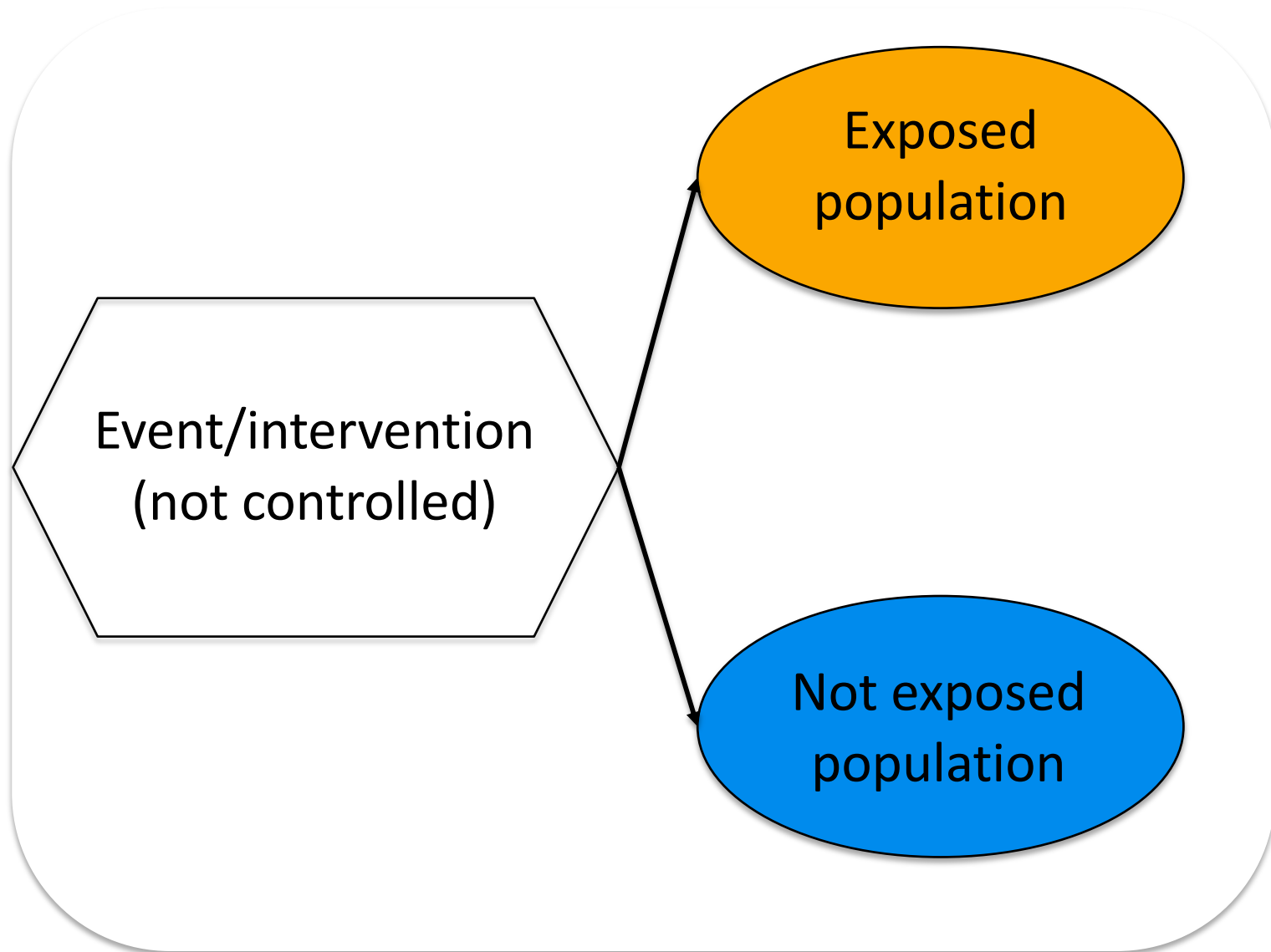# Finding Natural Experiments/ Data Sources for Natural Experiments
