COVID-19 Research Revealed: Mental Health as a Predictor of Illness and the Health Impact of Long-Haul Cases

November 18th, 2021

CIVHC

CENTER FOR IMPROVING VALUE IN HEALTH CARE

Housekeeping

- All lines are muted
- Please ask questions in the Chat box
- Webinar is being recorded
- Slides and a link to the recording will be posted on the Event Resources page on civhc.org

Presenters

Thomas Wilson, PhD, DrPH,
Epidemiologist, CEO
Trajectory Healthcare and Board Chair,
Population Health Impact Institute

Janet “Jessie” Sullivan, MD, FAAD
Consultant
SEJNS, LLC

Isabella Chu, MPH
Associate Director, Data Core
Stanford Center for Population Health Sciences

Kristin Paulson, JD, MPH,
COO, General Counsel
CIVHC

Agenda

- Overview of CIVHC and the CO APCD
- COVReD: COVID-19 Real World Data – Unraveling causes, inequities and risk for death and disability in the era of COVID-19
- Colorado All Payer Claims Data Set: A Real World Treasure for Exploring Population Health: Predictors of COVID-19 Diagnoses: The First Wave
- Questions and discussion

Our Mission

We strive to empower individuals, communities, and organizations through collaborative support services and health care information to advance the Triple Aim: Better Health, Better Care, Lower Cost

We are:

- Non-profit
- Independent
- Objective

Who We Serve

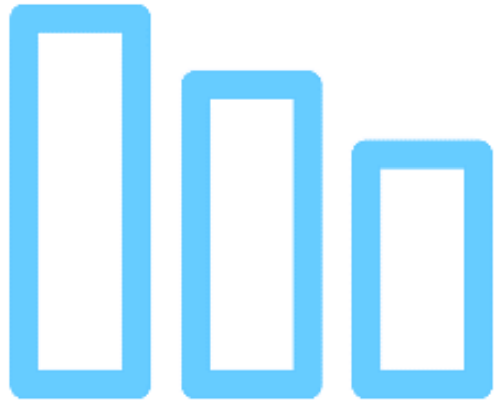
Change Agents

Individuals, communities, or organizations working to lower costs, improve care, and make Colorado healthier.

How We Inform

Public CO APCD Data

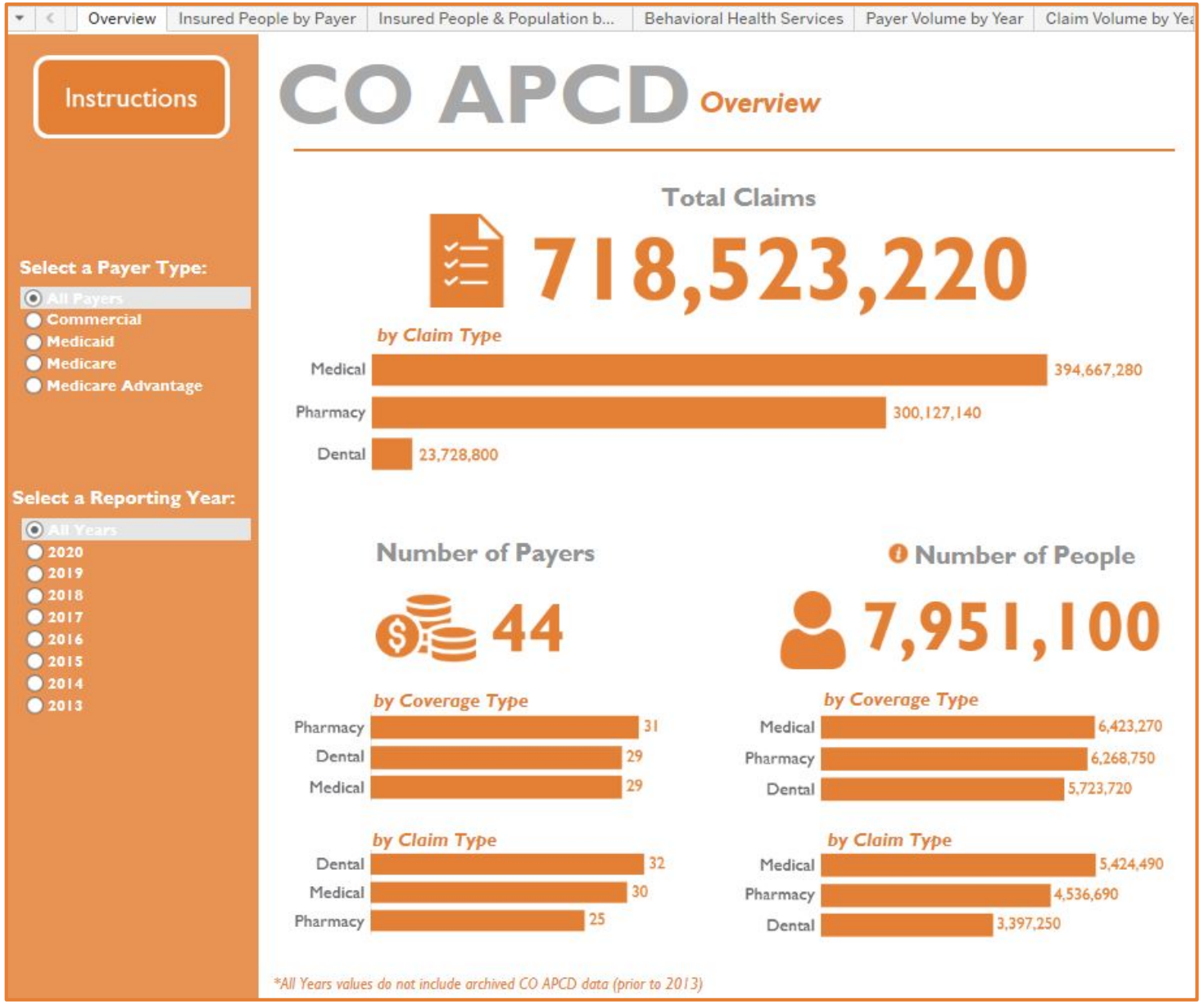
Identify opportunities for improvement in your community through interactive reports and publications



