# Economic Impacts of COVID

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# Economics in a Pandemic

- There are two major policy problems
  - Morbidity and mortality (direct and indirect)
  - Economic harm
    - GDP/Consumer spending/income
    - Social Ills (mental health, domestic violence, substance abuse)

- Economics provides
  - A framework to make decisions with scarce resources
  - A logical way to understand what did not happen

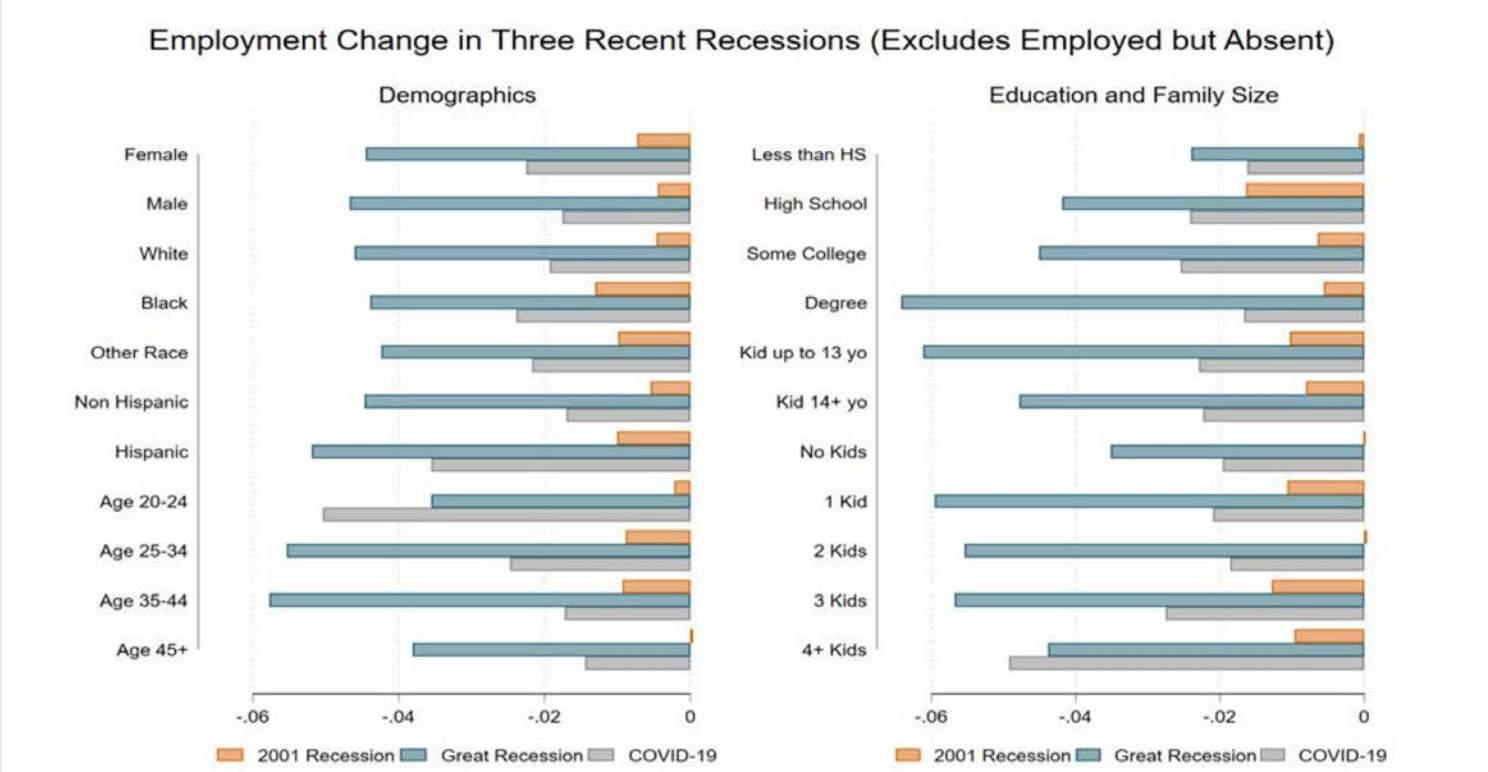
# Takeaways

- COVID-19 is an unprecedented shock to the economy
  - It is a simultaneous health and economic shock
- Cost benefit analysis is complicated by multiple shocks
  - Stay-at-home orders and self-protective responses occur simultaneously
  - Lockdowns likely pass cost-benefit test
- Health mandates that both (1) reduce the risk of infection, and (2) allow safe economic activity are pro-business
  - Masks and social distancing

# Disparities in COVID-19 Job Losses

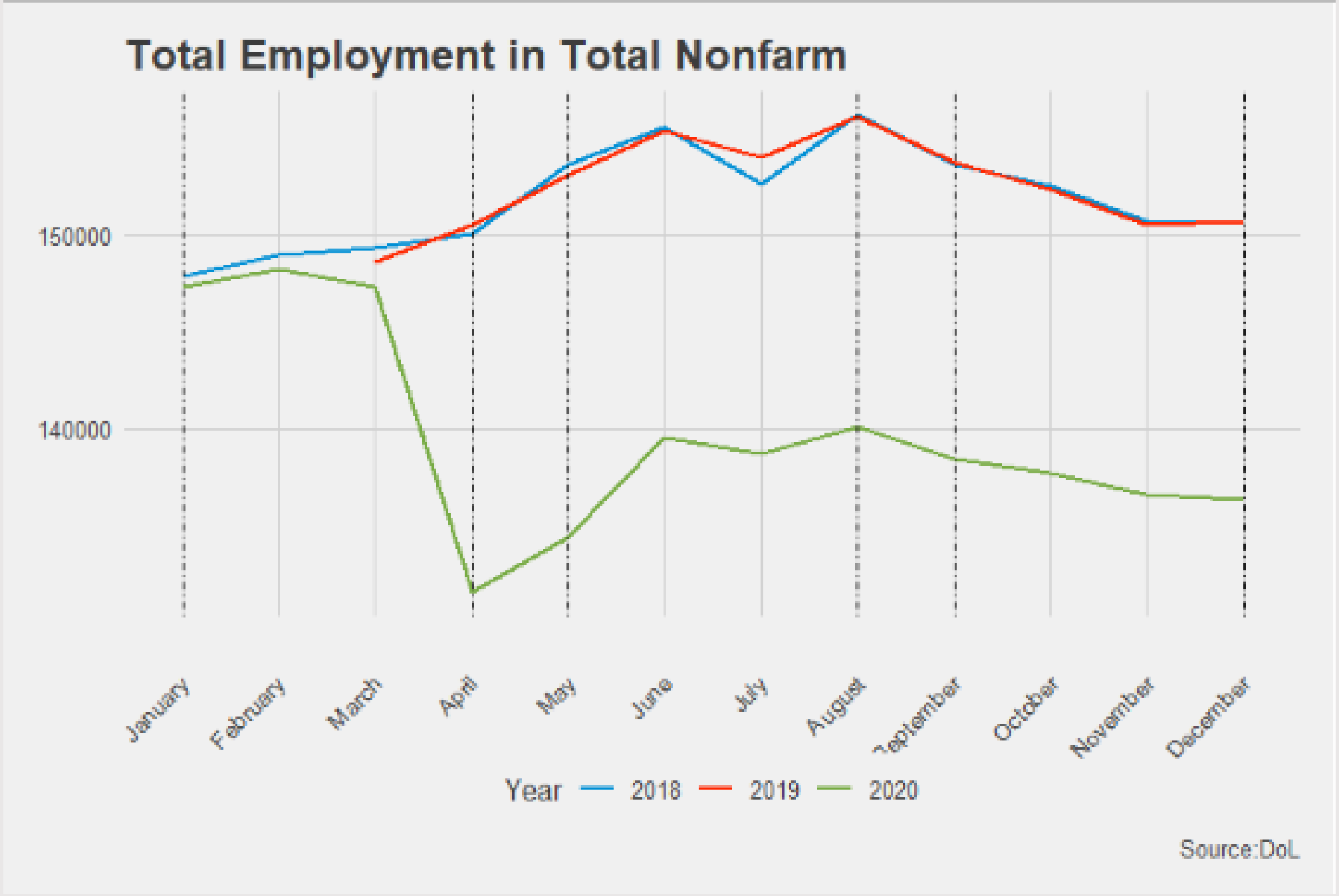
- Greater declines for Latinx, youth, women, large families, less-educated, Face-to-face jobs (Montenovo et al. 2020 NBER)