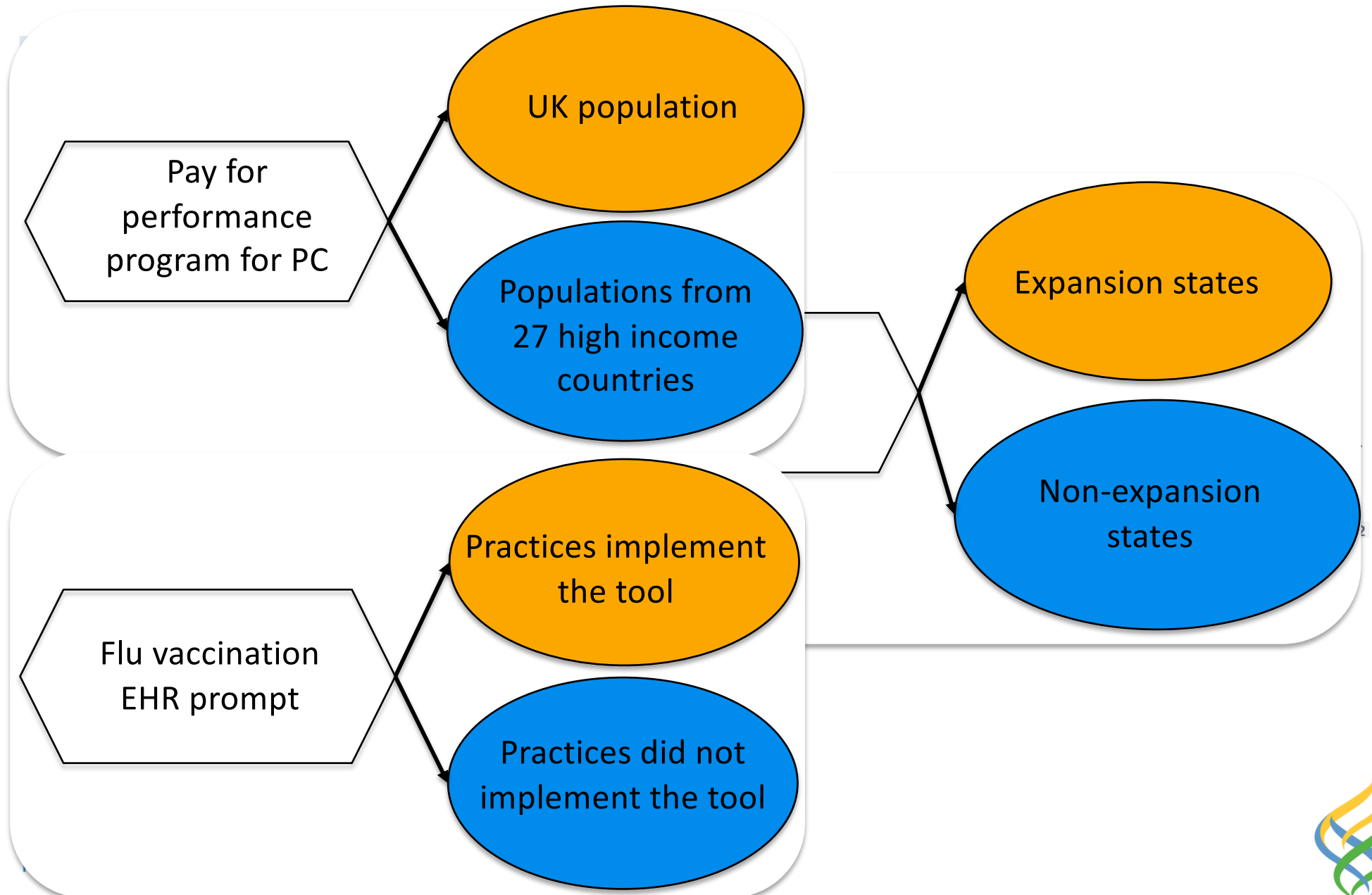
Nathalie Huguet, PhD
Assistant Professor
Department of Family Medicine