Non-Public CO APCD Data

License data from the most comprehensive claims database in CO to address your specific project needs

What's in the CO APCD https://www.civhc.org/get-data/whats-in-the-co-apcd/



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COVReD: COVID-19 Real World Data – Unraveling causes, inequities and risk for death and disability in the era of COVID-19

Isabella Chu, MPH
November 18, 2021

PHS Data Core Team

Stanford University | Center for Population Health Sciences

David Rehkopf – Faculty Director

Rebecca Miller

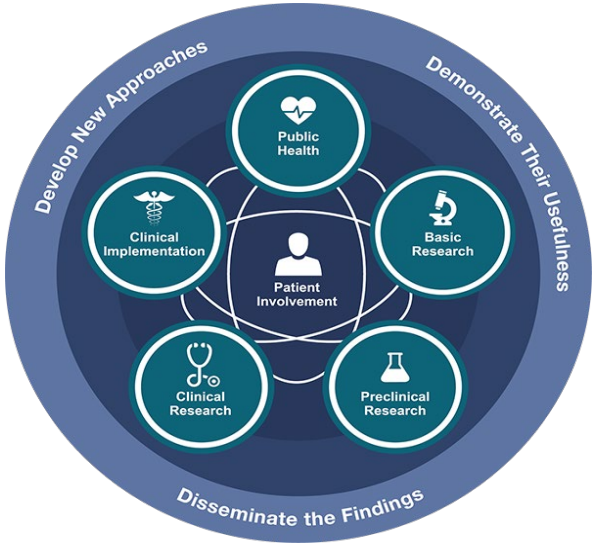
Isabella Chu

Emma Hallgren

Ayin Vala

Our approach to health equity research

Stanford University | Center for Population Health Sciences



Community Based
- Patients and caregivers
- Community based organizations
- Local public health departments
- Private sector partners

Data Driven
- Real world data
- Electronic Health Records
- Geographic Overlays of Social Data
- Life course linkages
- Digital data