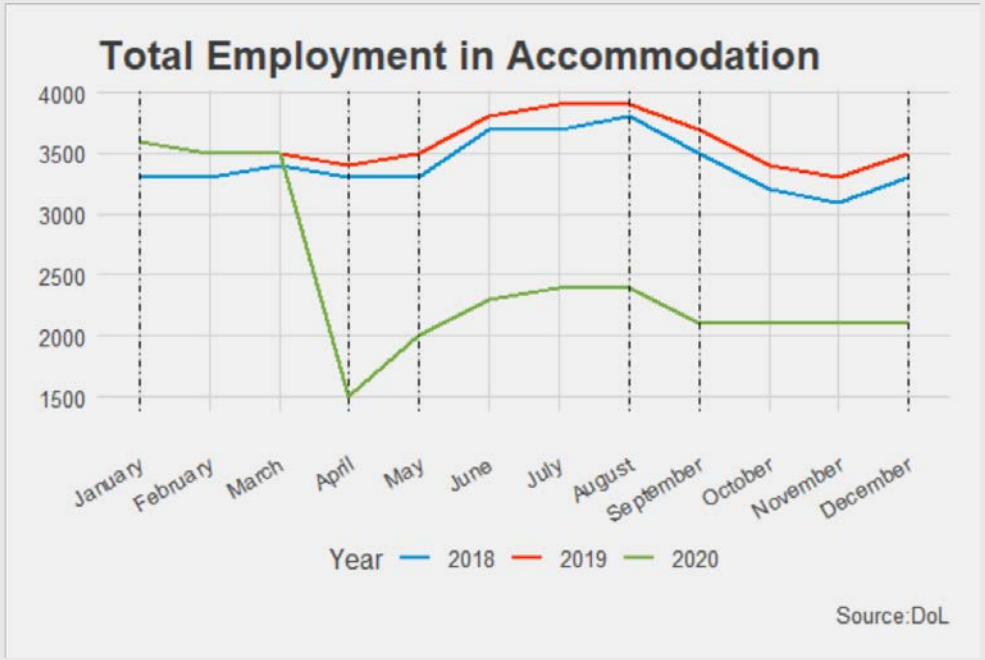
- Unequal recovery – job losses persisted more for African Americans, Latinx didn't catch up (Couch et al 2020 JPubE)

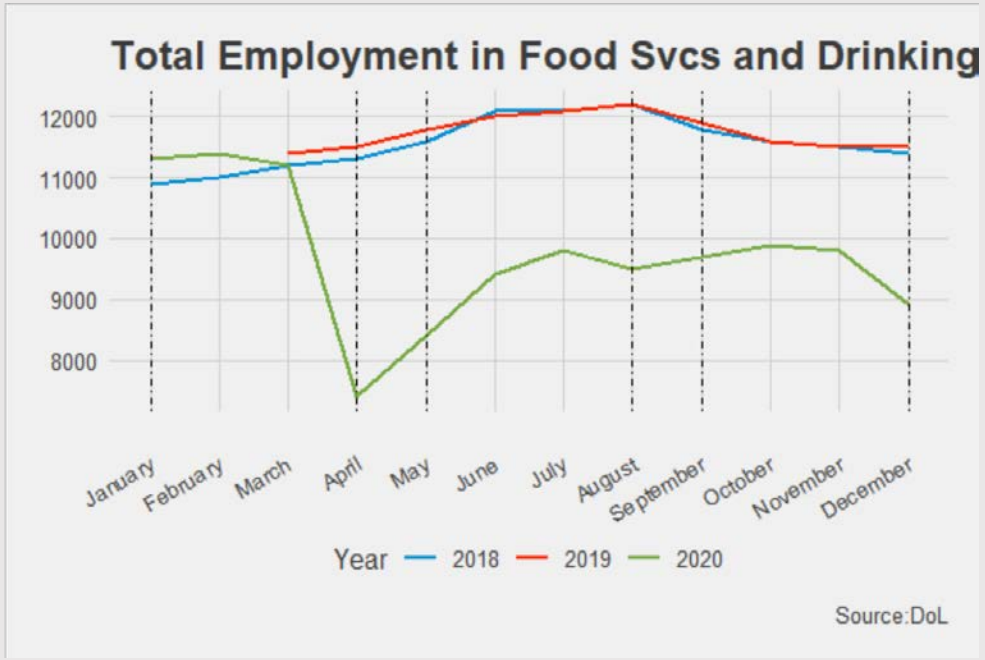



*Notes:* We computed the change in employment rates by demographic group over the three recent recessions National Bureau of Economic Research (2012). Change in employment, in this chart, was computed excluding individuals who are absent from work. The estimates were weighted using the CPS composited final weights.

