



# COVID-19: Responding with Data, Not Fear

---

Using Employee Benefits Data to Assess Risk

April 7, 2020





# Chris Savoie

VP of New Products

---

- Works with product management, user experience, and health analytics experts to help large enterprise organizations make the most of their employee benefits data
- Nearly 20 years of driving software and analytic solutions forward across multiple industries
- Favorite food is boiled crawfish

## OUR PURPOSE

---

**Turn the world's health data into great healthcare everyone can afford.**

## OUR APPROACH

---

**We empower U.S. employers and their advisors to optimize health benefits using data.**





# Dr. Rance Hutchings

Chief Clinical Officer

---

- Doctor of Pharmacy from University of Washington
- President and founder of Intermountain Drug Consulting, P.C. – a pharmacy consulting firm
- Working with providers in Washington State on Coronavirus outbreak
- Is an artisan cheese maker

# COVID-19 Risk Assessment

---

Demo of Analysis

# Respond with data, not fear.

## COVID-19 Risk Assessment

For demo purposes only

### Age

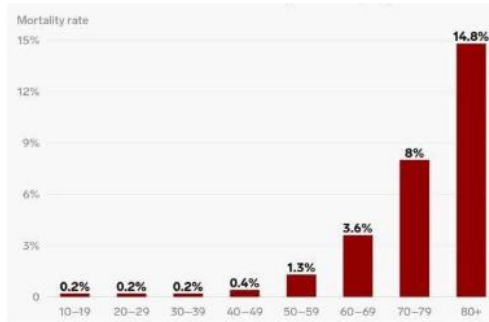
Eligible Member Counts Grouped by Age Based Mortality Rates as of 3/11/2020

Members 10-39 20,215	Members 40-49 6,478	Members 50-59 6,630	Members 60-69 5,610	Members 70-79 2,086	Members > 80 795
Fatality Rate 10-39 0.2%	Fatality Rate 40-49 0.4%	Fatality Rate 50-59 1.3%	Fatality Rate 60-69 3.6%	Fatality Rate 70-79 8.0%	Fatality Rate >80 14.8%

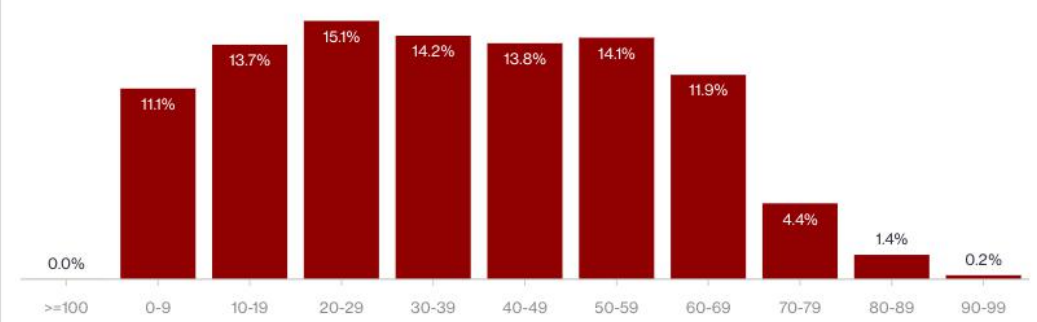
Source: <http://weekly.chinacdc.cn/en/article/d/e53946e2-c6c4-41e9-9a9b-fea8db1a8f51>

# Respond with data, not fear.

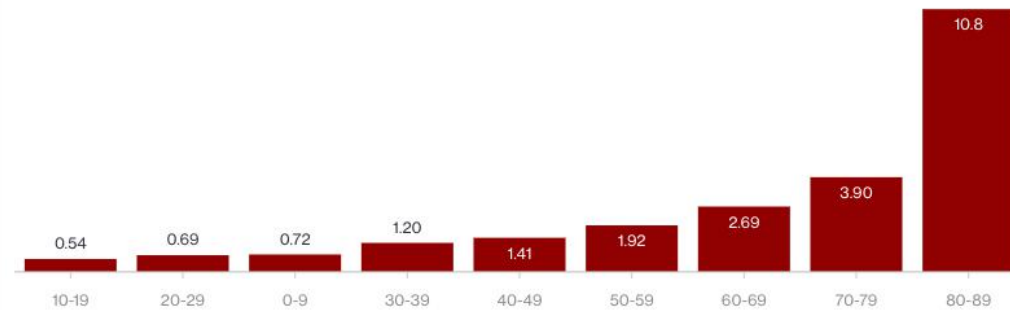
COVID Mortality by Age



Percent of Eligible Members by Age Bins



Avg Unscaled Risk Score by Age Bins



Avg Unscaled Risk Score - Total Population

1.21

Source: <http://weekly.chinacdc.cn/en/article/d/e53946e2-c6c4-41e9-9a9b-fea8db1a8f51>

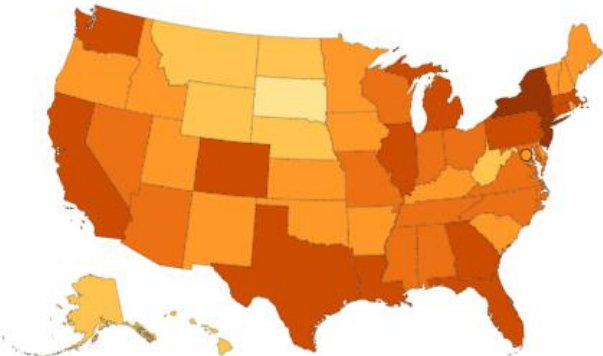


# Respond with data, not fear.

## Population Centers

Comparison of geographic presence of your employees compared to states reporting cases as of 3/26/2020