Natural Experiment Recipe

Surrounded by Natural Experiments

How We Study Natural Experiments

- Need data pre- and post-event

- From exposed and non-exposed groups

- Can use any data types: surveys, claims, electronic health records, vital statistics …

- What influences the choice of data:
  o Outcome measures
  o Availability of post-period
  o Comparable data in exposed and non-exposed groups
  o Data access (publicly, restricted, free, costly)

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NEXT-D 2 types of data

- EHR-Medicaid claims: Medicaid expansion; intensive behavioral therapy for obesity

- EHR-Medicaid claims-qualitative interviews: Medicaid health homes program

- EHR-geocoded data: Medicaid expansion

- EHR-Medicare claims-qualitative interviews: Medicare reimbursement for non-face-to-face chronic care management services

NEXT-D 2 types of data

- Claims: high/low deductible plan; care coordination program
- National organization and patient survey; inpatient administrative data-geocoded data: State innovation model initiative

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Publicly Available Data

Registry/vital statistics

Strengths	Limitations
• Generalizable • Incidence rates • Trends • Many indicators	• Delayed availability • Misclassification/missing data • Limited confounders • No prospective assessment

Survey data

Strengths	Limitations
• Generalizable • Repeated measures • Comprehensive measures	• Response rate/biased sample • Self-reported information • Little directly assessed health information • Delayed availability

Limited Access Data

Electronic Health Records

Strengths	Limitations
• Biomarkers	• Based on utilization
• Objective health indicators	• Data hidden in notes
• Health care services use	• Generalizability
• Test results	• Not publicly available
• Enhanced tracking	• Onerous data processing

Claims data

Strengths	Limitations
• Health care/medication use	• Exclude self-pay care
• Large sample size	• No test results
• Cost analysis	• Limited patient confounders
• Trend in care use/cost	• Not publicly available
	• No link between use and outcomes

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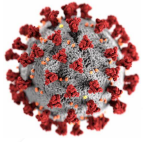
Is COVID a Natural Experiment?