Impact Focus
- Translation into practice
- Informing policy changes

Population Health Sciences: Three Types of Data

1. Randomized Trial
2. Traditional Cohort Study
3. **Real World Data**

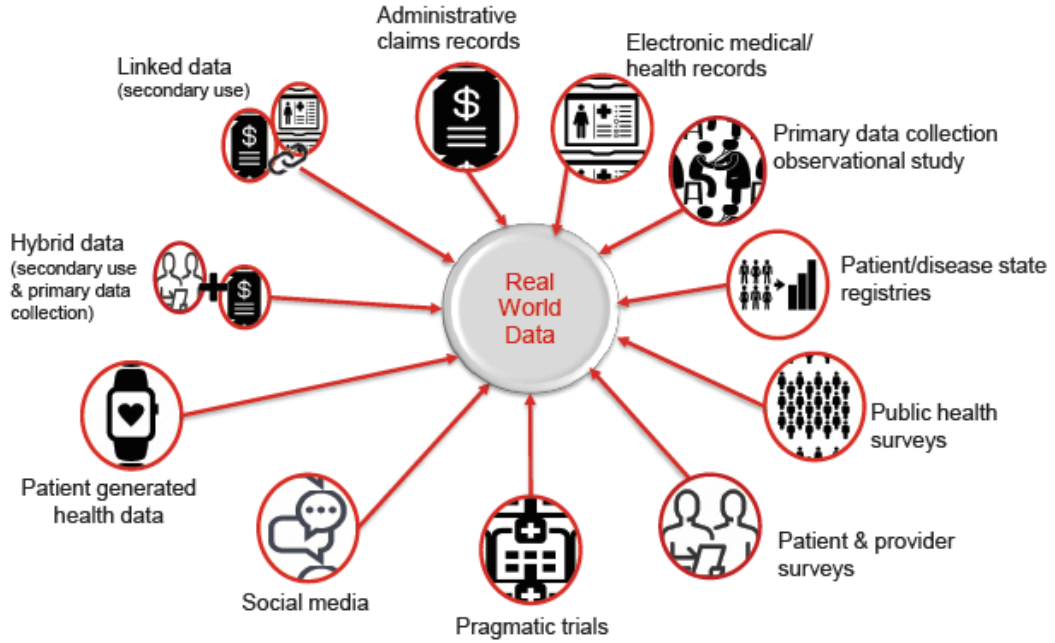


FIGURE 6-1 Possible sources of real-world data.
SOURCE: Yaist presentation, July 17, 2018.

Figure: IOM, 2019

Framework for Data Utility and Value: Large, Longitudinal and Linkable

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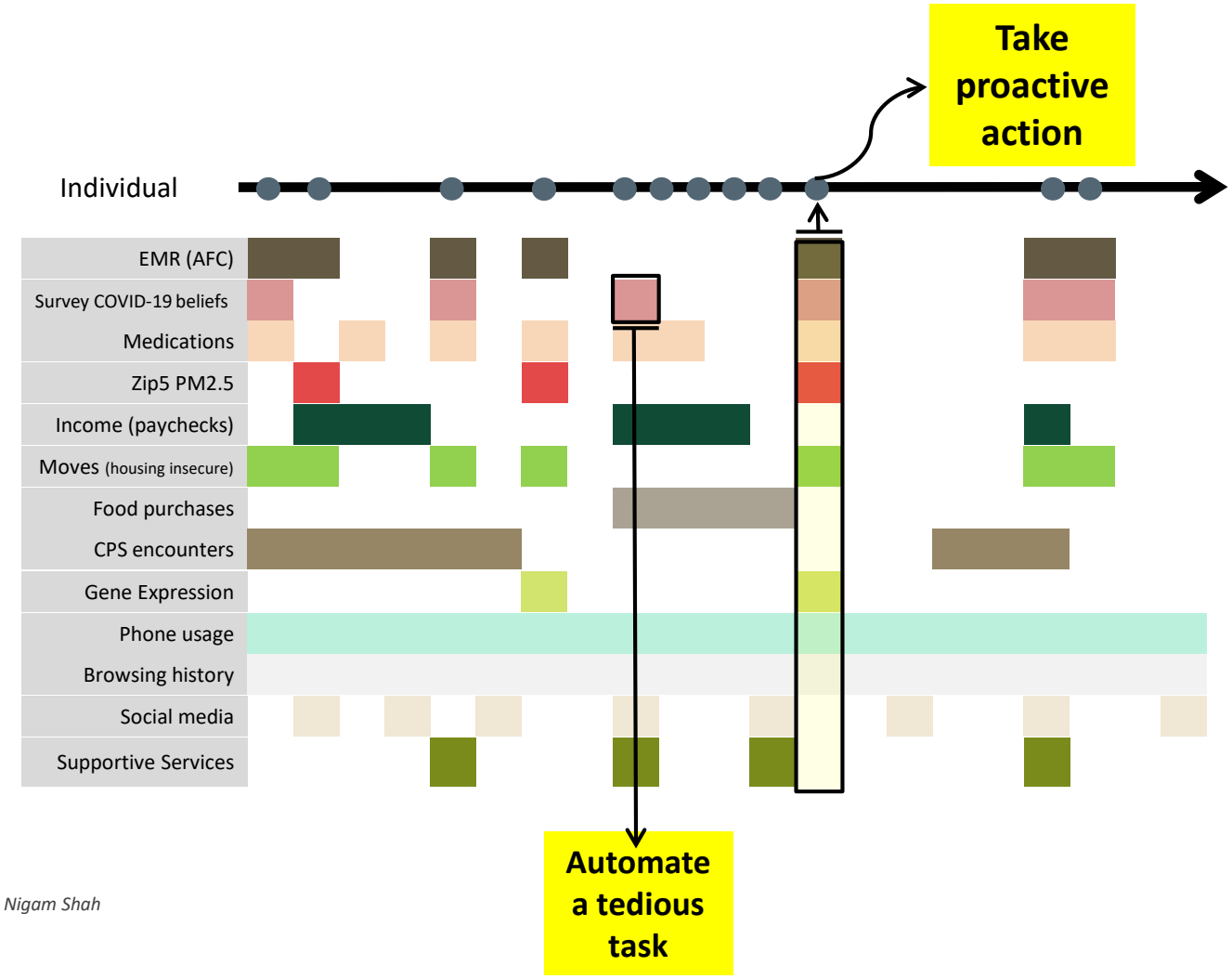