Compare your population to the states reporting cases of COVID-19 to CDC here:



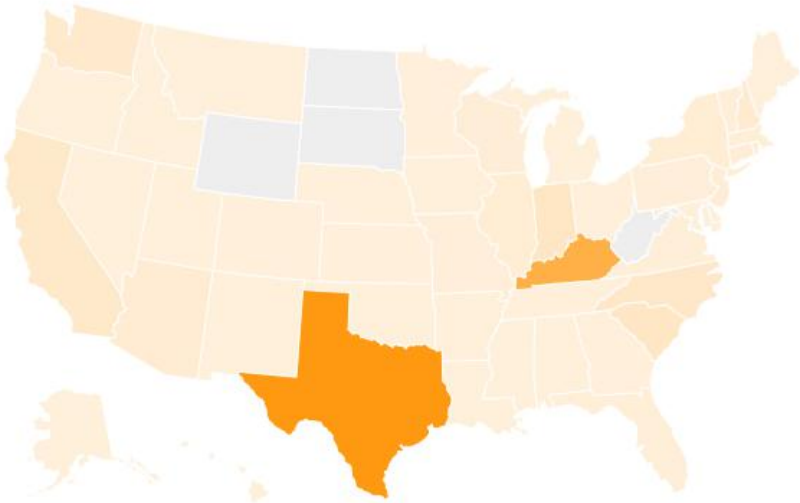
**Reported Cases**  
(last updated March 26, 2020)

- None
- 6 to 50
- 51 to 100
- 101 to 500
- 501 to 1000
- 1001 to 5000
- 5001 or more

