

Higher Education Ranking System

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Introduction:

- What impact do colleges/universities and their populations have on the city of Boston
- Create a weighted ranking for each university based on 3 primary categories: safety, transportation, & entertainment
- Determine what category weight assignments would establish the highest ranking for any individual school
- Use k-means to establish optimal police station placement to improve safety scores



Boston University of Public Health

New Ranking

Old Ranking



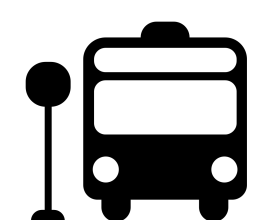
44 Social



33 Social



36 Transit



33 Transit



20 Safety



33 Safety

Data Sets:

- **Analyze Boston**
 - Boston Colleges and Universities
 - Boston Crime Incident Reports
- **City of Boston**
 - Boston Food Establishment Licenses
 - Boston Entertainment Licenses
 - Boston Police Station Locations
- **MassDOT Transit**
 - Car Crash Data
- **MBTA**
 - Boston Bus Station Location Data

Transformations:

- **Preprocessed Data**
 - Aggregate to 4 single datasets containing:
 - The number of 'social businesses' with corresponding zipcodes
 - Each college and how many crimes and crashes are located within a mile of each school
 - How many MBTA stops are located within a mile of each school
 - The number of police stations within a mile of each school
- **Ranking Optimizer**
 - Find individual scores per category per university by normalizing the number of relevant data points within a mile of each school
 - Use category scores to find overall ranking for each university assuming categories are weighted equally
 - Aim to find the optimal weight for each category that would maximize an individual school's own ranking.
- **K-Means**
 - Using our police stations data and the locations of universities with bottom half safety scores (score < 0.5)
 - Use k-means to find optimal placement for new police stations in order to improve safety scores.

Lingering Questions:

- Would the introduction of new police stations to low scoring areas improve the safety scores of schools over time?
- Are the rankings we've determined significantly impacted by Boston's anomaly of having a dense population of schools spread over a small surface area?