State actions:
Stay at home
Mask required
Social distancing

- More restrictions
- Fewer restrictions

Within state:
School restriction
Bar restriction
Gym restriction

- Counties in phase 2
- Counties in phase 1

World actions:
Health system capacity
Stay at home regulations

- More restricted
- Less restricted

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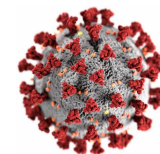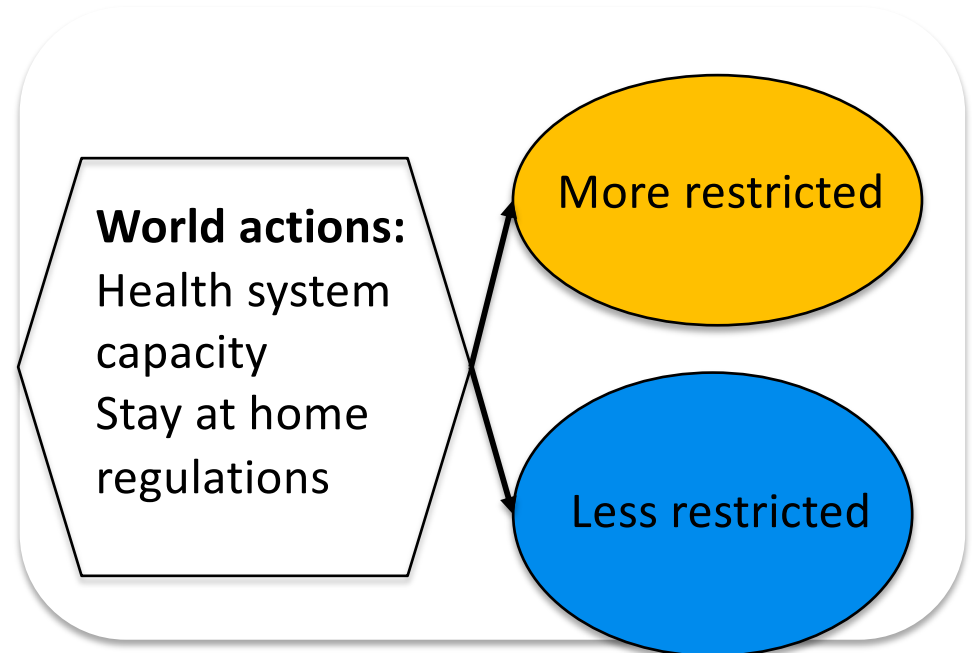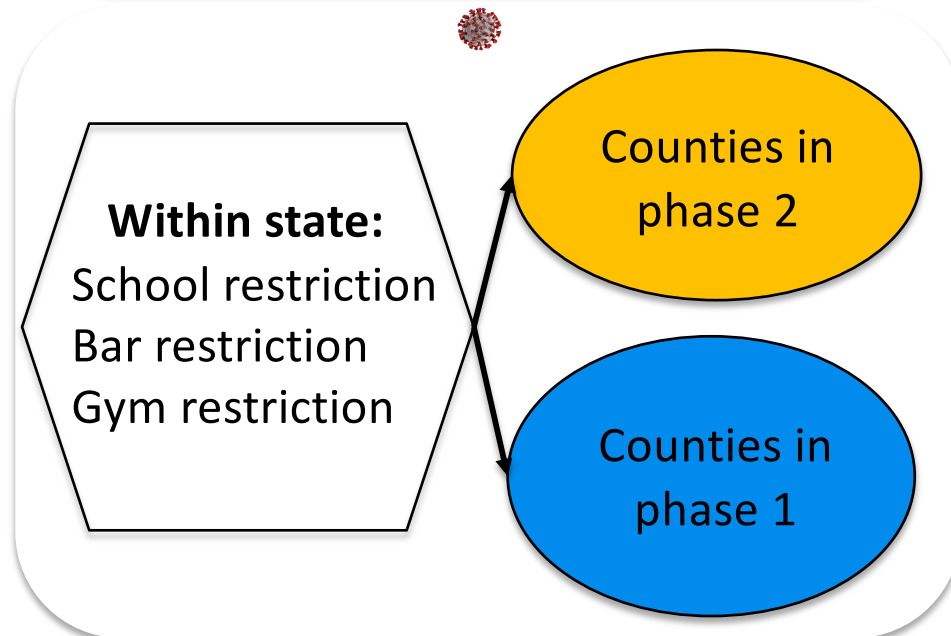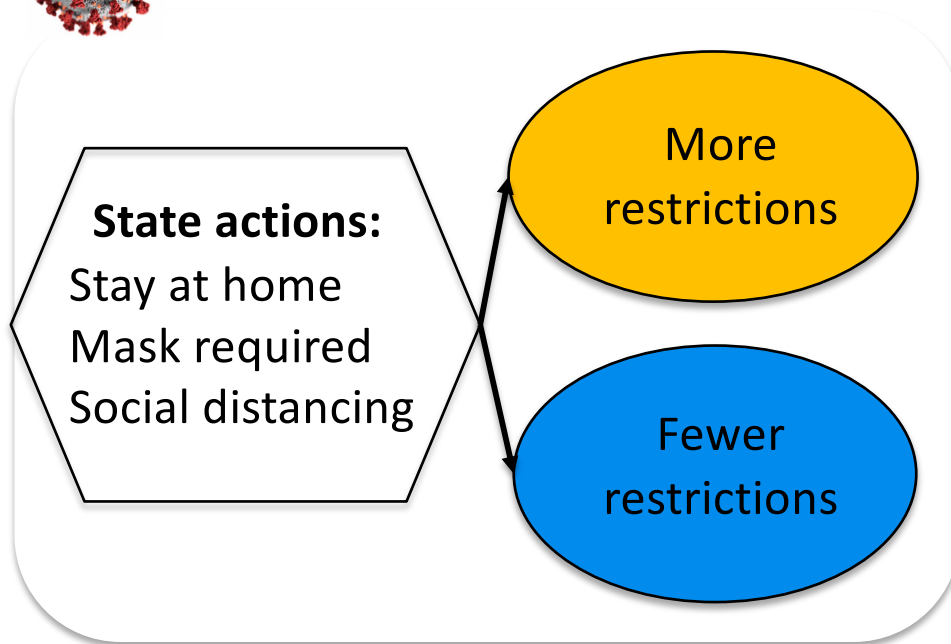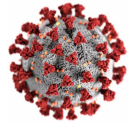
COVID Natural Experiment: What Data Can We Use?