Territories AS GU MH FM MP PW PR VI

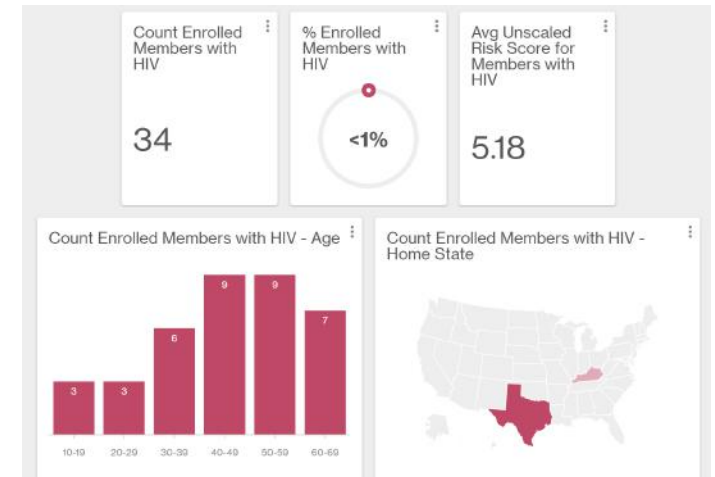
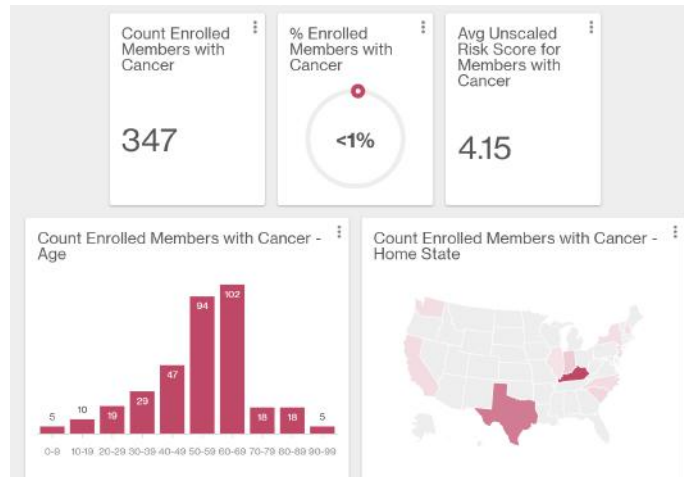
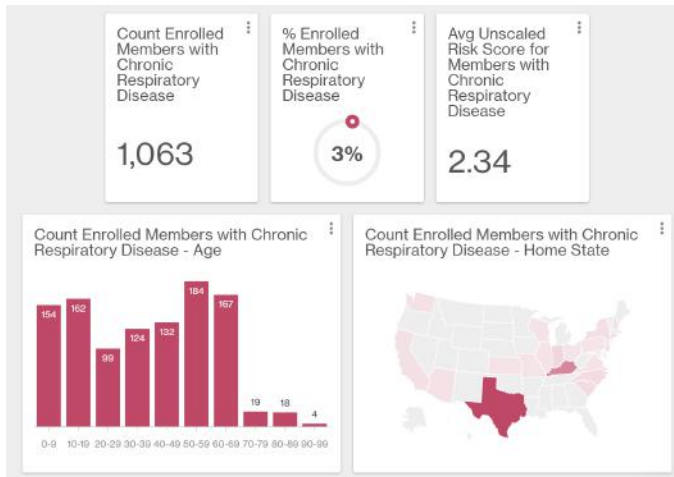
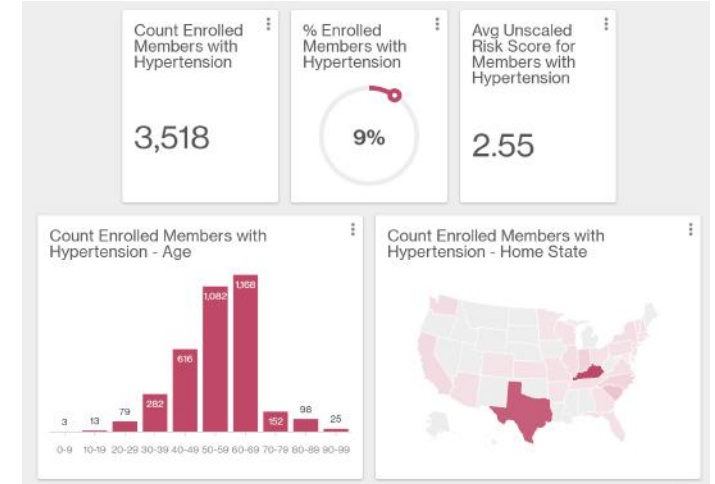
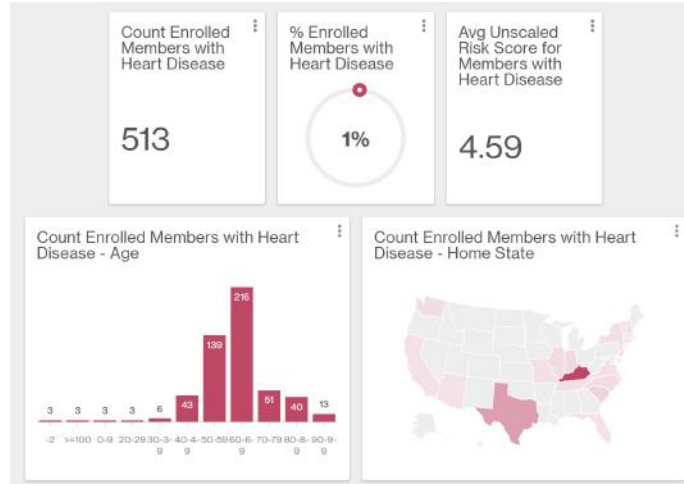
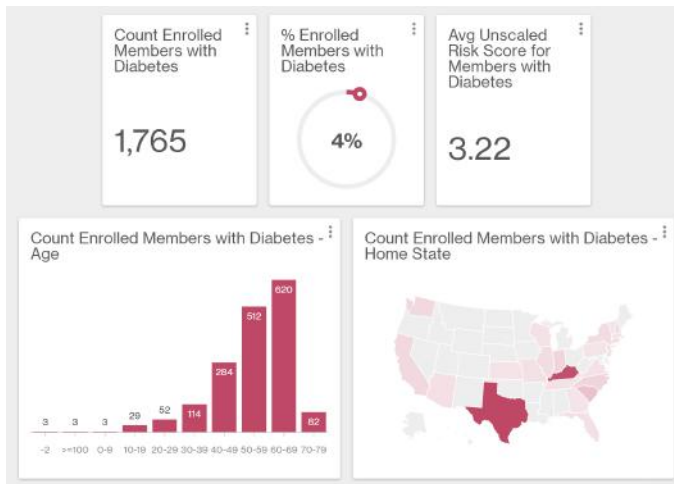