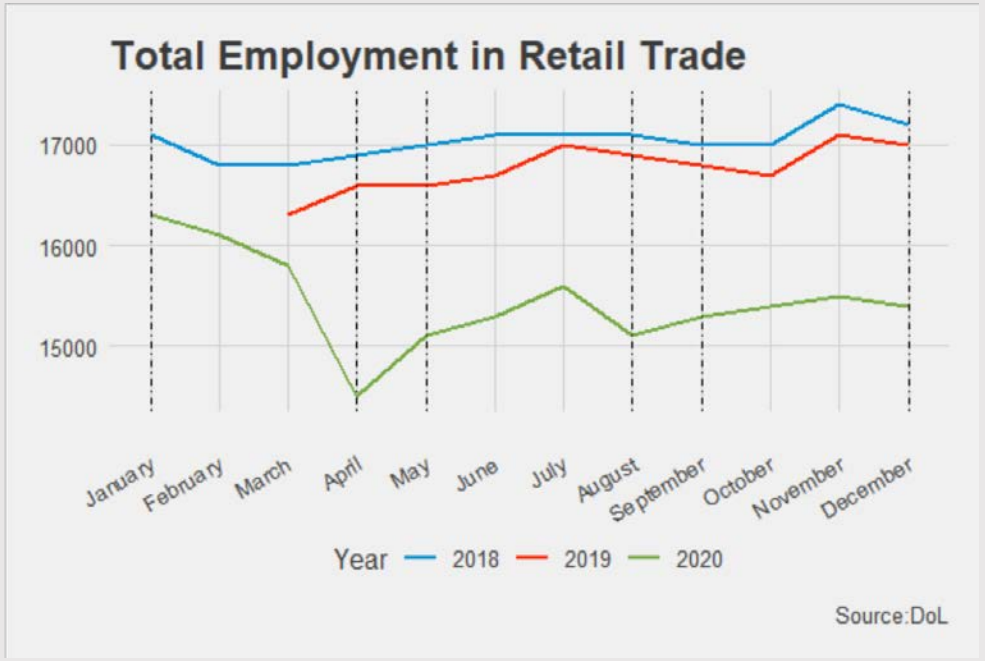
(Montenovo et al. 2020 NBER w27132)


Total Employment in Total Nonfarm
150000
140000
January
February
March
April
May
June
July
August
September
October
November
December
Year
2018
2019
2020
Source:DoL


Total Employment in Accommodation
4000
3500
3000
2500
2000
1500
January
February
March
April
May
June
July
August
September
October
November
December
Year
2018
2019
2020
Source:DoL

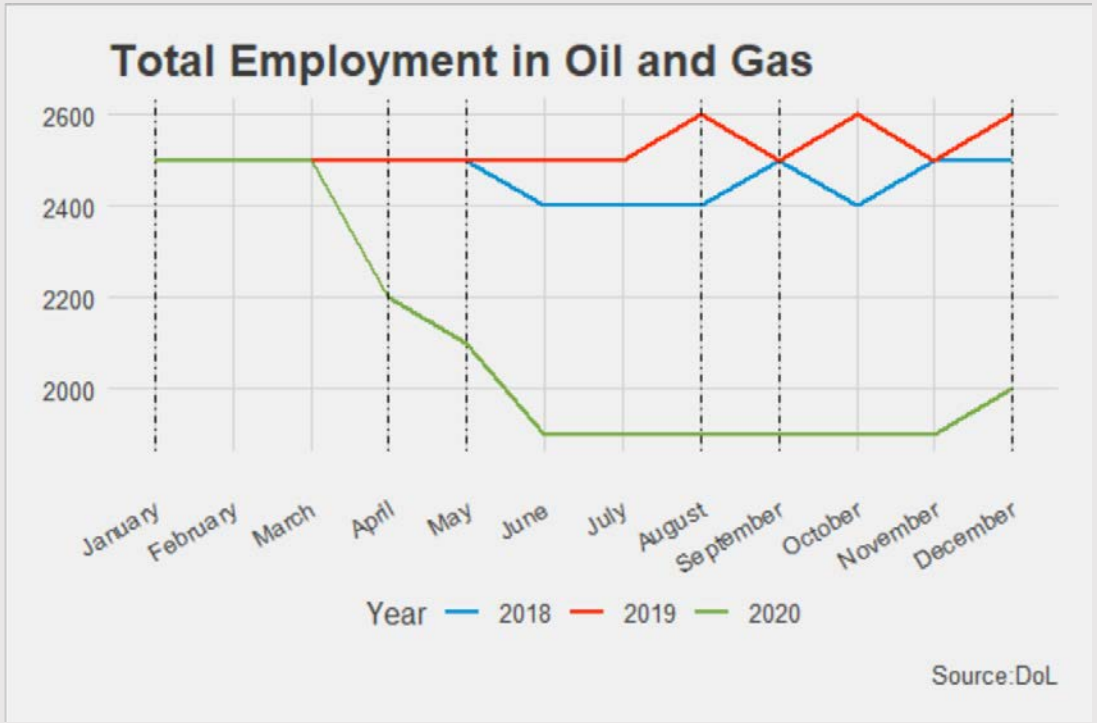

Total Employment in Food Svcs and Drinking
12000
11000
10000
9000
8000
January
February
March
April
May
June
July
August
September
October
November
December
Year
2018
2019
2020
Source:DoL


Total Employment in Leisure and Hospitality
17500
15000
12500
10000
January
February
March
April
May
June
July
August
September
October
November
December
Year
2018
2019
2020
Source:DoL


Total Employment in Retail Trade
17000
16000
15000
January
February
March
April
May
June
July
August
September
October
November
December
Year
2018
2019
2020
Source:DoL

# Simultaneous economic shocks

- COVID-19 impacted oil demand
  - Among other headwinds



# Epidemiological (SIR) Modelling

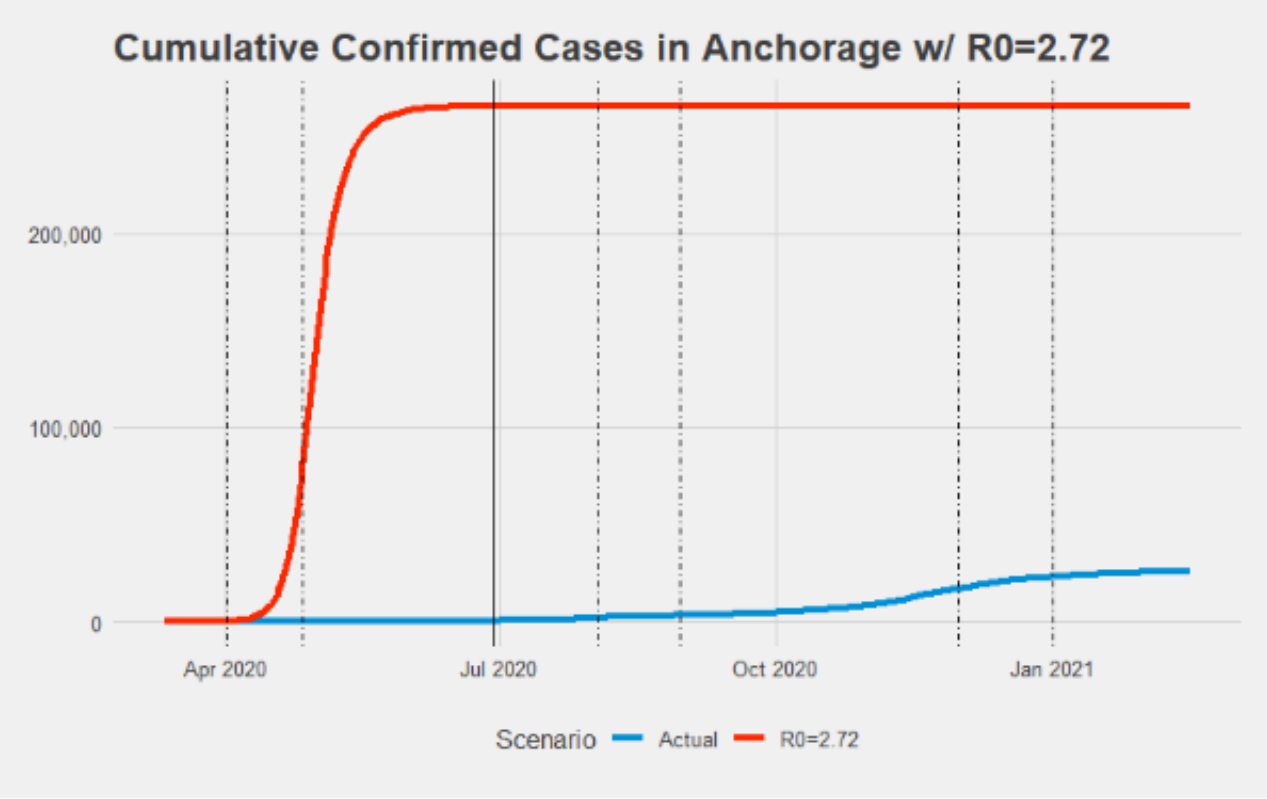
- What would an uncontrolled outbreak with no behavioral response look like?
  - $R_0 =$ number of new cases from first infected person in a population with no history
  - $R_0 = 2.72$ (1.6 - 3.5) (fit on first 2 weeks of cases in Anchorage)
  - Average infectious period of 7 days
  - Population of 290,000
  - Infection Fatality Rate of 0.5%

