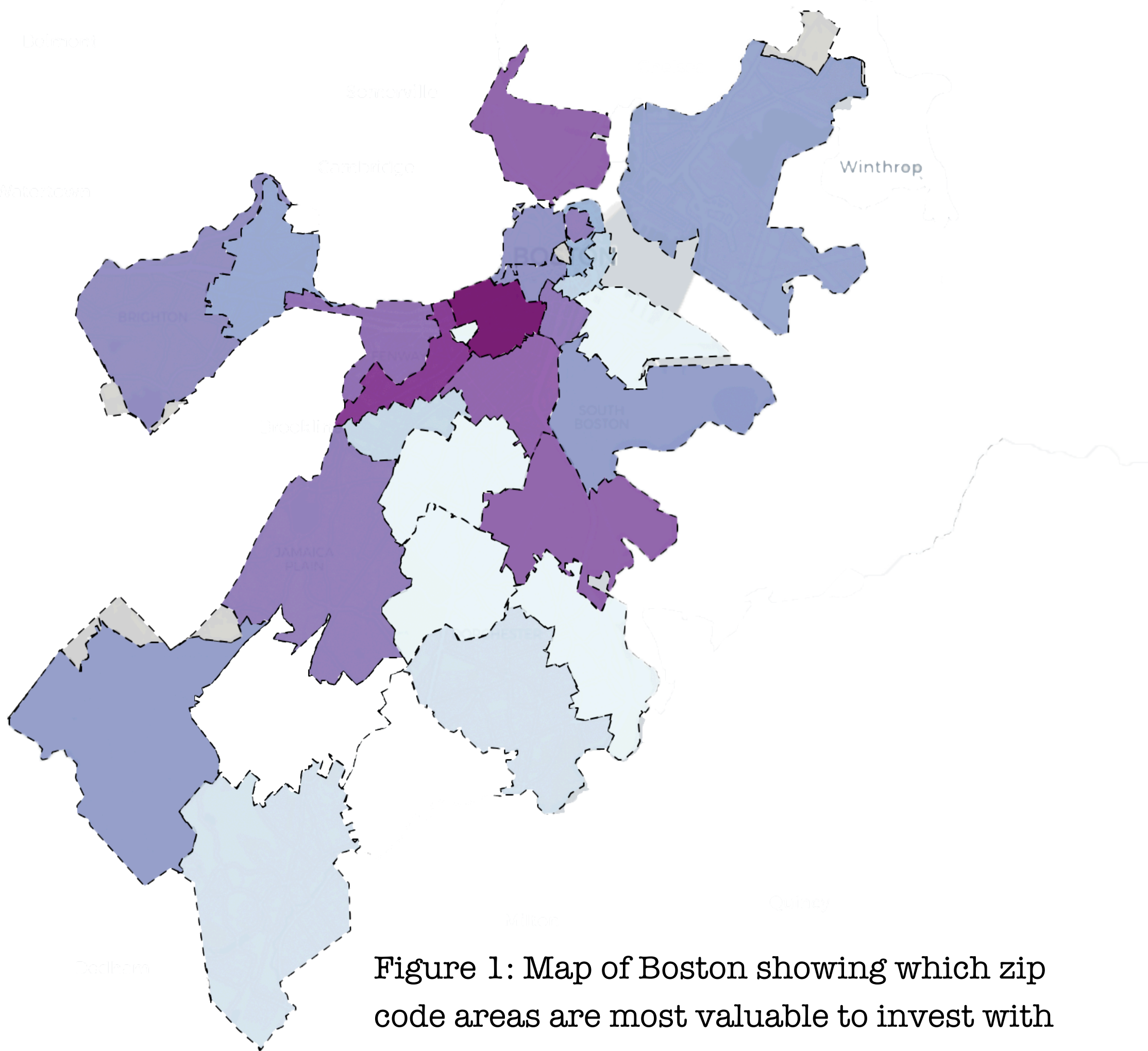
We used constraint satisfaction to get the best zip code in the Boston area. For each factor we considered, we calculated the mean μ and standard deviation σ . We only took valid data form $[\mu - 3\sigma, \mu + 3\sigma]$. We calculated the correlation between factors and then we used correlations to calculate weight for each factors. For each zip code, we multiplied weights to each factors and got the final evaluation score for each area. We then used greedy algorithm to get the most valuable areas to invest.

Conclusion

We calculate the score of each zip code in order to get the top 5 choices to invest.

And then showing the result with a heat map, areas with darker color had the higher final scores.

We claimed that the top 3 areas in Boston to invest were 02116, 02115 and 02215.



Correlation	Correlation Coefficient	Weight
Rent vs Education	0.43047954503287855	0.2576791092028839
Rent vs Facility	0.04038425343016952-	0.02417345625310676
Rent vs Safety	-0.32365265581635083	0.19373400897720977
Transportation vs Rent	0.04078514693410896	0.02441342556679958

Figure 2: Table showing correlation coefficients and weights