Count Eligible Members by Home State



Source: <https://www.cdc.gov/coronavirus/2019-ncov/cases-in-us.html#reporting-cases>

# Respond with data, not fear.



Source: <https://www.cdc.gov/coronavirus/2019-ncov/summary.html>

# Topics of Interest

---

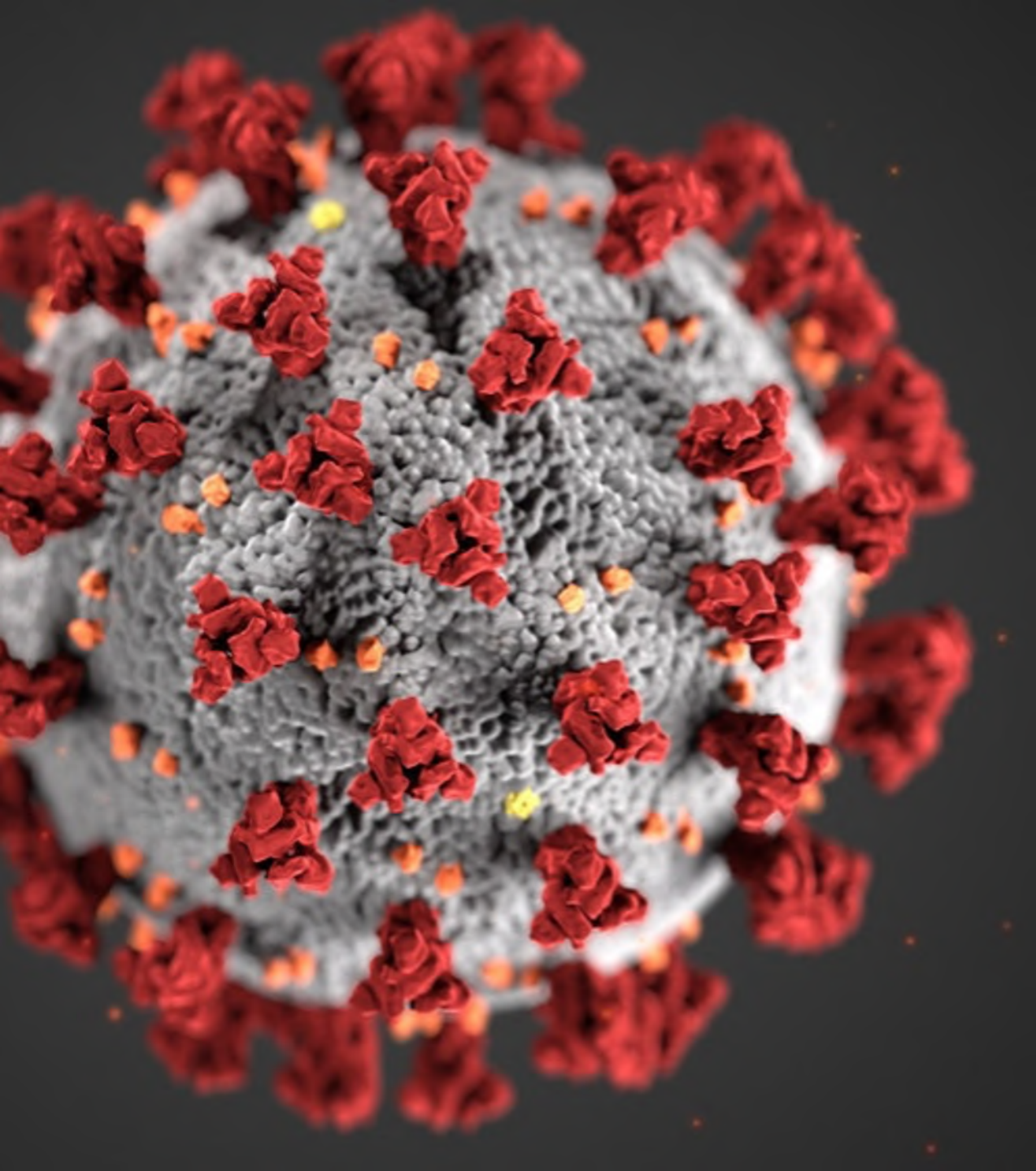
# Top requests from clients

1. Chloroquine and Hydroxychloroquine
2. Pneumonia cost
3. Elective procedures
4. Drug shortages
5. Cost modeling

# Choosing Your Data

---

Approaches for Predicting the Impacts of COVID-19



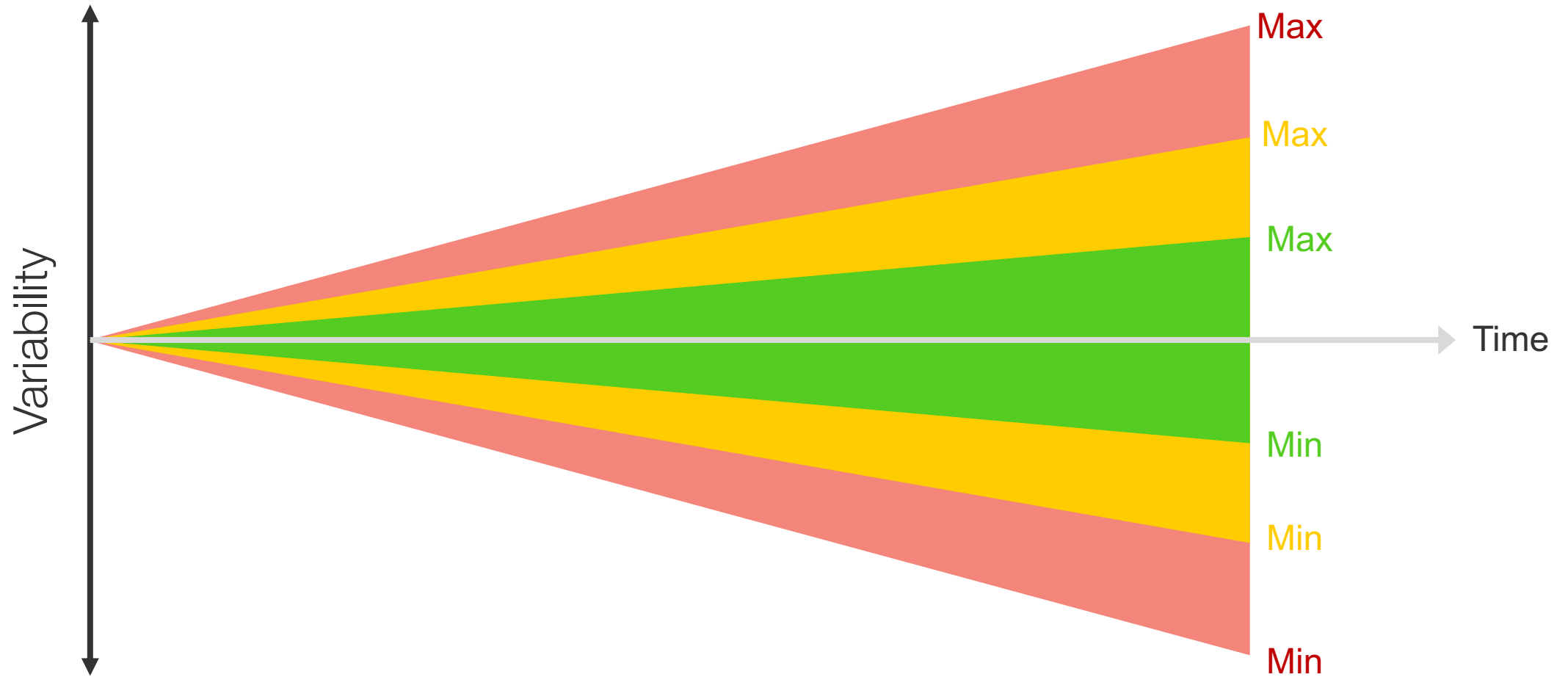
## COVID-19 Data Sources Artemis is Evaluating