$$\frac{\partial S}{\partial t} = -R_0 \gamma S(t) \frac{I(t)}{n}$$

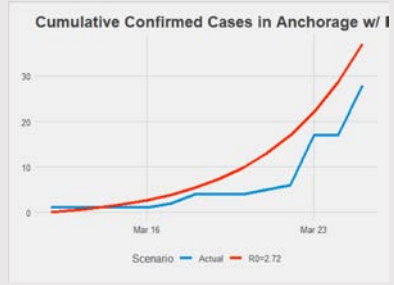
$$\frac{\partial I}{\partial t} = R_0 \gamma S(t) \frac{I(t)}{n} - \gamma I$$

$$\frac{\partial I}{\partial t} = \gamma I(t)$$

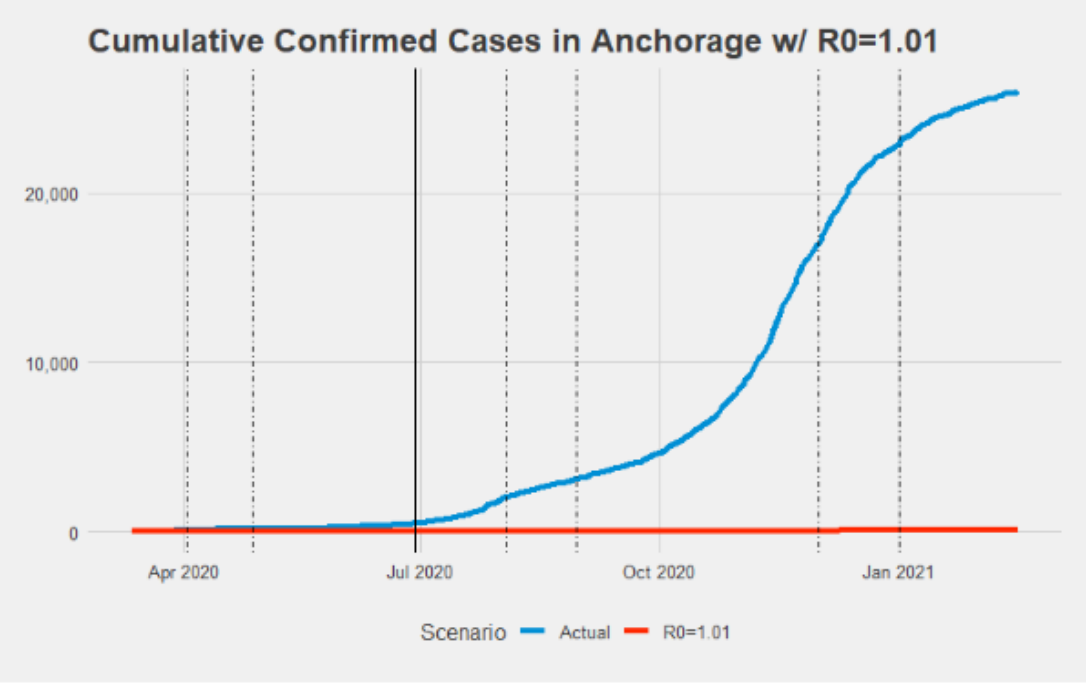
# SIR Modelling with $R_0 = 2.72\ (1.6 - 3.5)$




- Calibrated to first 2 weeks of COVID in Anchorage
  - Consistent with outside estimates of COVID
- 266,000 Cumulative Cases
  - 186,000 - 280,000
- Estimated 1,330 fatalities
  - 930-1,400



# SIR Modelling with $R_0 = 1.01$



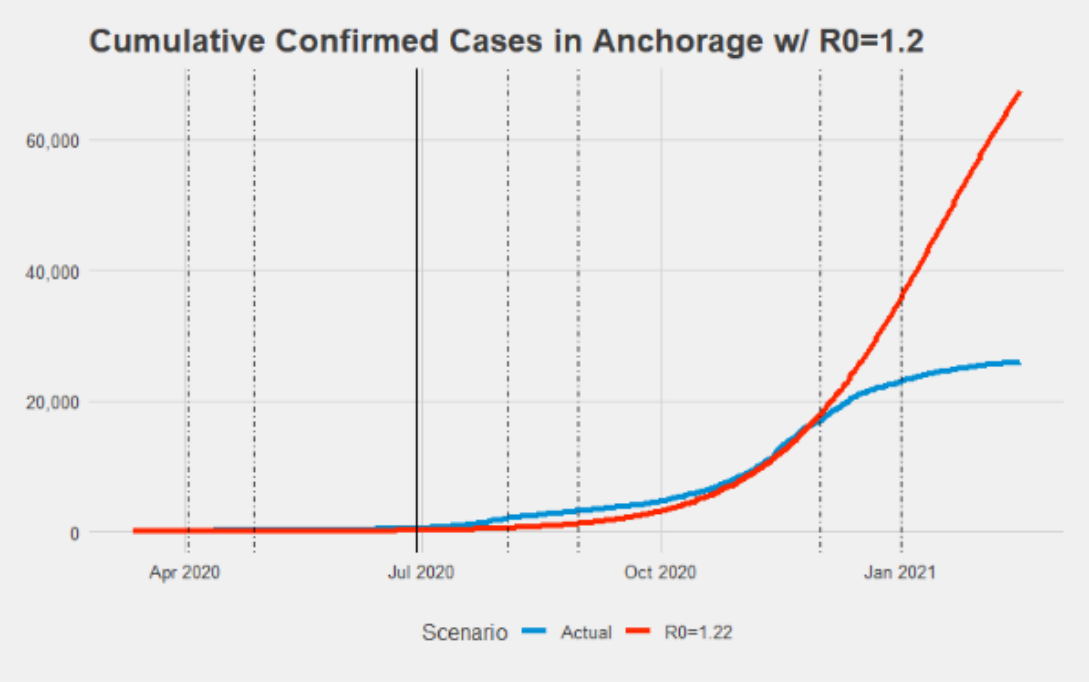

- Assuming effective measures to restrict spread
- 63 Cumulative Cases
- Estimated 0 fatalities