Slide credit: Nigam Shah

Aims of the COVEReD Project

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COVID-19

Incidence, prevalence, course and outcomes of

COVID-19 and COVID-19 variants

Efficacy and equity of distribution of COVID-19 vaccines

long haul COVID-19 incidence, prevalence and treatments

All Cause Mortality

Descriptive study: 20% increase in all cause mortality

AFC EMR Data – 6.4 Million Patients from ~3,000 Practices

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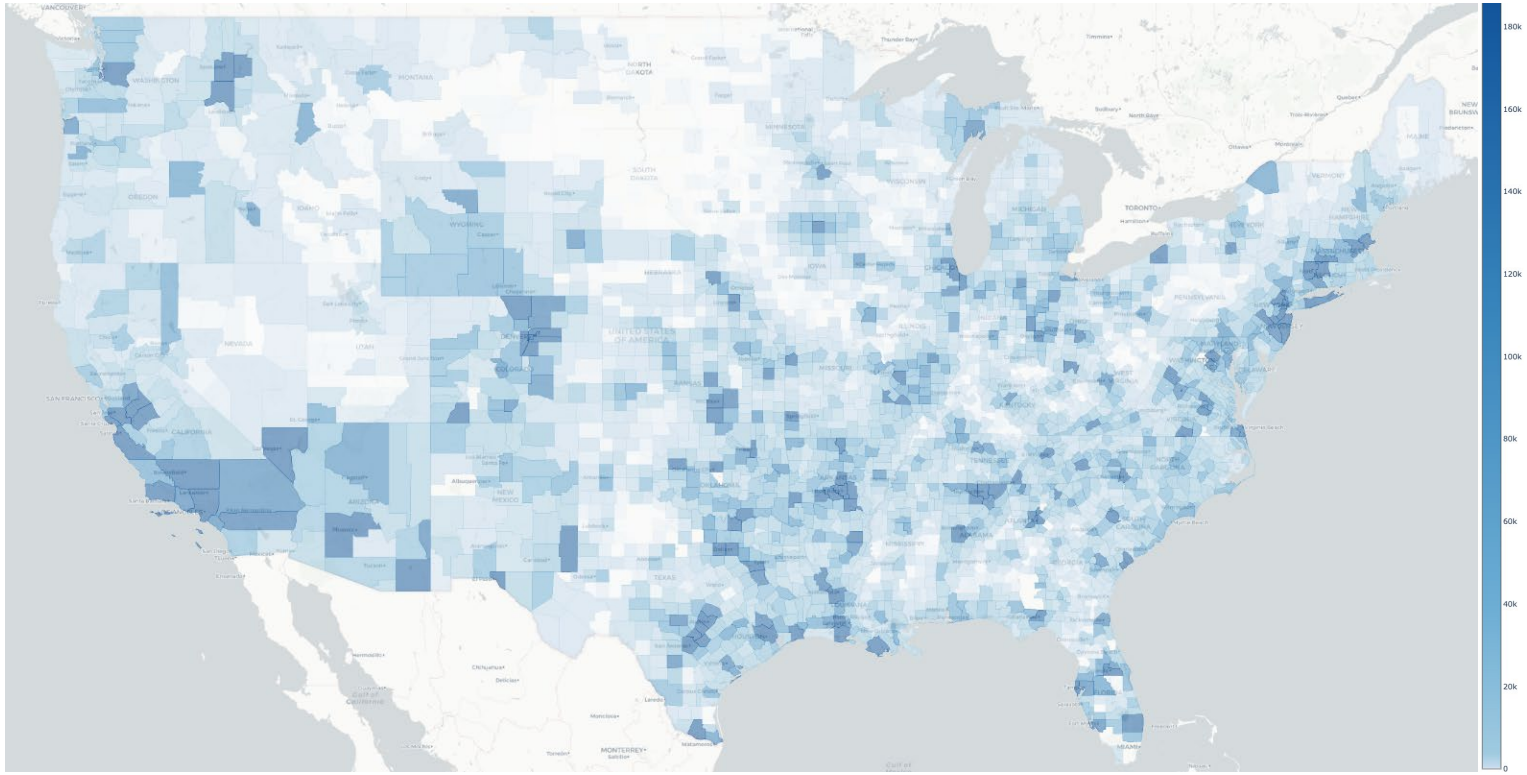

