A novel strategy to identify health disparities by linking Medical insurance Claims with County Health Ranking data

Subharati Ghosh, PhD, SEIU 775 Benefits Group

Charles W Hawley, NAHDO
Goal

Research: The overall goal of the chronic disease disparities project is to understand the prevalence of chronic disease and their association with social determinants of health factors within Washington’s Home Care Aide population using medical claims data and the County Health Rankings data.

Business: Create a visualization tool to support organizational leadership and program owners making decisions about cost effective and sustainable program development, resource allocation and prioritization, and evaluation.
Who are the Home Care Aides (HCAs)?
What we know?

In general, caregivers have poorer physical and mental health outcomes

- Caregivers have poor physical and mental health
- Caregivers have high rates of chronic disease compared to their non-caregiving, similar aged peers
- Caregivers have higher odds of early mortality, compared to similar aged non-caregivers

In Washington state, caregivers are more likely to be older, female, less educated, and lower income

- 48 is the average age of a WA caregiver
- 84% of WA caregivers identify as female
- The median household income of WA caregivers is between $35,000 - $39,000
What we know?

Disparities in health outcomes among caregivers

- Policy/culture
- Community
- Family
- Individual

Surveys

Cross-sectional data
Disparities at the individual level
What we do not know?

Social determinants of health disparities among caregivers at various systems level

Organizational priorities
- Health equity
- Design interventions
- Research prioritization
- Longitudinal tracking

Carriers addressing health equity
Specific aims

▪ Calculate the prevalence of chronic disease and co-morbidities among HCAs in WA State using medical health insurance claims data

▪ Identify social determinants of health factors associated with disparities in chronic disease and comorbidity prevalence among HCAs in the WA state

▪ Use research to create a visualization tool to enable organizational leadership and program owners in resource allocation and prioritization, and program development and evaluation
Methods
Data Sources

Medical Claims from Milliman MedInsight

• The Benefits Group is a self-funded employer receiving enrollment and claims data for its members
• Claims used represent 27,165 lives covered between 2016-2018
• All members were covered by a Kaiser Washington HMO plan

County Health Rankings

• County Health Rankings aggregates county-level data collected by the federal government (e.g. ACS, BRFSS)
• Washington state data were downloaded from the site and used as weights for statistical analysis
Chronic Diseases of Interest

- Asthma
- Cancers
- Chronic Obstructive Pulmonary Disorder (COPD)
- Diabetes
- Heart Disease
- Hyperlipidemia (high cholesterol)
- Hypertension (high blood pressure)
- Mental health
- Musculoskeletal
Results
Aim 1: Prevalence of chronic disease and co-morbidity
Results

Aim 1: Prevalence of chronic diseases
What factors are associated with increased risk of chronic disease?

<table>
<thead>
<tr>
<th>Variable</th>
<th>Change in Standardized Unit</th>
<th>Change in Chronic Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caregiver age</td>
<td>+13.26 years of age</td>
<td>71.3% increase</td>
</tr>
<tr>
<td>Caregiver gender - Female</td>
<td>+37% likelihood of being female</td>
<td>14.6% increase</td>
</tr>
<tr>
<td>Caregiver type - Agency Provider</td>
<td>+43% likelihood of being an AP</td>
<td>3.7% increase</td>
</tr>
<tr>
<td>“Other” race population (%)</td>
<td>+2.5% in a WA county</td>
<td>6.4% increase</td>
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<tr>
<td>Hispanic population (%)</td>
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<td>19.5% increase</td>
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<td>Rural (%)</td>
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</tr>
<tr>
<td>High school education (%)</td>
<td>+3.2% in a WA county</td>
<td>8.6% decrease</td>
</tr>
<tr>
<td>Median household income (USD)</td>
<td>+$14,634 in a WA county</td>
<td>33.5% decrease</td>
</tr>
<tr>
<td>Income inequality (80:20 ratio)</td>
<td>+0.36 in a WA county</td>
<td>6.1% decrease</td>
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<td>Access to exercise (%)</td>
<td>+10.4% in a WA county</td>
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<tr>
<td>Presence of water violation</td>
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1st prototype of the dashboard
Limitations

- Diagnostic data limitations
- Diagnostic vs. prescription data
- Analyzing and visualizing interactions
Next steps

The work matters.
Every day, in countries across the globe, Milliman works with clients to improve healthcare systems, manage emerging risks, and advance financial security, so millions of people can live for today and plan for tomorrow with confidence.
Thank You

Subharati Ghosh – subharati.ghosh@myseiubenefits.org

Charles Hawley - charles@nahdo.org