# What has behavioral change saved Anchorage?

- Anchorage Reality
  - 26,053 cumulative cases (~9% of Anchorage has been infected)
  - 150 deaths
- Best estimate
  - 266,000 cumulative cases
  - Estimated 1,330 fatalities
- Avoided mortality costs
  - ~240,000 avoided cumulative cases
  - 1,180 avoided fatalities
  - $8.7 billion in avoided mortality (omitting morbidity, long-term health effects)
    - $5.8 billion -$ 9.3 billion
    - Assuming a VSL of $7.4 million (EPA number)
    - Anchorage GDP in 2019 was $26.4 billion

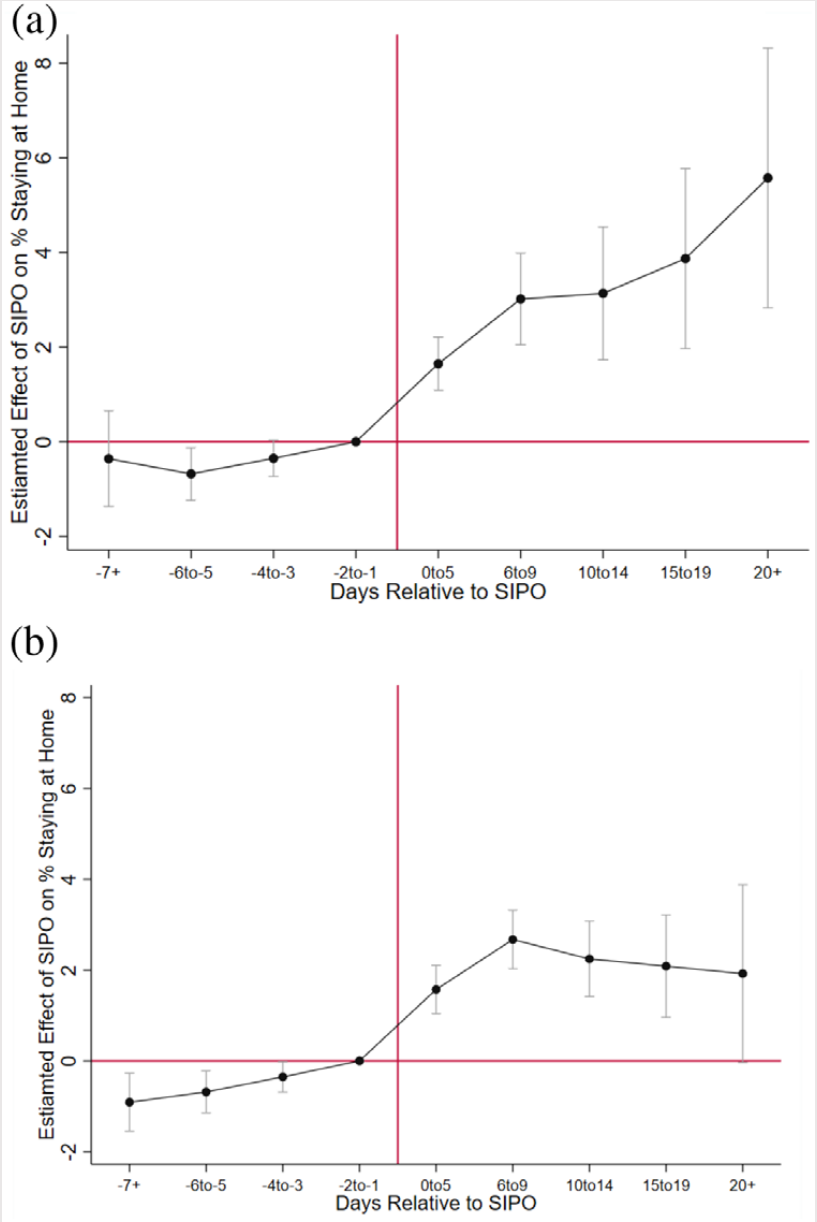
# SIR Modelling

- Fit to entire real curve in Anchorage
- 67,542 Cumulative Cases
- Estimated 337 fatalities
  - VSL ~$1.4 billion



# Shelter-in-place orders reduced spread

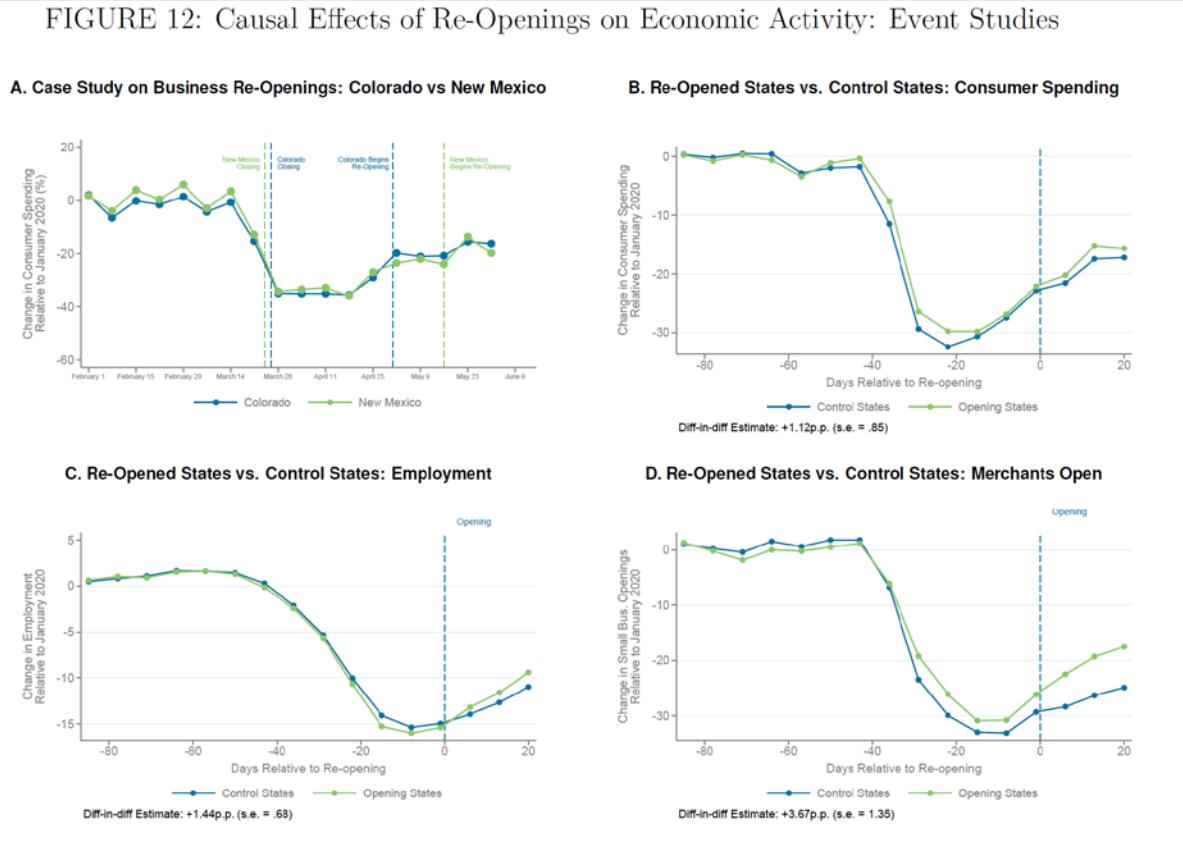
- Shelter in place orders were associated with 9%-10% increase in residents staying home
- 3 weeks after shelter-in-pace order cumulative cases fell by 53.5%
- Lead to significant declines in both cases and COVID-19 related deaths




