

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

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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

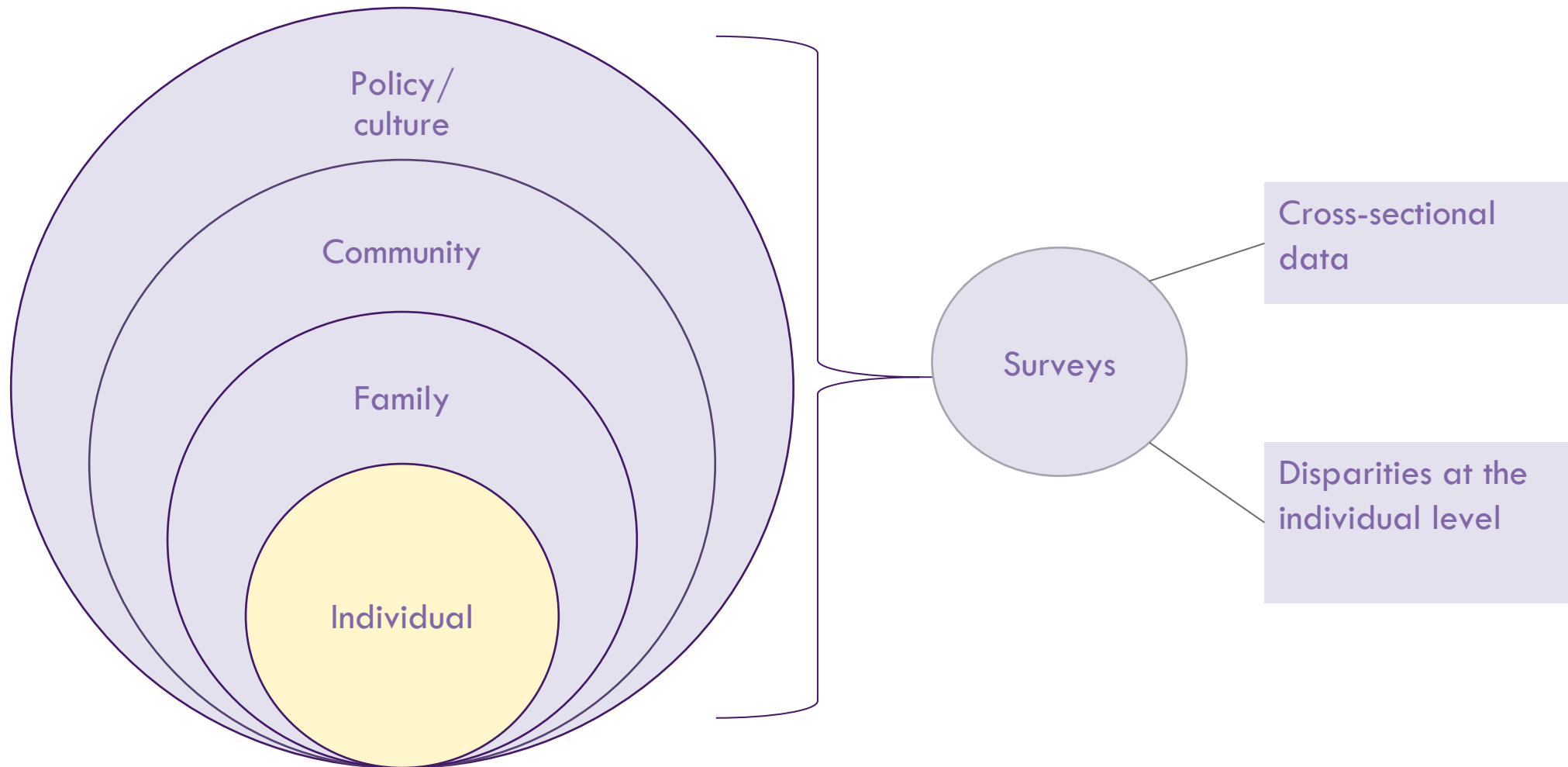
- Caregivers have poor physical and mental health
- Caregivers have high rates of chronic disease compared to their non-caregiving, similar aged peers
- Caregivers have higher odds of early mortality, compared to similar aged non-caregivers