ILI Sentinel Network

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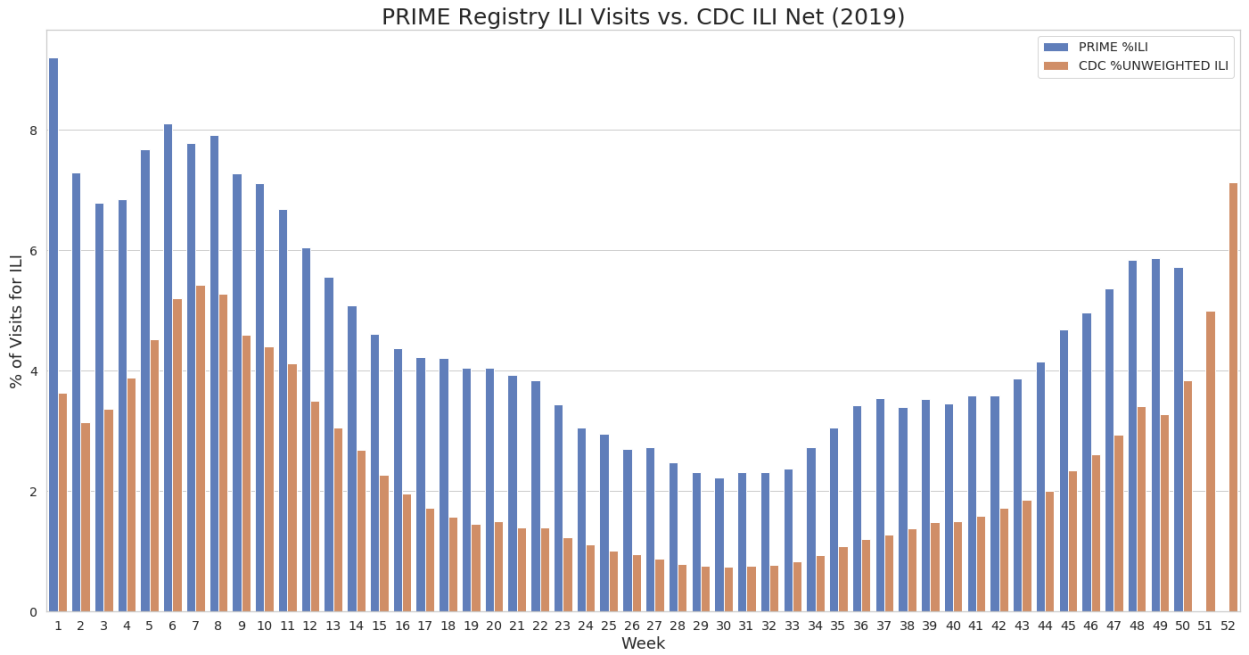

Figure 1. Percent of visits from Influenza Like Illness (ILI) from CDC ILI Net data (orange) as compared to the PRIME registry (blue), 2019.

Enhanced Granularity, Predictive Power and Ability to Incorporate Comorbidities and Socioeconomic Status

Further Information

Stanford University | Center for Population Health Sciences

- Data: phsdata.stanford.edu
- Data Access Instructions: phsdocs.stanford.edu
- Office Hours: phsofficehours.stanford.edu
- Data Core Contact: phsdatacore@stanford.edu
- Isabella Chu: phsdatacore@stanford.edu

Colorado All Payer Claims Data Set: A Real World Treasure for Exploring Population Health:

Predictors of COVID-19 Diagnoses: The First Wave

Thomas Wilson, PhD and Janet (Jessie) Sullivan, MD

Population Health Impact Institute (PHII) and
Trajectory® Healthcare, LLC

November 18, 2021

PHI Institute™

Trajectory® healthcare

Transforming Data. Transforming Decisions.

Organization

1) Thoughts on Population Health, Public Health and how it differs from Clinical Medicine

2) The Colorado All Payers Claims Data Set

3) Unique challenges doing Population Health studies

4) Our real-world study: Predictors of COVID-19

5) Next steps

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1) Clinical Medicine vs. Population Health / Public Health.

n=1: Clinical Medicine:

- The intervention is on the individual
- The measure of success is based on the individual
- Findings & Recommendations presented to the individual

n>1: Population Health:

- The intervention is on the individual (immunization) or the group (sewers, immunization campaigns)
- The measure of impact is on a defined population (e.g. employees at Vail Resorts with hypertension, the public at risk for COVID-19.
- Findings & recommendations presented to the individual and the "governance" of the defined population

Note: Much of current medical knowledge at use in the clinic is based on population health studies--group findings are used to justify individual interventions (e.g. "precision medicine")

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2) All Payers Claims Data: A Unique "Real World" Resource.

Lots of medical research -- is specialized, doing highly precise studies with high internal validity. There is often significant delay and results are often not the same in the "real world."

Clinical researchers are often wary of claims data which lacks the precision of information collected in the laboratory or abstracted by at the bedside. But claims data is a reflection of the real world.

Clinicians, payers and regulators worry about "translating research into practice (TRIP)."

--Our study goes in the other direction. Using claims data we are translating practice (what happens in the "real world") into research.