Dave et al. 2021 Economic Inquiry

Dave et al. 2020
https://www.nber.org/papers/w27091

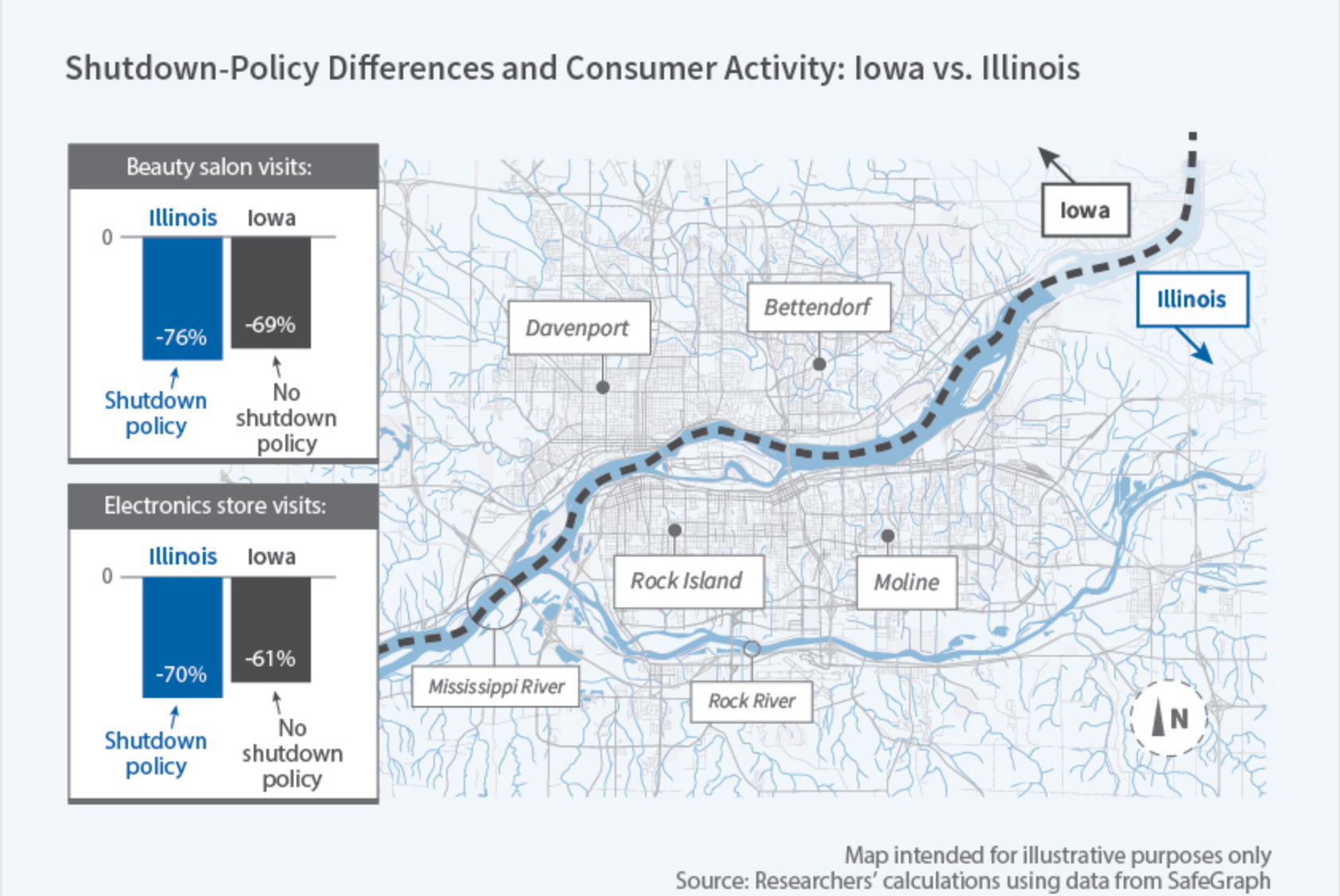
# Reopening has limited effects




- Insufficient evidence to say reopening leads to rapid recovery
- Some portion of the economic damage is due to people avoiding getting sick

Chetty et al. 2020
https://opportunityinsights.org/wp-content/uploads/2020/05/tracker_paper.pdf

# Similar places with different policies



# COVID-19 is the problem (Linn & Meissner)

- Nationwide study using cell phone records and traffic to essential and nonessential retail, entertainment, hotel, restaurant, and business services (https://www.nber.org/papers/w27531 )
- Stay at home restrictions only explain a modest fraction of behavior change
- "Private, self-regulating behavior explains more than three-quarters of the decline in foot traffic in most industries"
  - Smaller declines in essential retail
- Public school closures have a substantial effect on economic activity

# COVID-19 is the problem (Goolsbee & Syverson)

- Study of 2.25 million businesses in 110 industries showed 60 percentage point decline in economic activity during COVID (https://www.nber.org/papers/w27432 )
  - Only 12% of the decline was due to legal restrictions
  - Traffic started dropping before orders in place, tied to # COVID deaths
  - Clear shift towards smaller, less busy locations

# We can’t just return to normal

- Lockdowns are extreme
  - They work at reducing cases and reducing fatalities
- They come with serious economic costs
  - Domestic violence/lost education/mental health/substance abuse
- We can’t just turn them off - they replace voluntary avoidance behavior
  - People choose to avoid going out

- Can we get the reduction in spread with less economic damage?
  - Allow people to get closer to normal life
  - Encourage economic stability/recovery

