Notre Dame MSBA Capstone: Spring 2021

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Background

Bloomington Normal Economic Development Council (BNEDC) grows the local economy by recruiting new businesses and companies to the area. They encourage the next wave of entrepreneurs to establish their business in the area. They help get businesses started by getting people connected to resources and turning a big idea or a lifelong dream into something real. BNEDC helps businesses create jobs which leads to a more secure local economy. BNEDC surveys companies' needs, concerns, and tracks data to ensure that they expand and prosper in the Bloomington-Normal area. If a business needs financial assistance, BNEDC can help pick an incentive program that fits them best. If a business needs to relocate to grow, BNEDC helps search through site selection services for the best location for that particular business to succeed. BNEDC also works with education, businesses, and the community to build a talent pipeline through the EDC's Community STEM Initiative.

According to our client Patrick Hoban, CEO of BNEDC, small rural towns around the country are losing ground to more metropolitan areas and cities. The unemployment rate was 2.6% in Bloomington-Normal before COVID 19. Although low unemployment is typically good, it has created a shortage of available workforce for current and upcoming companies in Bloomington-Normal. For example, employers such as Rivian, Ferrero, and Brand continue to expand leaving the area with a talent shortage. People are fleeing from rural towns to cities, which has led to a talent outflow that has hurt rural communities such as Bloomington-Normal. On top of this, more companies are exercising remote work which has given employees the ability to move more freely than ever before.

Problem Statement

The Bloomington Normal Economic Development Council presented a few problems to us that they hoped we could tackle. First of the problems presented is that there is an unmet demand for talent in Bloomington-Normal, Illinois. A DCI national research report found that in 2020, nearly 70% of people would be willing to relocate for the right opportunity, a 12% jump from the previous year (DCI, 2020). While these results suggest that talent is open to relocation, the BNEDC now faces the problem of identifying the right population to target with talent opportunities in Bloomington-Normal. Bloomington-Normal boasts an impressive Cost of Living Index and above average wages. The area is rapidly growing, and constantly developing in order to create a more attractive location for potential talent.

An additional problem for the BNEDC is they are not capitalizing on the talent coming from local colleges, mainly Illinois State University. Engineers and analysts make up a large portion of the positions BNEDC will be trying to fill in the next year, and college graduates who are

already familiar with the surrounding area are strong potential candidates for attractive wages. Finally, upon identifying the ideal candidate to market opportunities in Bloomington-Normal to, BNEDC asked that we help identify specific metrics and statistics that could be used in a marketing campaign to the target market.

Overall, the problem at hand remains that Bloomington-Normal has become an attractive hub for multiple big-name companies, and they are rapidly expanding and desperately seeking talent to fulfill their positions. In the following section, we will outline the methods we have gone through to more accurately identify strong candidates to fill the talent demand in Bloomington-Normal.

Methodology

We knew that the first step of our project was to find counties in America that were similar to McLean County. This is because the overall goal of this project is to highlight the attributes that make McLean County attractive to people who are living in similar counties and may want to move. We agreed that the perfect tool to conduct this research would be a K-Means Algorithm. We collected key indicators that are commonly used to compare counties. The indicators are urban influence, rural urban continuum, poverty percentage, population, household income, education level and density. We then ran these numbers through a K-Means Algorithm and plotted our results.

Originally, our data included **all** counties in the United States. We realized after plotting our original K-Means Algorithm that cities were overpowering our findings (Figure 1). Therefore, we decided to take out all cities from our data set and run a new K-Means Algorithm. The results can be found in Figure 2.

There are some interesting and hopeful results from this early exploration. McLean County was in ‘Cluster 4’ and as we can see they maintained the lowest poverty rate and highest percentage of people in the highest education bracket.

Education_1_Percent = Didn’t Graduate Highschool
Education_2_Percent = Graduated High School
Education_3_Percent = Some College Education
Education_4_Percent = Bachelor's Degree or higher

Now, we have a list of counties that are statistically similar to McLean based on the K-Means Algorithm (382 unique observations). After running this algorithm, we are ready to move ahead with our exploration and identify the key attributes that make McLean unique from the other

counties in their cluster. These attributes will be used in future marketing campaigns that can help attract people to the county and meet its growing job demand.