PHI Institute™

3) Unique Challenges in Population Health

There is a lot going on, its not just medicine

- Major issues from our current pandemic: Is the focus on the individual, the group, or both.
- Public officials say: “follow the data.”
  - “Data” often implied group level wisdom. It seemed to put the group over the individual. People were insulted
    - Dr. Amy Acton, head of Ohio Department of Health, in May 2020 expressed it like this: “As doctor, as scientist I was not aware of the things that set off those [emotional] triggers for people.”
- Health is a big deal WHO definition
- “Health … is a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity and ….health requires the action of many other social and economic sectors in addition to the health sector.”
- It’s a team sport: Sociology, Politics, Business, Engineering, Law, Epidemiology, Medicine
- Jessie are representatives of two disciplines: Epidemiology and Medicine: It’s a start.

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4) Our “Real World” Study

Covid 19 and Mental Health - study ideas

1) Persons recovering from COVID infection– impact on their Mental Health

2) Persons never infected with COVID,- impact on their Mental Health of the pandemic disruptions and deprivations

3) Did a prior mental/ behavioral health (MBH) diagnosis have any impact on the risk of getting COVID?.

The data limited us to first address #3 Reference to pre-print:

Wilson, Thomas and Sullivan, Janet (Jessie), Mental/Behavioral Health as a Predictor of Initial COVID-19 Diagnosis: Results from the Colorado All Payer Claims Data Set to June 30, 2020. ***SSRN*** *March 18, 2021; last revised Jun 21, 2021). http://dx.doi.org/10.2139/ssrn.3807198*

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Methods: Selection criteria for identifying COVID19 persons and a "similar" non-COVID19 reference group

We identified COVID19 patients by their first primary diagnosis of COVID-10 (ICD10 of U07.1)

We wanted to compare COVID19 patients to persons who were similar but who did not get COVID19 using specific diagnoses

What makes a person similar?

- **Age**: <30, 30-64, 65+
- **Sex**: M,F
- **Estimated health status**: we used quartile of healthcare cost in the previous 12 months as a rough estimate of health status – those with more healthcare cost generally have more health problems than those with very little healthcare cost.
- **Estimated duration of coverage**: number of months between a date of service between March-June, 2020 and the first claim in the previous 12 months.
- **An index date** in the same month in the epidemic (Mar, Apr, May, June 2020): for COVID19 patients this was the first date of a COVID19 diagnosis; for persons in the reference group it was a claim for any healthcare service in the same month.

--***Social determinants of health*** **was measured by Medicaid status.**

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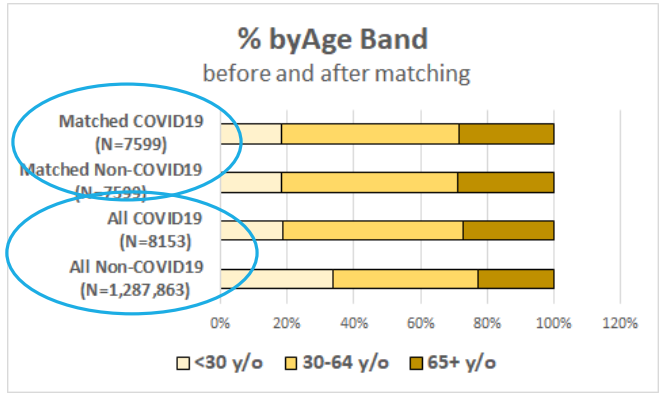
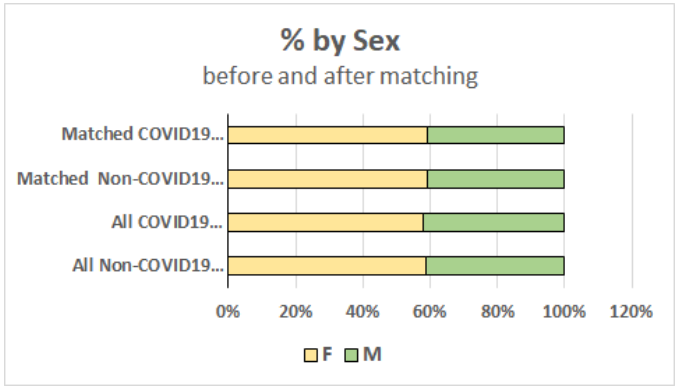
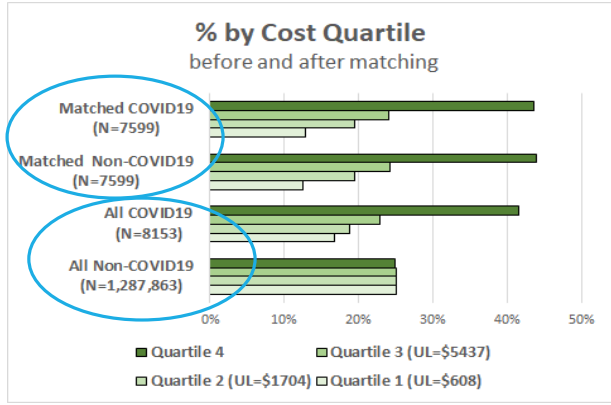
PSM identified a non-COVID19 reference group well matched to the COVID19 group on the selected criteria

