Humana Case Question #1

Background

Social Determinants of Health (SDOH) are social and economic factors that impact an individual's health. Examples of SDOH include financial insecurity, lacking a reliable means of transportation, food insecurity, and loneliness/social isolation. In recent years the impact of SDOH on individuals' health and finding ways to improve individuals' health by alleviating negative SDOH factors have become a focus of research for Humana, other health insurance companies, the Centers for Disease Control and Prevention, the World Health Organization, and many other groups around the world.

Humana is one of the nation's largest health insurers and is invested in improving the health of their members and being on the cutting edge of care. To this point, in 2015 Humana announced their Bold Goal, a population health strategy to improve the health of the communities they serve by 20% by 2020 and are now continuing the goal beyond 2020. There are many ways in which Humana has been working to meet their Bold Goal, but one of the main focuses is on addressing members' SDOH.

One-way Humana addresses members' SDOH is through the Community Resource Directory (CRD). The CRD is an easily searchable, multi-state directory with comprehensive information on over 50,000 national, state, and local community based resources. Humana associates can use the CRD to provide members with information on resources to help with their SDOH concerns. For example, a member with food insecurity may be given information on local food banks, programs such as the Supplemental Nutrition Assistance Program (SNAP), and other related resources.

You and your team are actuaries at Humana who have been tasked with analyzing the impact on members' health from using CRD resources to help alleviate their SDOH issues. You will be provided data for the following five groups of members:

1. **Financial Assistance population** – members who received information on resources to help provide financial assistance.
2. **Transportation population** – members who received information on resources to help with transportation.
3. **Food Insecurity population** – members who received information on resources to help with finding healthy, affordable food.
4. **Lonely population** – members who received information on resources to help develop relationships and become less socially isolated.
5. **Control population** – members who did not receive any information on resources to help with SDOH issues.

For each member you will be provided utilization data for ER visits, PCP visits, inpatient hospital admissions, and Rx claims as well as claims cost data. For each of the four SDOH populations described above, you will need to evaluate the impact of receiving these resources on these key cost and utilization metrics and then provide a recommendation on whether the CRD should continue to be used for each SDOH. When making the recommendation it may be appropriate to state that the CRD is only useful for a certain member cohort based on member demographic or geographic information. For any SDOH where you do not see a positive impact from using the CRD resources you will be asked to do additional research and recommend new ways to potentially help address that SDOH.

Assignment

You and your team must complete and submit this assignment by March 2, 2020 at 9AM EST.

You have been provided with the following data in the included spreadsheet
- Four years of claims data for Humana members
  - Claims data contains two cohorts: those who received assistance from the Community Resource Directory and those who did not
- A data dictionary for the provided claims data

Provide a memorandum to Humana senior leadership that details the following:
- **First Task: Data Preparation**
  - Summarize your data for the two cohorts and explain any data scrubbing methods used
  - Identify extraneous data for this report
  - Explain how the extraneous data should be treated
  - Provide reasoning for the above decisions
- **Second Task: Determine CRD Impact**
  - Determine the appropriate pre and post CRD outreach data to compare
  - Calculate the impact that the CRD program has on the members who participated
  - Identify which social determinants are affected by the CRD program and provide your methodology
  - Provide assumptions made to complete the analysis
  - Illustrate your results in a graphical manner
- **Third Task: Program Considerations**
  - Provide recommendations Humana should consider in regard to the current CRD program
  - Provide additional considerations Humana should make in order to improve a member's care beyond the CRD program

The memorandum must include the following components:
- Executive Summary
- Introduction
- Data and Assumptions
- CRD Impact Conclusions and Methodology
- Program Considerations
- Appendices and Additional Graphs

Ensure that your memorandum does not include the names of anyone on your team, the name of your university, or other personally identifying information. If you feel you must refer to yourselves, use the phrase "the team", such as "the team recommends the following".

There is no prescribed length to this memorandum. To ensure that your recommendations are considered by Humana's leaders, be clear and concise in your communication. The main report, excluding appendices, should be no longer than 8 pages. Everything you wish to be graded must be in the memorandum; additional files will not necessarily be reviewed.