Background

- Mortality has not continued to improve for US populations.
- Health insurance and socioeconomic factors are known to contribute to the differences between population groups.
- Affordable Care Act (ACA) of 2010 resulted in over 90% of the US population having health insurance in 2017.
- Life expectancy has varied for adults across the US.
- Social determinants of health (SDH) influence individual and population health and include the following six domains:
  - Economic stability
  - Neighborhood and physical environment
  - Education
  - Community and social context
  - Food access
  - Access to the healthcare system
- Current SDH measures incorporate four to five domains while a gap in knowledge exists in the understanding of interaction between health insurance and SDH on health and care utilization.

Objectives

- Conduct a literature review of the effects of health insurance and SDH on health outcomes, specifically, mortality and care utilization rates.
- Develop a SDH composite measure, encompassing the six domains and assess its prediction of mortality and care utilization.
- Evaluate the combined and separate effects of insurance status and SDH on clinical outcomes among adults with two high cost chronic diseases (cardiovascular disease and cerebrovascular disease) and care utilization.

Data and Methods

- US Department of Agriculture Food Access Research Atlas
- • American Community Survey by the US Census Annual Data (2000 and 2010) – food access data at ZIP code level
- • US Census (2000 and 2010) – population data at ZIP code level
- • US Census (2005 to 2015) – population data at ZIP code level

Aim 1: Develop an index measure of SDH encompassing six domains into one composite measure

Aim 2: Assess the power of both individual SDH domains and a SDH composite measure to predict mortality and care utilization and develop optimal weighting for the domains of the composite measure

Aim 3: Evaluate the interaction of health insurance with levels of SDH as predictors of mortality and utilization among adults with cardiovascular and cerebrovascular disease.
- Using multivariable regression analysis, logistic regression, and negative binomial regression to examine the interaction between insurance status and SDH.

Preliminary Results

Table 1: Initial Review Results

<table>
<thead>
<tr>
<th>Search Phase</th>
<th>Health Insurance on Health</th>
<th>Health Insurance on Utilization</th>
<th>Social and Economic Factors on Health</th>
<th>Social and Economic Factors on Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Review</td>
<td>57,789</td>
<td>15,607</td>
<td>40,827</td>
<td>6,741</td>
</tr>
</tbody>
</table>

Table 2: Data Summary

<table>
<thead>
<tr>
<th>Race (White)</th>
<th>8,069,490 (61.6%)</th>
<th>6,617,016 (53.7%)</th>
<th>11,217,675 (71.9%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black/African</td>
<td>2,220,854 (17.0%)</td>
<td>2,554,739 (20.7%)</td>
<td>1,175,992 (7.5%)</td>
</tr>
<tr>
<td>Asian</td>
<td>363,435 (2.8%)</td>
<td>439,810 (3.6%)</td>
<td>1,363,152 (8.7%)</td>
</tr>
<tr>
<td>Other</td>
<td>2,392,143 (18.3%)</td>
<td>2,650,010 (21.5%)</td>
<td>1,776,928 (11.5%)</td>
</tr>
<tr>
<td>(Hispanic)</td>
<td>1,278,323 (9.8%)</td>
<td>1,811,075 (14.7%)</td>
<td>3,469,769 (22.3%)</td>
</tr>
</tbody>
</table>

Figure 1. Conceptual Framework and SDH Process Map

Conclusion and Discussion

- Most prior studies show an association between health insurance and improved health outcomes, with increased healthcare utilization.
  - Socioeconomic factors including SDH influence health outcomes, but more studies are needed to examine the effects on care utilization.
- Our preliminary results show that private health insurance and living in a low poverty region is associated with lower mortality rates, while having Medicaid may improve mortality, among those living in high poverty regions.
- Care utilization rates are greatest among those with Medicaid or living in high poverty regions.
- Further work is underway to examine differences in mortality and utilization by levels of SDH and health insurance.

Limitations

- Dataset does not include primary care visits, resulting in lack of ability to account for the effect of preventive care on health outcomes.
- Hospitalized population may be sicker and have higher utilization of care, leading to higher mortality.
- Social determinants were assigned at the ZIP code, not individual address.

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