After PSM selection the COVID19 and NonCOVID19 groups match on age bands

Before matching the COVID19 population is older



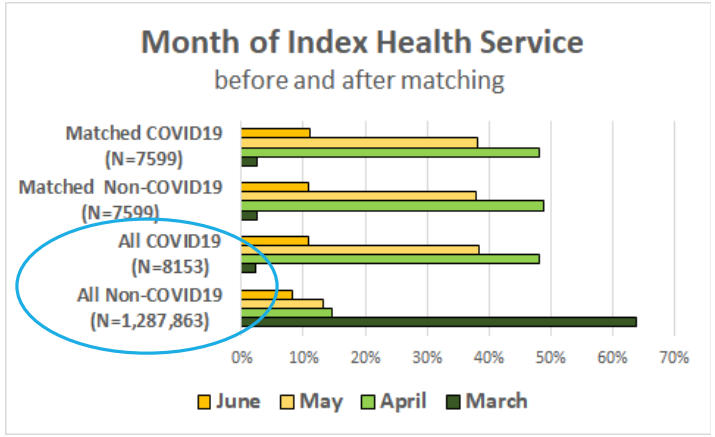


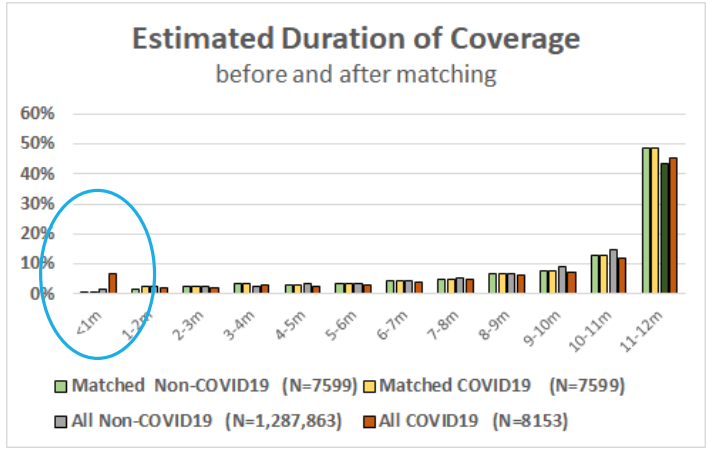


After PSM selection the COVID19 and NonCOVID19 groups match on cost quartiles

Before matching the COVID19 population is more costly – suggesting poorer health preCOVID19

