



Illinois Shrinking Population

Sentiment Analysis Result for NLP Final Project

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Executive Summary

Illinois has been having lower than national average population growth since 2000 and recently has been having **negative population growth** which is **worrying especially that the state is in deficit** and need the population to **generate economy** and income for the state.

Sentiment analysis is performed on recent news article related to Chicago and Illinois using Natural Language Processing to **understand some of the major concerns** and **identify opportunities** to reverse the trend.



Methodology

Sentiment Scoring

- News articles is filtered for english language and 'population' word
- Sentiment scoring is performed using Affin package
- Negative sentiments are considered if the affin score is below -10, and positive if above 10. ANything is between is considered neutral is removed from analysis

Topic Modeling

- TF-IDF and LDA is used to identify some theme in the news articles
- N-grams (7-gram) and also word frequencies are performed to analyze the positive and negative sentiments separately
- Stopwords and emojis are removed before running n-grams

Targeted Analysis

- NER Tagging is used to identify organizations and people
- A more targeted Sentiment analysis is performed for organizations and people separately
- Word clouds are build to visualized words used in articcles

Population Decline in Illinois

Illinois has been having a declining population growth for the past 6 years, and 1 of 7 countries to have a negative growth rate in 2016. However, Illinois has slow growth rate than the US national average beginning in 2000¹. Some of the reasons of population migration out of the state is because

- Crime rate has been increasing including vandalism and gun violence
- High level of taxes to the resident
- High level of deficit in the state budget and mismanagement of funds
- Reduce number of job opportunities or low wage positions
- Chicago teachers on strike disrupting school year

Suggested corrective actions

- Increase number of police presence and patrol in the city
- Take immediate actions to control the city and state budget
- Provide training to the residents for better opportunities and higher salary

¹ Source: <http://worldpopulationreview.com/states/illinois-population/>

[illegible]

There is a huge growth in real estate development that will attract talents and new businesses to the city

[illegible]

Being the hub for the midwest there are plenty of job opportunities in the government, political, and also non-profits sector

Conclusion

Negative population growth is not sustainable for Illinois especially that the state is currently in deficit.

A healthy population growth will ensure the state economy will thrive. In addition addressing some of the residents and business concerns will make the people happier that will lead to a happier state.
