POSTER ABSTRACT

Social Determinants of Health Composite Index

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Introduction: The transition to value based care incentivizes providers to extend care beyond hospital walls to improve the long-term health of their patients. To this end, behavioral, social and environmental factors, also known as social determinants of health SDoH, provide substantial information on patients' needs for improved health outcomes. Yet, most healthcare providers do not have efficient ways to collect and manage SDoH data nor have efficient ways to translate SDoH to actionable insights. For that purpose, we developed an index system based on a rich set of SDoH data in order to provide one index which can be used for ranking neighborhoods based on zipcode level data by their SDoH. This information can, in turn, be used for improving health care delivery.

Methods: Our main objective was to combine different determinants into one index that truly represents the SDoH status of a zipcode. Sixteen determinants such as median income, unemployment rate, crime rate, volunteering rate and relationship with primary physician were selected and grouped into five categories based on the "Healthy people 2020" initiative [1]: Economic stability; Education; Health and Healthcare; Neighborhood; and Social Context. We then computed a score for each category and aggregated them into one index.

In order to identify the importance of each determinant and category, we first built a regression model for each category that explains the deviance in self-report health status. The regression model predicts the percentage of people, by zip code, reporting their health status is very good or excellent. The model was trained using a dataset from South Florida. The response variable ranged from 37% to 72% between the 224 zip codes analyzed. We used a health status correlation of at least 0.5 as selection criteria for determinants. Using the regression model, we computed a score for each zipcode/category. To create the final index, we used a weighted sum of the categories where the weight of each category was determined by its ability to explain the deviance, such that categories with higher explained deviance have greater weights.

Results: The final model was able to explain 80% of the deviance of the health status. This index can be used for numerous purposes. In the context of potentially avoidable ED visits visits that didn't lead to admission, we found that the Pearson correlation between avoidable ED visits and the SDoH index was ~-0.45, i.e., people that live in areas with lower index tend to visit the ED more often.

Conclusion: We proposed an approach to evaluate the SDoH status of neighborhoods. The SDoH index is the first step towards understanding patient challenges and needs outside of hospital walls. This information can be used to improve care delivery in many ways such as better prediction of readmission risk, predicting appointment no-show risk, tailoring care plans, and improving medication adherence

References:

1- U. S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion 2010. Healthy People 2020. Retrieved from www.healthypeople.gov

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