The reason that we wanted to narrow down our list of counties to investigate is because we will now be exploring data that is harder to find in general data sets and therefore will increase the search time for that information. Lowering the number of counties that we are searching will help to increase our focus and as a result increase the quality of our output.

An example of what attributes we intend to investigate can be found at this link. For example, we want to use college enrollment status for various counties in our list to identify which counties are producing the highest number of new individuals ready to join the workforce.

Timeline

- **Tuesday 3/16**: Deep dive into family-oriented, mid-30+ demographic
    - Identify similar cities via the k-means clustering, and compare the cities on the selected metrics (healthcare, property values, quality of life, cost of living, etc.)
- **Tuesday 3/23**: Create a heat-map representative of these selected 'cluster cities', and the selected metrics.
    - Objective: Bloomington-Normal visibly outperforms all communities that are demographically similar, meaning that inhabitants of these communities should be targeted
- **Tuesday 3/30**: Deep dive into recent college graduate demographic
    - Analysis of University of Illinois Urbana-Champaign, and the potential engineering graduates.
- **Tuesday 4/6**: Conduct forecasting models for Cost-of-Living Indices for major cities (NYC, Chicago, San Francisco, vs. Bloomington-Normal)
- **Tuesday 4/13**: Compile findings from up until this point (k-means clustering, Urbana-Champaign, CLI forecasting)
- **Tuesday 4/20**: Deliverable: Report/Presentation Draft Due
- **Tuesday 4/27**: Dry Run Presentation
- **Tuesday 5/4**: Sponsor Presentation

Appendix

Figure 1

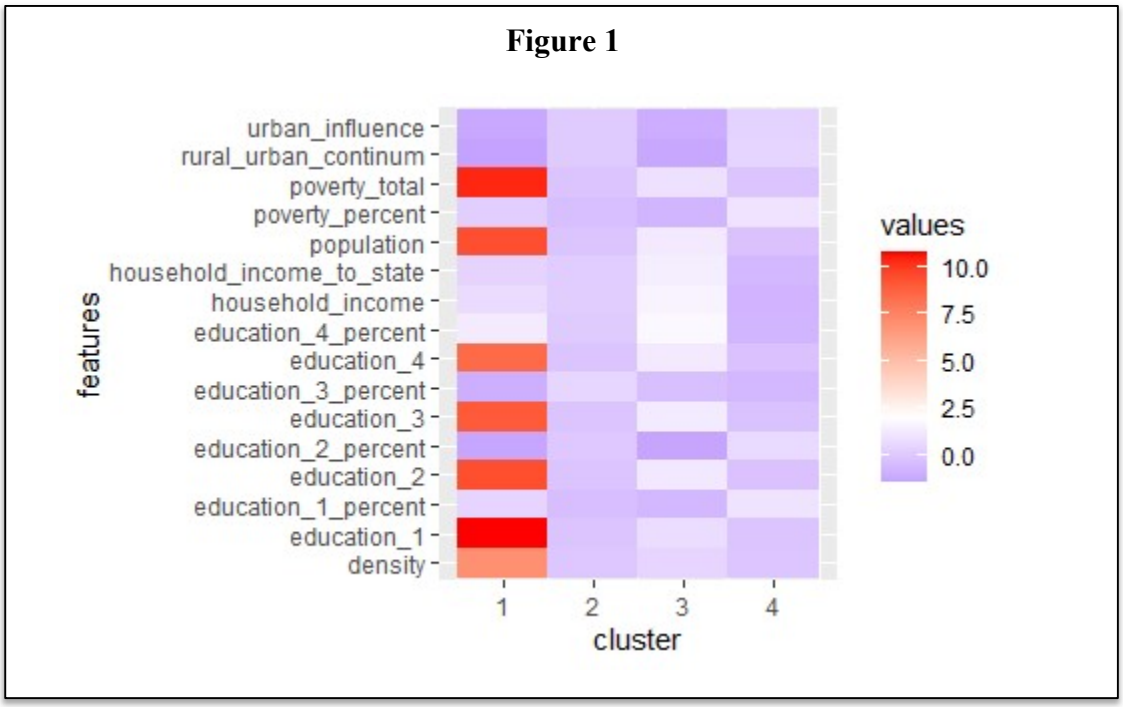

Figure 2