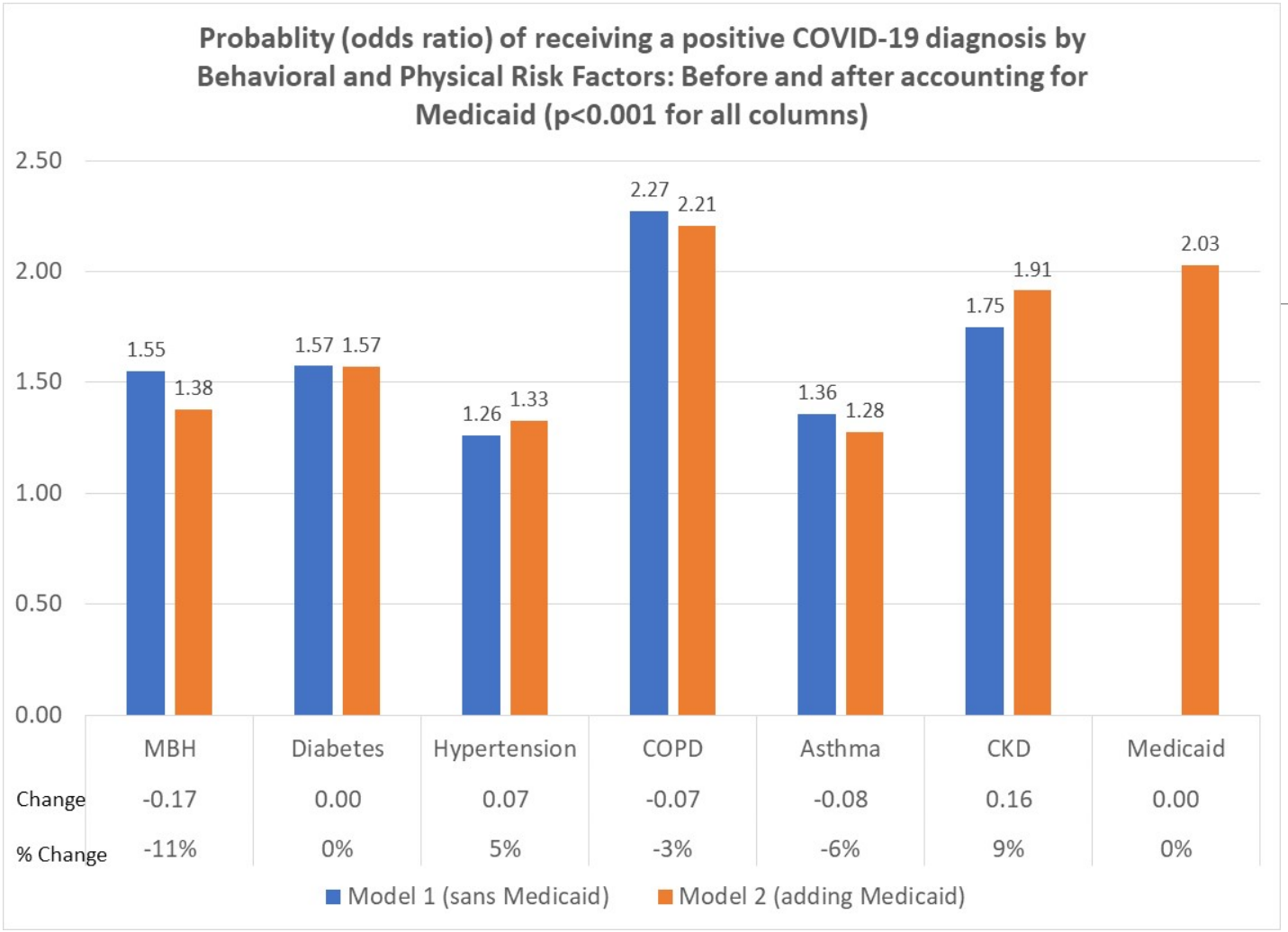
In March there were very few COVID19 patients and many non-COVID19 patients continued to receive health services. After the PSM selection the groups are well matched by month of service.





Even before matching, the COVID19 and non-COVID19 populations showed a similar distribution of est. duration of health insurance coverage; most people had 11-12 months in the prior year.

The exception was persons with COVID19 who were more likely to have less than one month of coverage. This suggests some people were enrolled for the first time when they presented with COVID19.



- We initially looked at prior diagnoses as predictors of COVID-19 diagnosis (blue bars).
- We found that a prior MBH diagnosis was an independent risk factor for COVID diagnosis equivalent to known physical risk factors for COVID-19: diabetes, hypertension, asthma.

Based on feedback we received, we subsequently added the impact of a Social Determinants of Health metric to the model predicting COVID-19 diagnosis.

- We used Medicaid coverage as a proxy for low economic status.
- As shown (Orange bars) Medicaid insurance was a significant independent predictor of COVID-19 diagnosis.
- In this model, including Medicaid status, a prior diagnosis of MBH continued to be an independent predictor of COVID-19 diagnosis.

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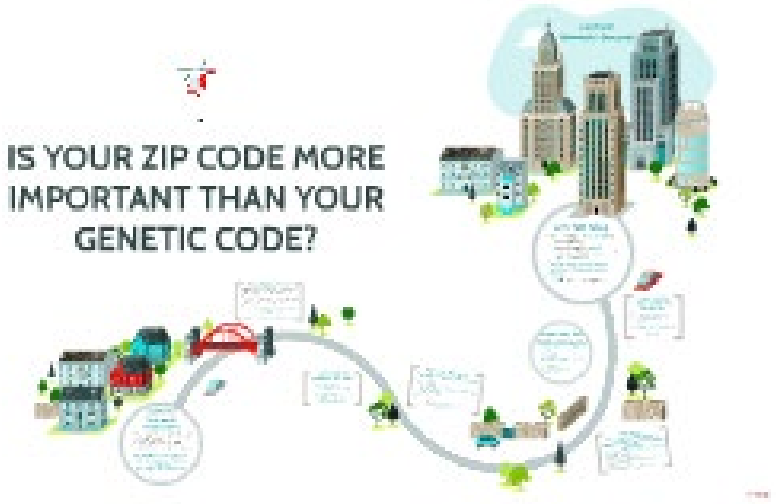
5) Next Steps

The full range of risk: Before and After Covid and a broader level of SDOH

Group level data applied to individuals: “Ecological fallacy”

Our position:

More funding for population health



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Trajectory Healthcare, LLC web site http://trajectory-inc.com/

CIVHC web site https://www.civhc.org/
info@civhc.org

Questions? Suggestions?

Reach out to info@civhc.org

Connect with CIVHC on Facebook, LinkedIN, and Twitter

Recording will be posted here:
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