The Impact of Community Resource Directory (CRD) on Social Determinants of Health (SDOH)

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INTRODUCTION

In recent years, since the nation's large health insurers have emphasized the importance of SDOH (Social Determinants of Health) on individuals' health actuaries are tasked with analyzing the impact on members' health from using CRD resources, which is an easily searchable, multi-state directory with comprehensive information on over 50,000 national, state, and local community based resources in order to help health insurers improve individual's health by alleviating their negative SDOH factors. In this research, we used hypothesis tests to process data to determine the efficacy of the CRD program from 2016 to 2019 and finally tried to provide some recommendations to improve a member's care in regard to the current CRD program. However, based on the current hypothesis test we used including the assumptions, principles, practicability, credibility, pros and cons, we are still looking for some more practical and advanced methods.

OBJECTIVES

This project focuses on the hypothesis test to evaluate the impact of receiving CRD resources to help alleviate their SDOH issues.

Based on related materials, the objectives are as follows:

- First Task: Data Preparation

1. Summarize the data we got for the two cohorts and explain any data scrubbing methods used
2. Identify extraneous data for the research

- Second Task: Determine CRD Impact

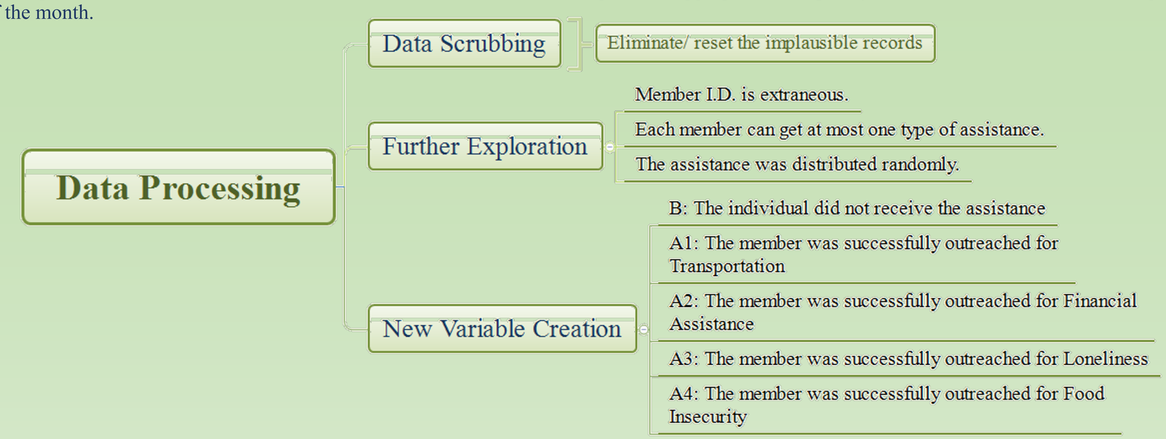
1. Determine the appropriate pre and post CRD outreach data to compare
2. Calculate the impact that the CRD program has on the members who participated
3. Identify which social determinants are affected by the CRD program and provide your methodology
4. Provide assumptions made to complete the analysis
5. Illustrate the results in a graphical manner

- Third Task: Program Considerations

1. Provide recommendations that the insurer should consider in regard to the current CRD program
2. Summarize the conclusions and present results to actuarial conference(s) if possible.

MATERIALS & METHODS

Assumptions: For each individual that received assistance, a marked change in the aggregate, or frequency, of the indices occurred at the beginning of the month.

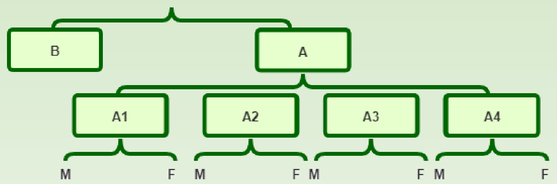


There are four stages in the analysis process.