# Cost of shelter-in-place behavior

- Lack of evidence of an increase in suicide in Anchorage
- Lack of evidence of increased crime in Anchorage
- Evidence of a fall in academic achievement in schools
  - Increase in incomplete grades in ASD
  - Evidence that schools are not a driver of disease transmission (Oster et al.)
- Evidence of an increase in calls to domestic violence and sexual assault organizations

# Cost of shelter-in-place behavior

- 7.5% increase in calls related to DV call centers (Leslie & Wilson 2020 JPubE)
- 9.7% increase in calls during first 5 weeks of shelter-in-place orders
- Closures and stay at home orders came after the start of increased DV
  - Suggesting it was not a response to mandated quarantine/wont easily reverse
- Lockdowns lead to large increases in calls from areas without recent history of calls
  - New calls being placed
  - In blocks with a history the impact is small
- Effects not driven by demographic/income/industry

# The tradeoff we face

Lockdowns have a positive Benefit/Cost ratio

- The tradeoff is not lockdowns vs return to normal

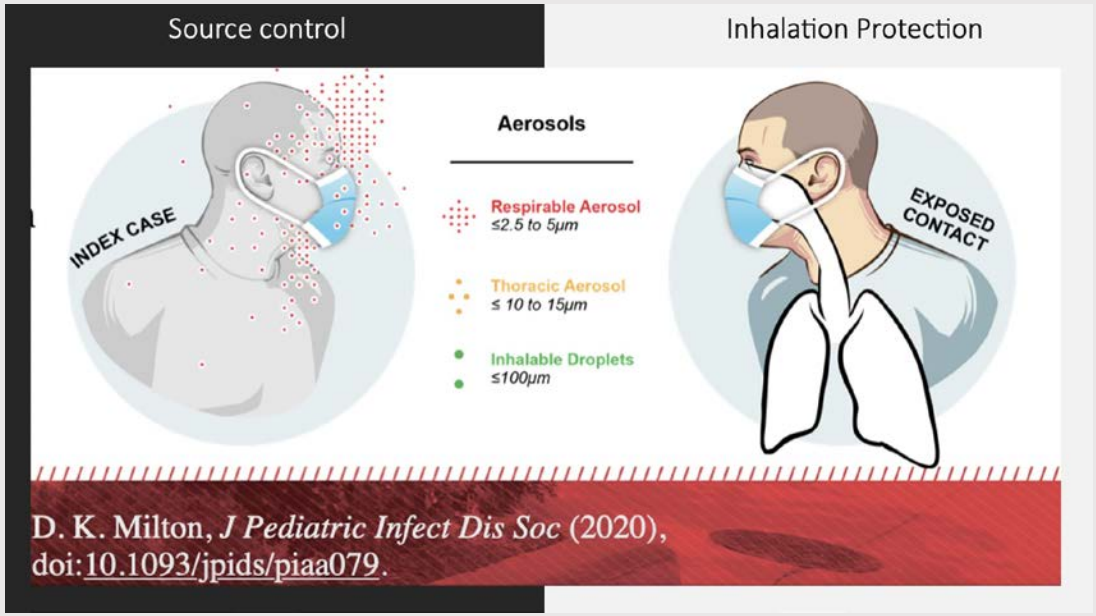
Lockdowns are not the only option

- Masks, social distancing, limiting groups sizes and lower cost restrictions reduce spread
  - Reduce the spread of the virus (harm to human health)
  - Reduce voluntary avoidance behavior (economic harm)
  - Avoid risk of lockdowns in future

Targeted interventions avoid need for blanket untargeted policy

- Mask mandates, social distancing et al. allow us to avoid lockdowns

# Masks as Non-Pharmaceutical Interventions




- Masks are a commonly referenced NPI
- They work through two mechanisms
  - Source Control
    - Reduce particulates 50%-70%, slow remaining ones https://t.co/Z6NXg7hK0Y?amp=1
  - Inhalation Protection
- From an economic perspective, these are
  - Community Protection
  - Self-Protection

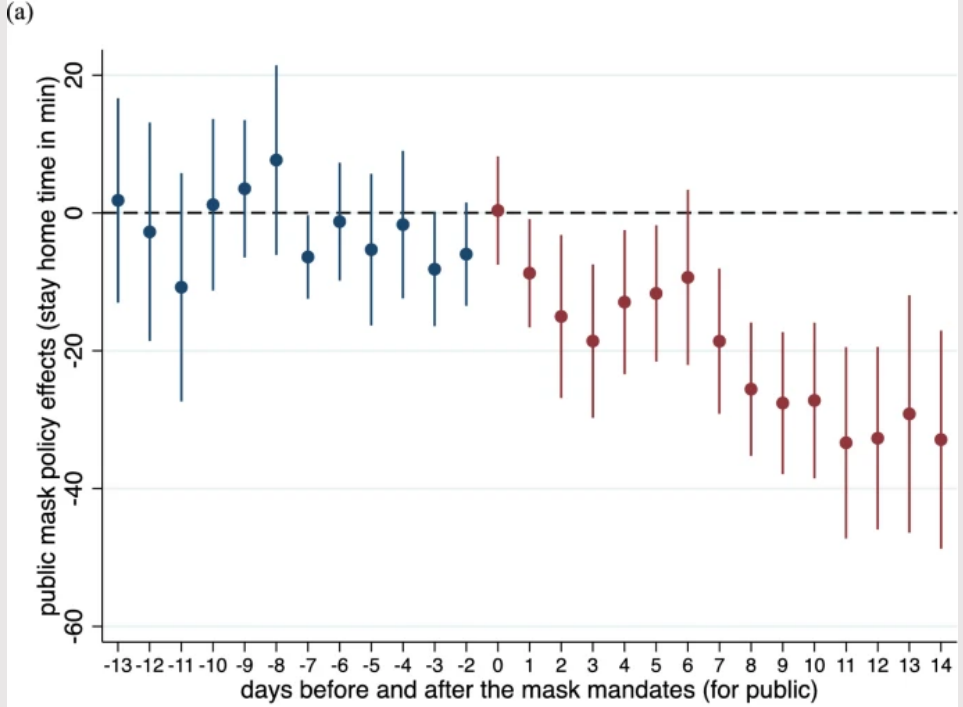
  https://pubmed.ncbi.nlm.nih.gov/32709611/