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



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

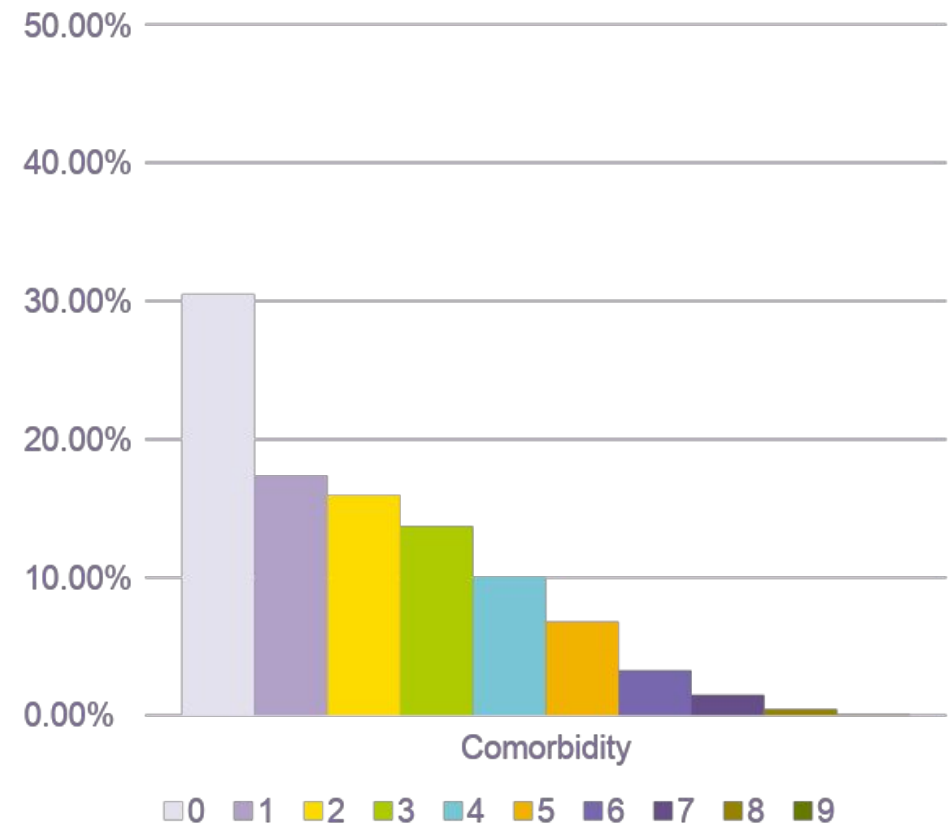
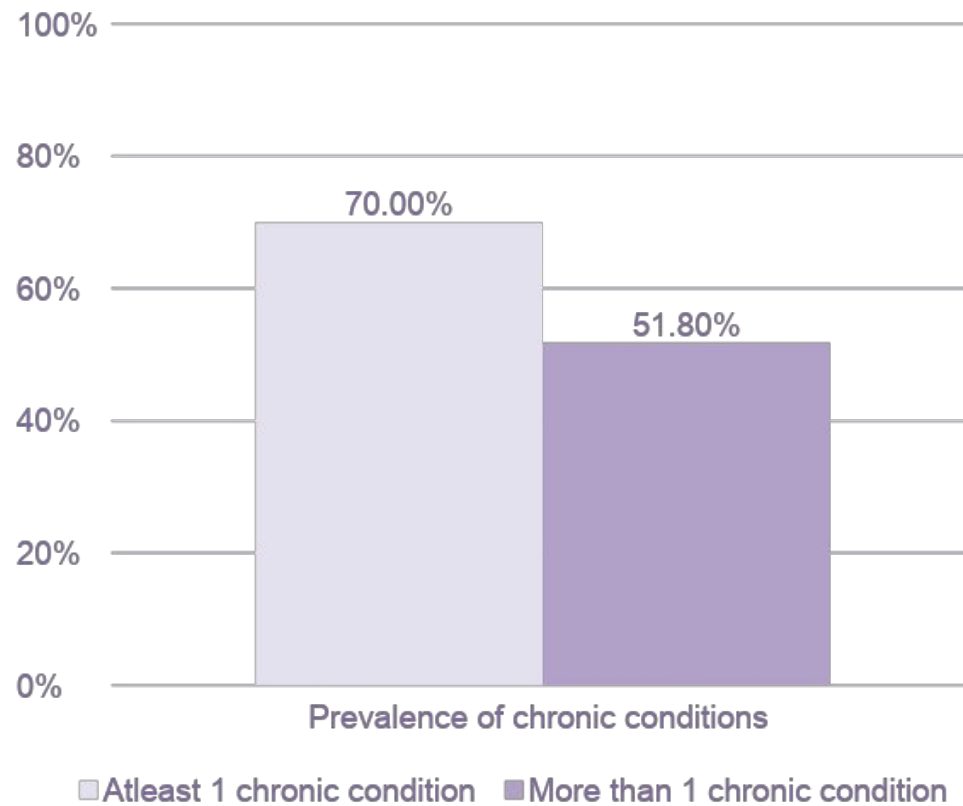
- Asthma
- Cancers
- Chronic Obstructive Pulmonary Disorder (COPD)
- Diabetes
- Heart Disease
- Hyperlipidemia (high cholesterol)
- Hypertension (high blood pressure)
- Mental health
- Musculoskeletal