Immediately available:

- Surveillance data:
  - Daily updates on COVID positive cases and death
  - Daily update on State actions

- EHR data:
  - Health care use: change to telemedicine
  - COVID tests, test results, ER visits, inpatient visits, ICU, mortality

- Claims data:
  - Health care use
  - COVID tests, ER visits, inpatient visits, ICU

Available in 2 years:

2022

- Surveillance data:
  - Vital statistics
  - Economic impact
  - Traffic fatalities

- National survey data:
  - Substance use
  - Social determinants of health
 - Adherence to actions (stay at home, masks…)

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COVID Natural Experiment: Examples

Community Use Of Face Masks And COVID-19: Evidence From A Natural Experiment Of State Mandates In The US

Wei Lyu and George L. Wehby

Event study estimates of the effects of states mandating community face mask use in public on the daily county-level growth rate of COVID-19 cases, 2020

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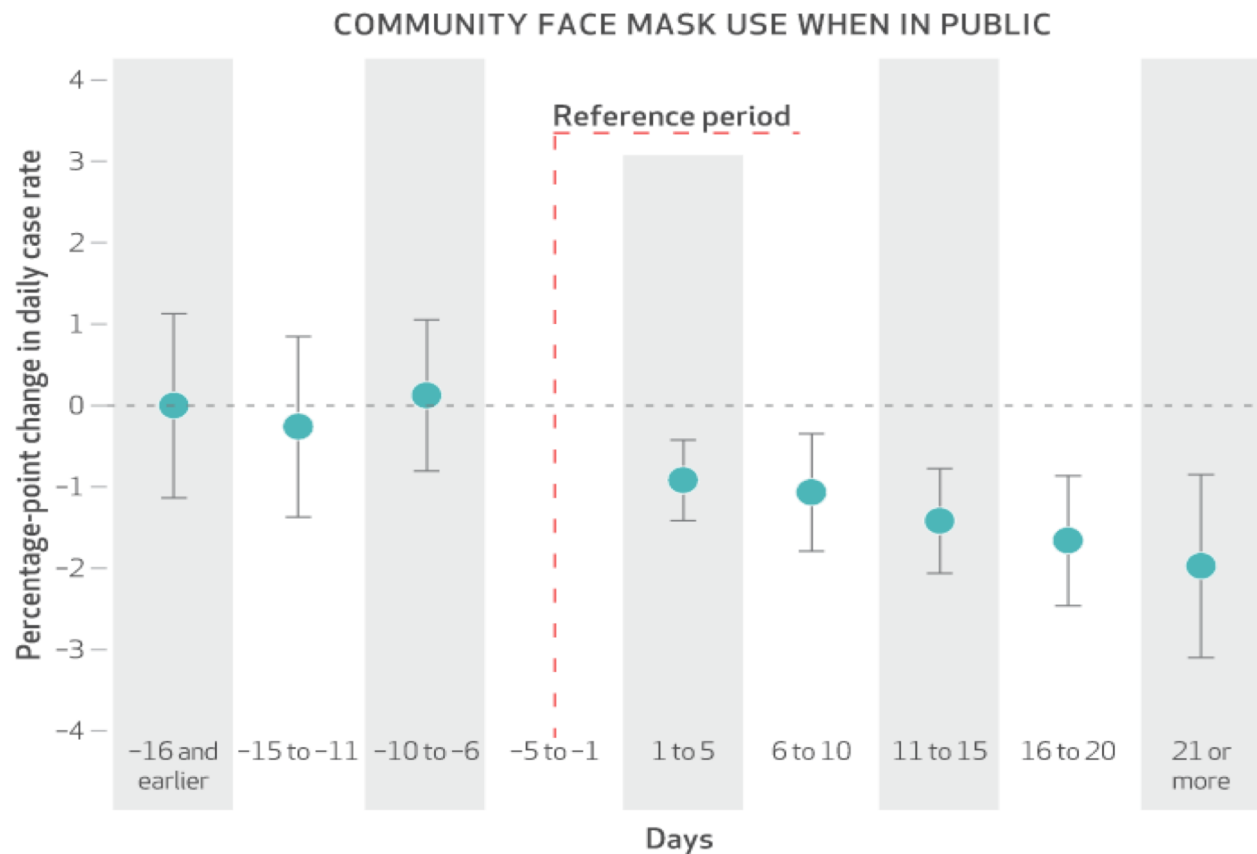
Take Away Messages

- Natural experiments are everywhere

- Any data can be used to study natural experiments

- No data are perfect

- Availability of data limits what can be studied when

Data are not everything, understanding the methodology to accurately study natural experiments is another challenge

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OCHIN	Site PI: Megan Hoopes Biostat: Teresa Schmidt, Annie Larson PM/Research Coordination: Nate Warren, William Pinnock
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