1. We classified these records into two groups based on if they received assistance. Then, analyze if there is a significant difference in aggregate claim amounts or monthly utilization frequency between these 2 groups: group A and B. If yes, it means the assistance can impact in aggregate claim amounts or monthly utilization frequency regardless of the type of assistance or member.

2. We focus on the group with people who got assistance and categorized them into four groups: group A1, A2, A3 and A4, by the type of assistance they received. We analyzed if there was a significant difference in aggregate claim amounts or monthly utilization frequency before and after they got the assistance. If yes, it means some certain types of assistance can impact on aggregate claim amounts or monthly utilization frequency regardless of the type of people.

3. We categorized the sample based on criteria, such as gender or region, and analyzed if there was a significant difference in aggregate claim amounts or monthly utilization frequency before and after they got assistance. If yes, it means some certain types of assistance can impact on aggregate claim amounts or monthly utilization frequency regardless of the type of people. Then we made a summary of discoveries we got on the first stages. (The first three steps are illustrated at right.)



4. We suspected that the influence we discovered is due to the time change instead of the introduction of assistance. For people who received the assistance, we constructed the empirical distribution of month when each individual received the assistance in 2017 and we simulate some months for people who did not get assistance to pretend that they got assistance. Then, we did a similar analysis as what we did on the second and third stages for people who did not get the assistance. If there are some similar discoveries that we already found before, it means the change is systematic instead of due to the introduction of assistance.

Subgroup	Utilizations / Claims	Monthly Average Changes for Each Individual	Number of Individuals in The Subgroup	Annual Expected Changes in The Subgroup	p-value
A2	Rx	-0.0114	1508	-206.2944	0.0003
A1	PCP	-0.0061	1432	-104.6506	0.0122
A4	ER	0.0062	1202	90.0058	0.0001
B and Age Level 3	Rx	-0.0039	760	-35.3491	0.0128
A2 and Age Level 3	Rx	-0.0142	468	-79.9157	0.0135
B and Rural Level 1	Rx	-0.0059	193	-13.6019	0.0278
A1 and Rural Level 1	Rx	-0.0373	115	-51.4188	0.0018

RESULTS

After we found and sifted some results, we made the following table to summarize the results we thought which were important. Since everything we analyzed was about the monthly average value for an individual, which is not quite tangible. Therefore, we multiplied our results about the monthly average change for an individual by the number of individuals in the corresponding subgroup, and then multiply it by 12. After that, the value would become the annual expected change in this subgroup. See the table below in the middle.

CONCLUSIONS

After financial outreach we saw an increase in Rx utilization. There was also an increase in the age sixty-five to seventy-four and rural subgroups of the control group. Rx utilization also increased in the rural subgroup of the group that received outreach so the increase could be systematic within the rural population. Since the entire group that received financial outreach saw an increase in Rx utilization, we recommend an action commensurate with the insurer's goals. That is, if the insurer wants their members' Rx utilization to increase then they should continue the financial outreach.

Primary care physician visits increased after outreach with information concerning transportation resources. Similar to the increase in Rx utilization, if the insurer believes this to be a positive outcome concerning members' well-being then we recommend continuing this outreach. In the group that received outreach concerning nutrition, we saw a decrease in ER visits in almost all subgroups and we consider this a positive outcome. So, we recommend continuing the outreach regarding nutrition. In both of the preceding indices, the control group did not have the same changes in frequency.

We only saw a change in hospital admissions for the group receiving outreach concerning relationships in the small subgroup, 127 members, who had no chronic illnesses but there was an increase in hospital admissions for the control group. Based on our analysis, we saw no reason to recommend outreach concerning relationships. Outreach to inform members about transportation, finances, and nutrition may show positive outcomes quicker. A causal positive outcome of helping members by giving outreach for relationships may take a longer time to realize.

The aggregate claims for the groups receiving outreach concerning transportation and finances increased after the month of outreach by twice the amount of the control group. This could be because of the increase in PCP visits and Rx utilization.

ACKNOWLEDGEMENTS

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