Results

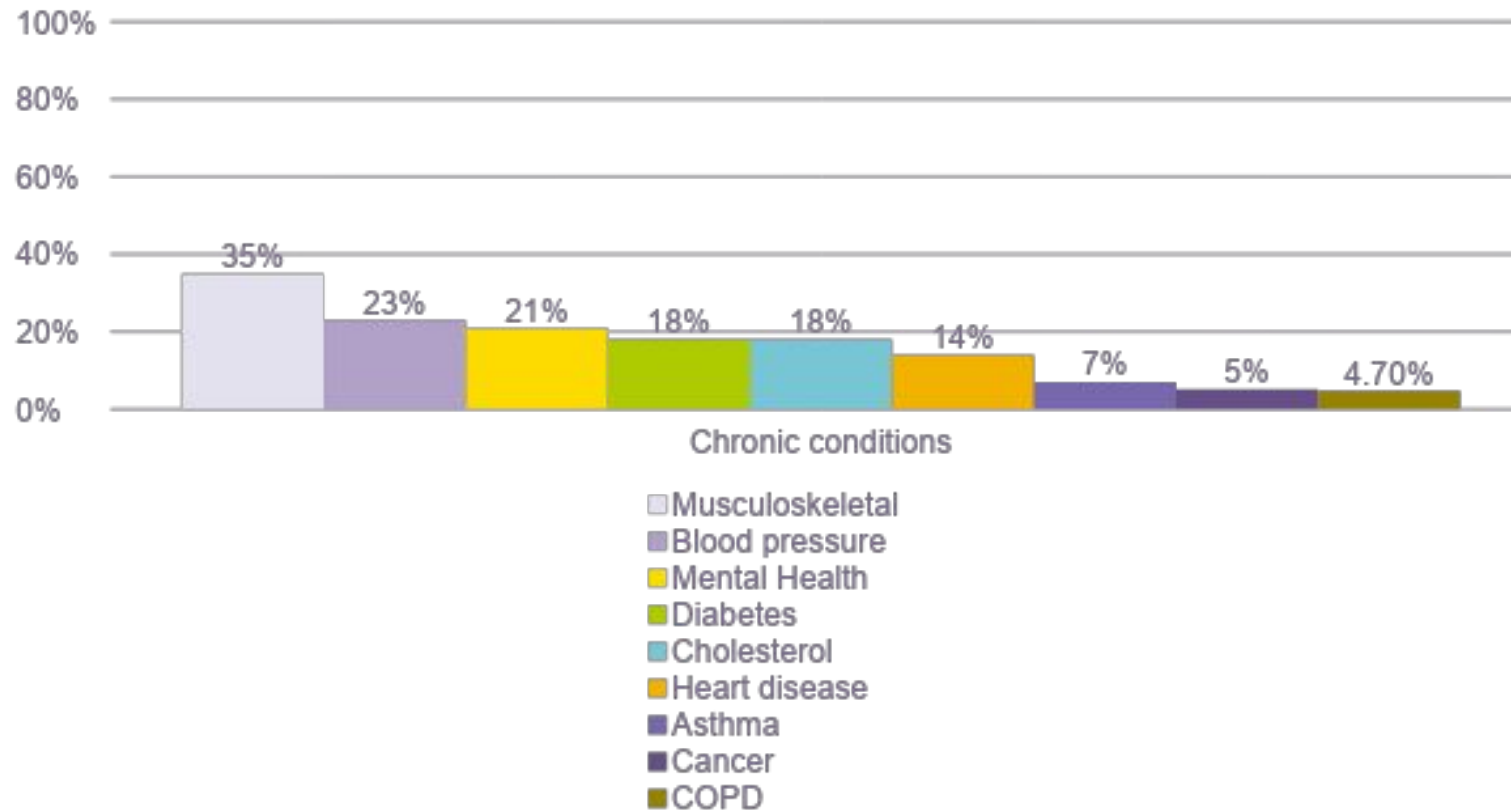
Results

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?

Variable	Change in Standardized Unit	Change in Chronic Disease
Caregiver age	+13.26 years of age	71.3% increase
Caregiver gender - Female	+37% likelihood of being female	14.6% increase
Caregiver type - Agency Provider	+43% likelihood of being an AP	3.7% increase
“Other” race population (%)	+2.5% in a WA county	6.4% increase
Hispanic population (%)	+11.3% in a WA county	19.5% increase
Rural (%)	+16.5% in a WA county	7.5% increase
High school education (%)	+3.2% in a WA county	8.6% decrease
Median household income (USD)	+\$14,634 in a WA county	33.5% decrease
Income inequality (80:20 ratio)	+0.36 in a WA county	6.1% decrease
Access to exercise (%)	+10.4% in a WA county	7.8% increase
Presence of water violation	+40% likelihood of a water violation in a WA county	9% increase

What factors are associated with increased risk of co-morbidity?

Variable	Change in Standardized Unit	Change in Chronic Disease
Caregiver age	+13.26 years of age	99.2% increase
Caregiver gender - Female	+37% likelihood of being female	9.3% increase
Caregiver type - Agency Provider	+43% likelihood of being an AP	4.6% increase
Other race population (%)	+2.5% in a WA county	6.8% increase
Hispanic population (%)	+11.3% in a WA county	28.1% increase