---

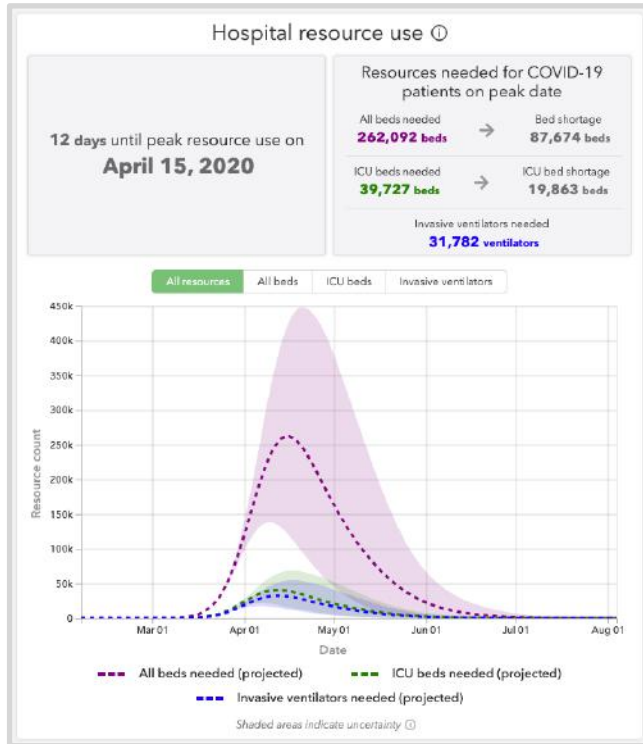
- World Health Organization (WHO)
- Centers for Disease Control (CDC)
- Johns Hopkins University
- National Institutes of Health
- Kaiser Family Foundation
- Fair Health
- Other government tracking sites (SoKo, Italy, US)

Artemis Health doesn't endorse any numbers  
outside of our platform.

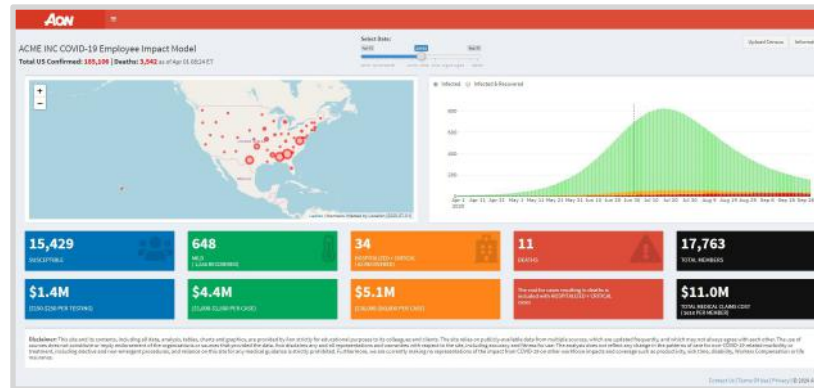
# Cone of Uncertainty



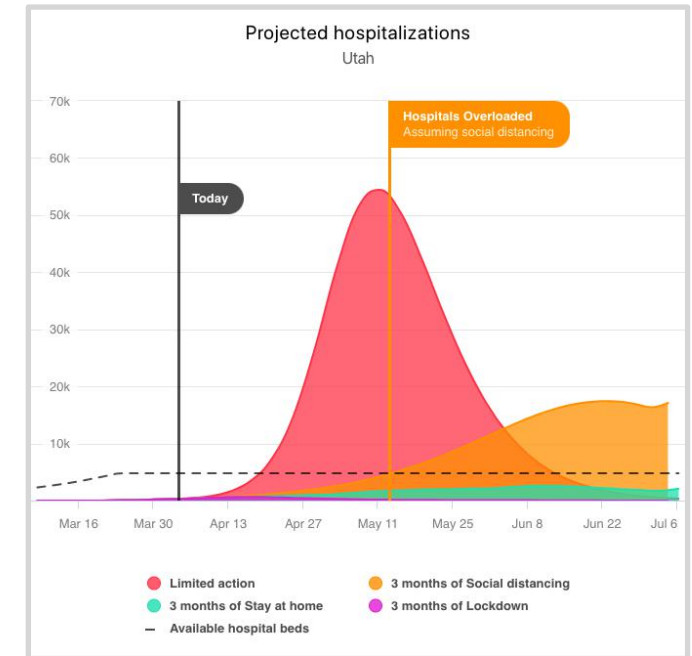
# Examples of COVID-19 Prediction Sites



Source: <http://www.healthdata.org/covid>



Source: <https://aon.mediaroom.com/2020-04-03-Aon-Forecasts-Workforce-Impact-of-COVID-19-with-Interactive-Web-Application>