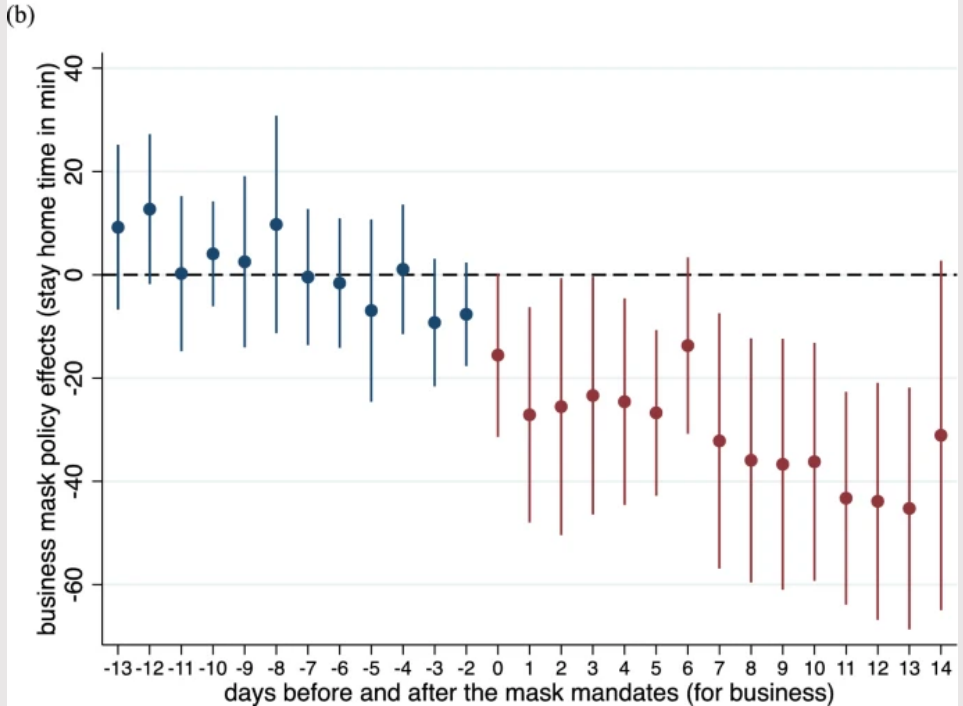
# Evidence on Masks

- And we know the benefits of mask wearing
  - They reduce exposure through filtration https://t.co/MvNh4gKv2M?amp=1
  - Hair stylist study: https://t.co/7OzVHtHB3e?amp=1
    - 2 sick stylists, 139 clients, none of 67 interviewed got sick
  - Beijing Study: 124 households with sick member, masks reduced secondary cases by 79% https://t.co/9ao9pc5q0O?amp=1
  - Thailand retrospective: those who "always wore masks" had 70% less transmission https://t.co/nCYoTrvQsC?amp=1
  - USS Theodore Roosevelt: Mask wearing reduced transmission 70% https://t.co/533EIVLHfP?amp=1
  - Et al.

# Masks and Risk Tradeoffs

- Facemasks are effective and a common response
- People make tradeoffs in response to risk
- Americans subject to mask mandates spend 11-24 fewer minutes at home on average



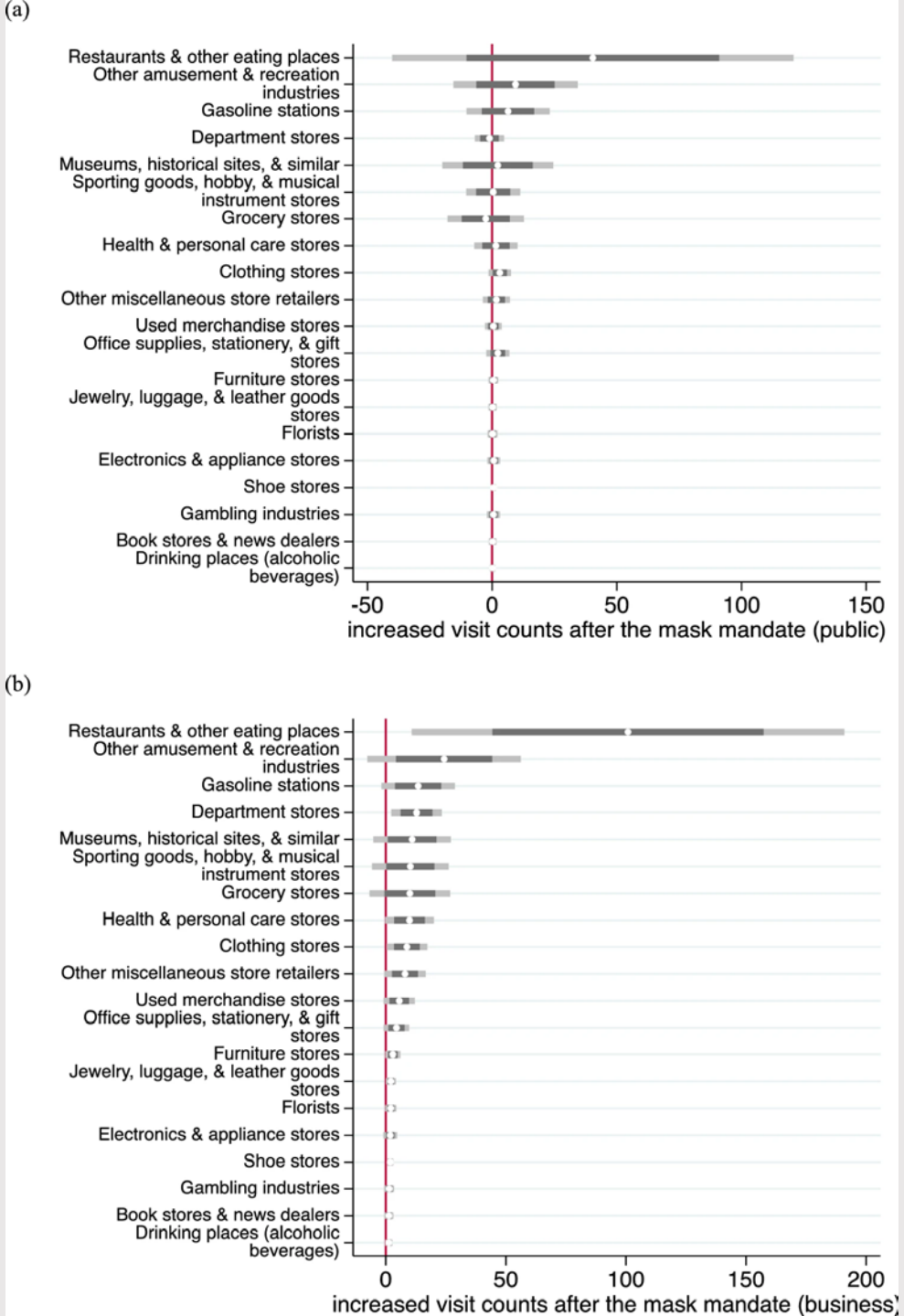




Yan et al. 2021 https://www.nature.com/articles/s41598-021-82574-w

# Masks and Risk Tradeoffs

- Americans increased their time spent at restaurants and other eating places the most
  - Likely takeout
- This suggests they're an important part of economic recovery
- Unclear what the impact is on overall risk

Yan et al. 2021 https://www.nature.com/articles/s41598-021-82574-w



# A thought experiment

Assume not everyone is the same:

1. Some people living life as normal
2. Some people reducing their time away from home
3. Some people 100% hunkered down

How many people in group 2 and 3 can be made to feel safe so that they increase spending to justify a mask mandate?

- What is the cost of a mask mandate?
  - ~0

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