Rural (%)	+16.5% in WA county	3.3% increase
High school education (%)	+3.2% in a WA county	11.8% decrease
Median household income (USD)	+\$14,634 in a WA county	32.1% decrease
Income inequality (80:20 ratio)	+0.36 in a WA county	6.8% decrease
Access to exercise (%)	+10.4% in a WA county	6.7% increase
Presence of water violation	+40% likelihood of a water violation in a WA county	7.3% increase

1st prototype of the dashboard

← Revert Refresh Pause * View: Original Alerts Subscribe Share Download Com

Health Disparities Dashboard

Current View: HCA Data & County Metrics

Chronic Diseases

AND ?
 OR

Asthma

Include
 Exclude

BP

Include
 Exclude

Cancer

Include
 Exclude

Cardiovascular

Include
 Exclude

Cholesterol

Include
 Exclude

COPD

Include
 Exclude

Diabetes

Include
 Exclude

Mental Health

Include
 Exclude

Musculoskeletal

Include
 Exclude

About This Data
?

Additional Filters ?

Age Cat

(All)

17 or under

18-26

27-44

45-54

55-64

Gender

(All)

Female

Male

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County-Wide Publicly Available Metrics

Metric

- Null
- % Asian
- % Hispanic
- % HS Graduation
- % Not Proficient in English
- % Severe Housing Cost Burden
- % Unemployed
- % With Access To Exercise Facilities
- Food Environment Index
- Income Ratio 80:20
- Median Household Income
- Presence of Water Violation