Source: <https://covidactnow.org/us/ut>



# Predicting Cost Impact

---

Simple predictive models to think about cost

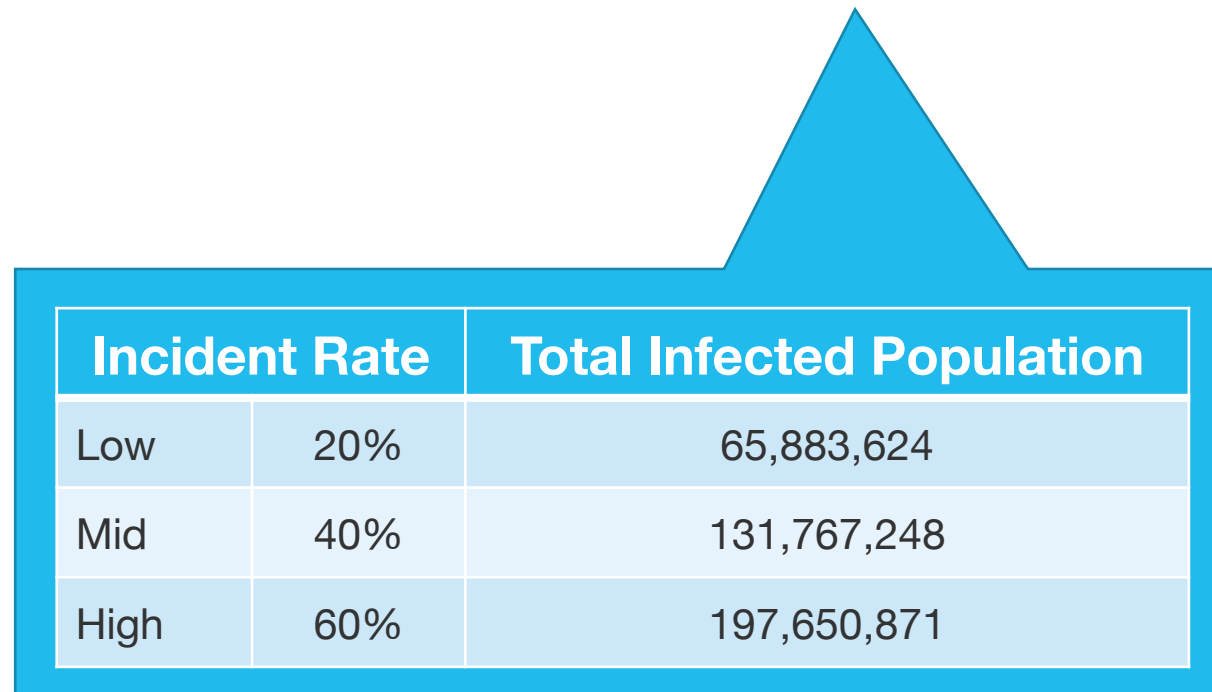
# Cost Prediction

- How many people do you have?

How many people do you have that you cover healthcare expenses for?

# Cost Prediction

- How many people do you have?
- **How many of those people contract the disease?**




Incident Rate		Total Infected Population
Low	20%	65,883,624
Mid	40%	131,767,248
High	60%	197,650,871

Source: <https://www.fairhealth.org/publications/briefs>

# Cost Prediction

- How many people do you have?
- How many of those people contract the disease? (20%, 40%, 60%)
- **How many of those people require hospitalization?**



Source	Hospitalization
CDC Low	20.7 %
CDC High	31.4%
Imperial College London	4.4%

CDC: <https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm>

Imperial College London: <http://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/covid-19/report-9-impact-of-npis-on-covid-19/>

# Cost Prediction

- How many people do you have?
- How many of those people contract the disease? (20%, 40%, 60%)
- How many of those people require hospitalization? (4.4%, 20.7%, 31.4%)
- **How many of those people require ICU or ventilator care?**

Source	ICU
CDC Low	4.9%
CDC High	11.5%
Imperial College London	30%

CDC: <https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm>

Imperial College London: <http://www.imperial.ac.uk/mrc-global-infectious-disease-analysis/covid-19/report-9-impact-of-npis-on-covid-19/>

# Cost Prediction

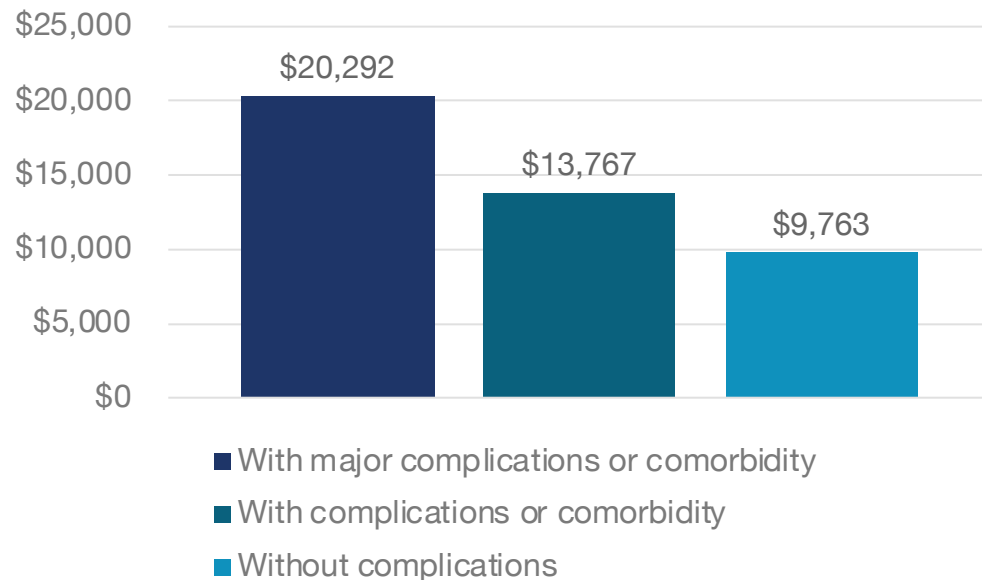
- How many people do you have?
- How many of those people contract the disease? (20%, 40%, 60%)
- How many of those people require hospitalization? (4.4%, 20.7%, 31.4%)
- How many of those people require ICU or ventilator care? (4.9%, 11.5%, 30%)
- **What is the cost of hospitalization?**