Chronic Disease Rate

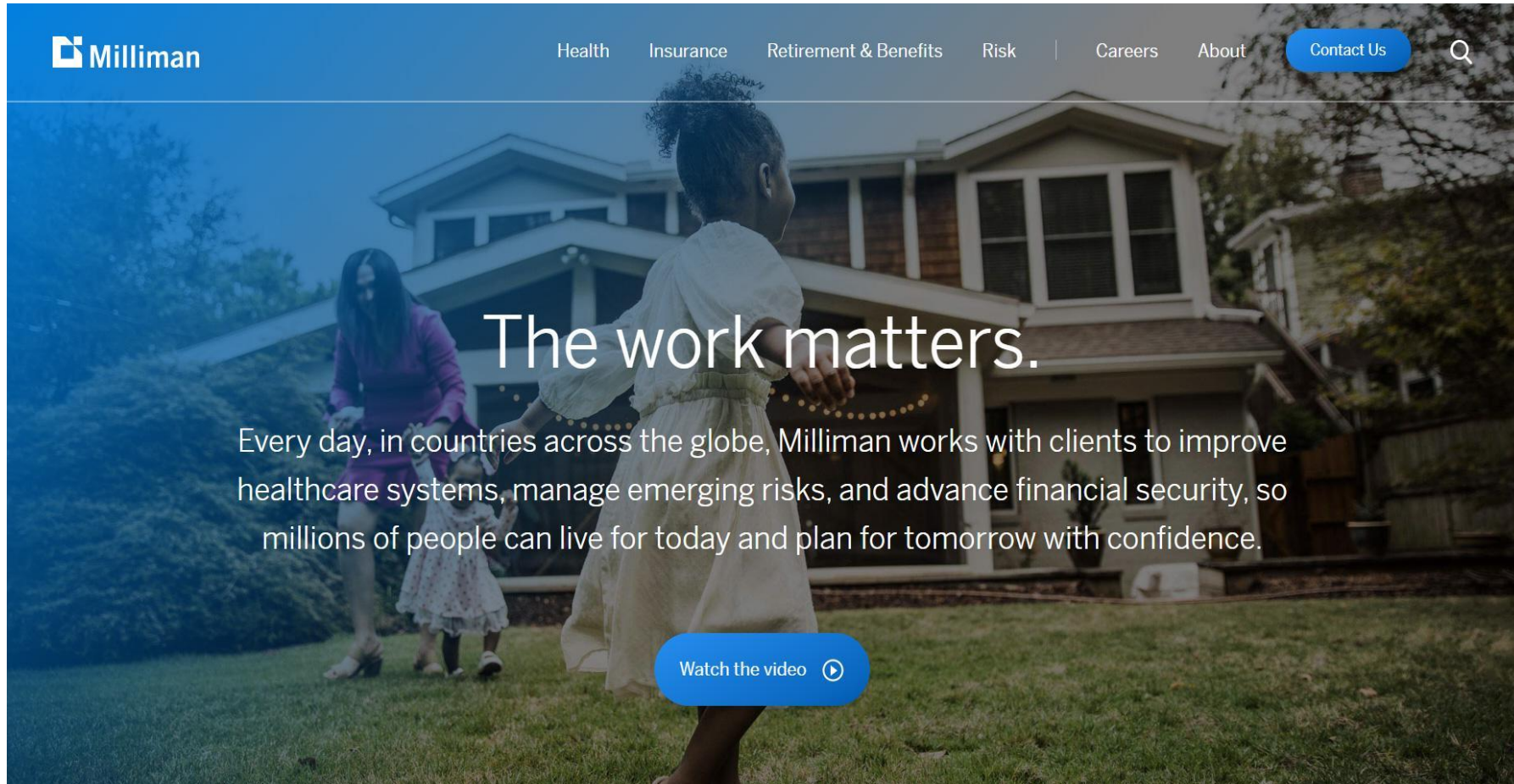
	Low	Medium	High
Low			
Medium			
High			

County Metrics

Limitations

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

Next steps

The image shows a screenshot of the Milliman website. At the top left is the Milliman logo. The navigation menu includes links for Health, Insurance, Retirement & Benefits, Risk, Careers, and About. A 'Contact Us' button and a search icon are on the right. The main content area features a background image of a family in a yard with a house in the background. The headline reads 'The work matters.' followed by a paragraph: '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.' A 'Watch the video' button with a play icon is positioned at the bottom center of the hero section.

Milliman

Health Insurance Retirement & Benefits Risk | Careers About [Contact Us](#) 🔍

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.

[Watch the video](#) ▶

Thank You

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