# What is the cost of hospitalization?

Peterson-KFF

## Health System Tracker

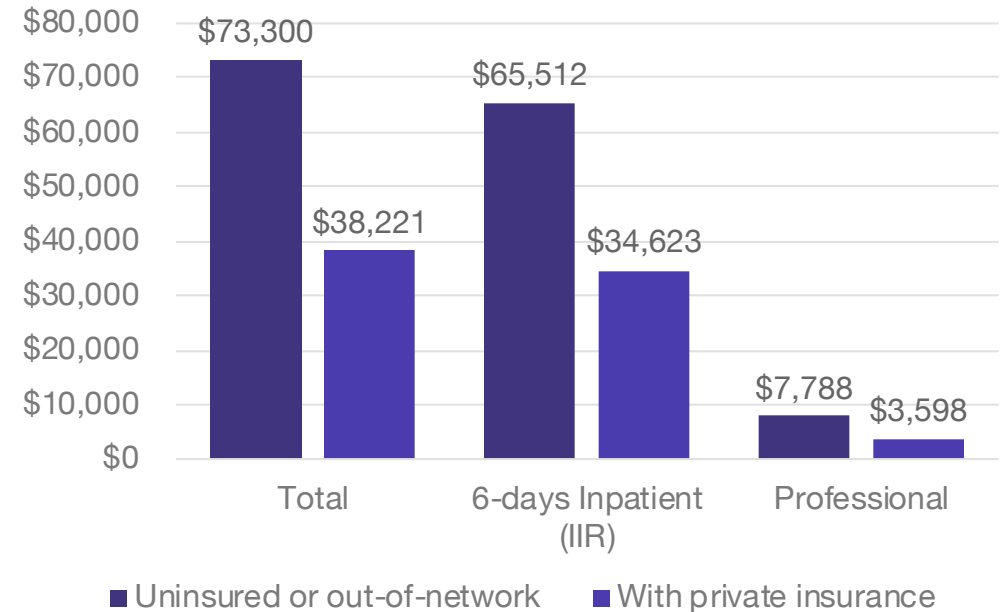
Average cost of treatment for an inpatient admission with employer paid plan



Source: <https://www.healthsystemtracker.org/brief/potential-costs-of-coronavirus-treatment-for-people-with-employer-coverage/>



Average cost of treatment for an inpatient admission



Source: <https://www.fairhealth.org/publications/briefs>

# Cost Prediction

- How many people do you have?
- How many of those people contract the disease? (20%, 40%, 60%)
- How many of those people require hospitalization? (4.4%, 20.7%, 31.4%)
- How many of those people require ICU or ventilator care? (4.9%, 11.5%, 30%)
- What is the cost of hospitalization? (\$9,763, \$13,767, \$20,292)
- **What is the cost of ICU or ventilator care?**

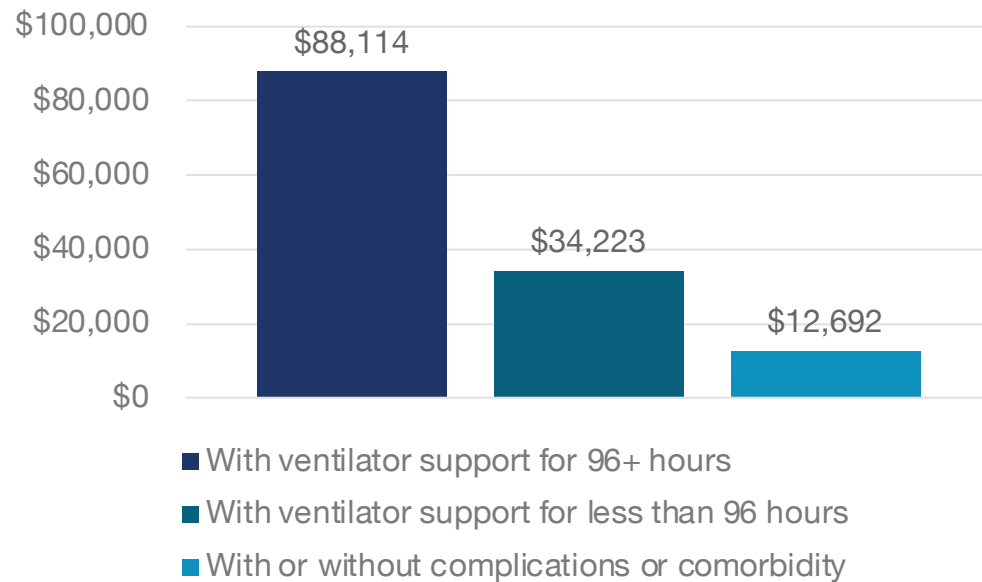


# What is the cost with ICU or ventilator care?

Peterson-KFF

## Health System Tracker

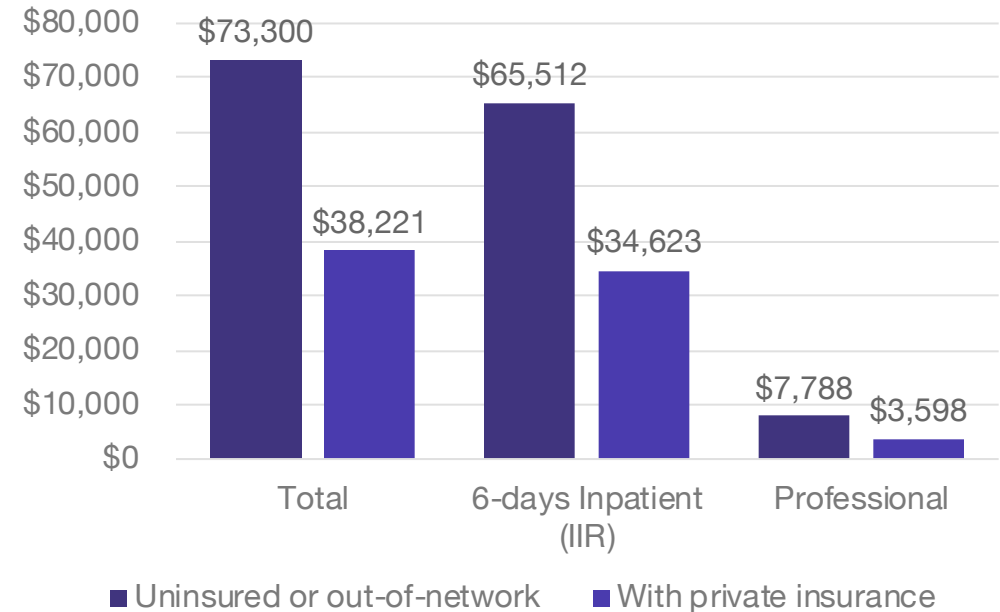
Average cost of treatment for an inpatient admission with employer paid plan



Source: <https://www.healthsystemtracker.org/brief/potential-costs-of-coronavirus-treatment-for-people-with-employer-coverage/>



Average cost of treatment for an inpatient admission



Source: <https://www.fairhealth.org/publications/briefs>

# Cost Prediction

- How many people do you have?
- How many of those people contract the disease? (20%, 40%, 60%)
- How many of those people require hospitalization? (4.4%, 20.7%, 31.4%)
- How many of those people require ICU or ventilator care? (4.9%, 11.5%, 30%)
- What is the cost of hospitalization? (\$9,763, \$13,767, \$20,292)
- What is the cost of ICU or ventilator care? (\$12,692, \$34,223, \$88,114)

<div style="border: 1px solid #ccc; padding: 5px;"> <p>Count Enrolled Members</p> <p>1 Filters: Age Bins = 20-29</p> <p>Current</p> </div>		20%		4.4%		<div style="border: 1px solid #ccc; padding: 5px;"> <p>* Avg by Episode Episode Plan Paid Amount (Med+Rx)</p> <p>1 Filters: Episode Name = Pneumonia...</p> <p>Current</p> </div>
	<b>x</b>	40%	<b>x</b>	20.7%	<b>x</b>	\$20,292
		60%		31.4%		\$34,223
People		Infection Rate		Hospitalization Rate		Episode Cost

Source: <https://www.healthsystemtracker.org/brief/potential-costs-of-coronavirus-treatment-for-people-with-employer-coverage/>

# Non-Urgent Procedures vs COVID-19 Cost

COVID-19 Hospitalizations  
COVID-19 ICU  
Telehealth  
WFH Musculoskeletal Costs



Preventive Care  
Non-Urgent Surgeries  
Procedure Deferral  
Decreased Risky Behavior

# Predicting Business Impact

---

Simple predictive models to think about business impact

# Impact Prediction

- How many people do you have?
- How many of those people contract the disease? (20%, 40%, 60%)
- How many of those people require hospitalization? (4.4%, 20.7%, 31.4%)

# Impact Prediction

- How many people do you have?
- How many of those people contract the disease?
- How many of those people require hospitalization?
- **How many days will these people miss?**

Source		Days
CDC	Median - Low	10
	Median - High	13
KFF Health System Tracker	No Complications	3.1
	Less than 96 hours with Ventilator	5.8
	96+ hours with Ventilator	22.6
Fair Health	Average	6

CDC: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>

Health System Tracker: <https://www.healthsystemtracker.org/brief/potential-costs-of-coronavirus-treatment-for-people-with-employer-coverage/>

FAIR Health: <https://www.fairhealth.org/publications/briefs>

# Impact Prediction

- How many people do you have?
- How many of those people contract the disease?
- How many of those people require hospitalization?
- How many days will these people miss?
- **How much is a day worth?**

Occupation	Earnings
Management & Professional	\$266
Service	\$120
Sales & Office	\$151
Natural Resources	\$116
Construction	\$178
Maintenance	\$195
Production & Transportation	\$147

Source: <https://www.bls.gov/news.release/pdf/wkyeng.pdf>

# Impact Prediction

- How many people do you have?
- How many of those people contract the disease? (20%, 40%, 60%)
- How many of those people require hospitalization? (4.4%, 20.7%, 31.4%)
- How many days will these people miss? (3.1, 10, 13)
- How much is a day worth? (\$266, \$178, \$120)

							
	<b>x</b>	20%	<b>x</b>	4.4%		3.1	\$266
		40%	<b>x</b>	20.7%		10	\$178
		60%		31.4%		13	\$120
People		Infection Rate		Hospitalization Rate		Days Lost	1 Day Productivity

Source: <https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm>



# Predictions for Cost and Business Impact

## Cost

<div style="border: 1px solid #ccc; padding: 5px;"> <small>Count Enrolled Members</small>  <small>1 Filters: Age Bins = 20-29</small>  <small>Current</small> </div>						<div style="border: 1px solid #ccc; padding: 5px;"> <small>* Avg by Episode Episode Plan Paid Amount (Med+Rx)</small>  <small>1 Filters: Episode Name = Pneumonia...</small>  <small>Current</small> </div>
	<b>x</b>	20%	<b>x</b>	4.4%	<b>x</b>	\$20,292
		40%		20.7%		\$34,223
		60%		31.4%		
People		Infection Rate		Hospitalization Rate		Episode Cost

Source: <https://www.healthsystemtracker.org/brief/potential-costs-of-coronavirus-treatment-for-people-with-employer-coverage/>

## Lost Productivity

<div style="border: 1px solid #ccc; padding: 5px;"> <small>Count Enrolled Members</small>  <small>1 Filters: Age Bins = 20-29</small>  <small>Current</small> </div>						
	<b>x</b>	20%	<b>x</b>	4.4%	<b>x</b>	3.1
		40%		20.7%		10
		60%		31.4%		13
People		Infection Rate		Hospitalization Rate		Days Lost
						1 Day Productivity
						\$266
						\$178
						\$120

Source: <https://www.cdc.gov/mmwr/volumes/69/wr/mm6912e2.htm>



Learn more on our COVID-19 resources page at [artemishealth.com/covid19](https://artemishealth.com/covid19)



Join us next week at the same time for part four of our COVID-19 webinar series



*“Some days, doing ‘the best we can’ may still fall short of what we would like to be able to do, but life isn’t perfect on any front—and doing what we can with what we have is the most we should expect of ourselves or anyone else.”*

*- Fred Rogers*

# Q&A

---

Ask our experts your questions.

# Thank you.

