

# Identifying Lead Effects of COVID-19 in Texas



512-A Human Centered Data Science Project (MSDS)

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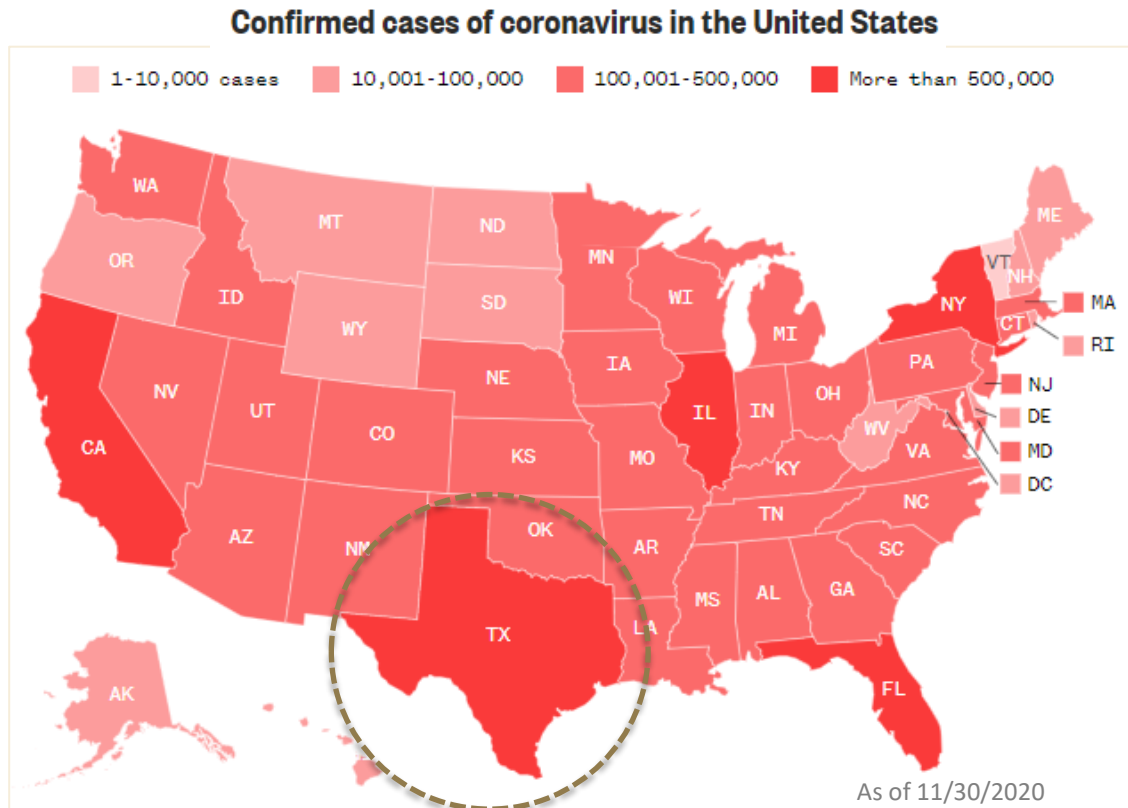


# What are lead effects?

- > Example:
  - Increase in traffic on Redfin website today leads to an increase in home sales 3 months later
  - 3 months is the lead effect of traffic on house sales
- > Early Indicator of future crisis in our context

# Motivation

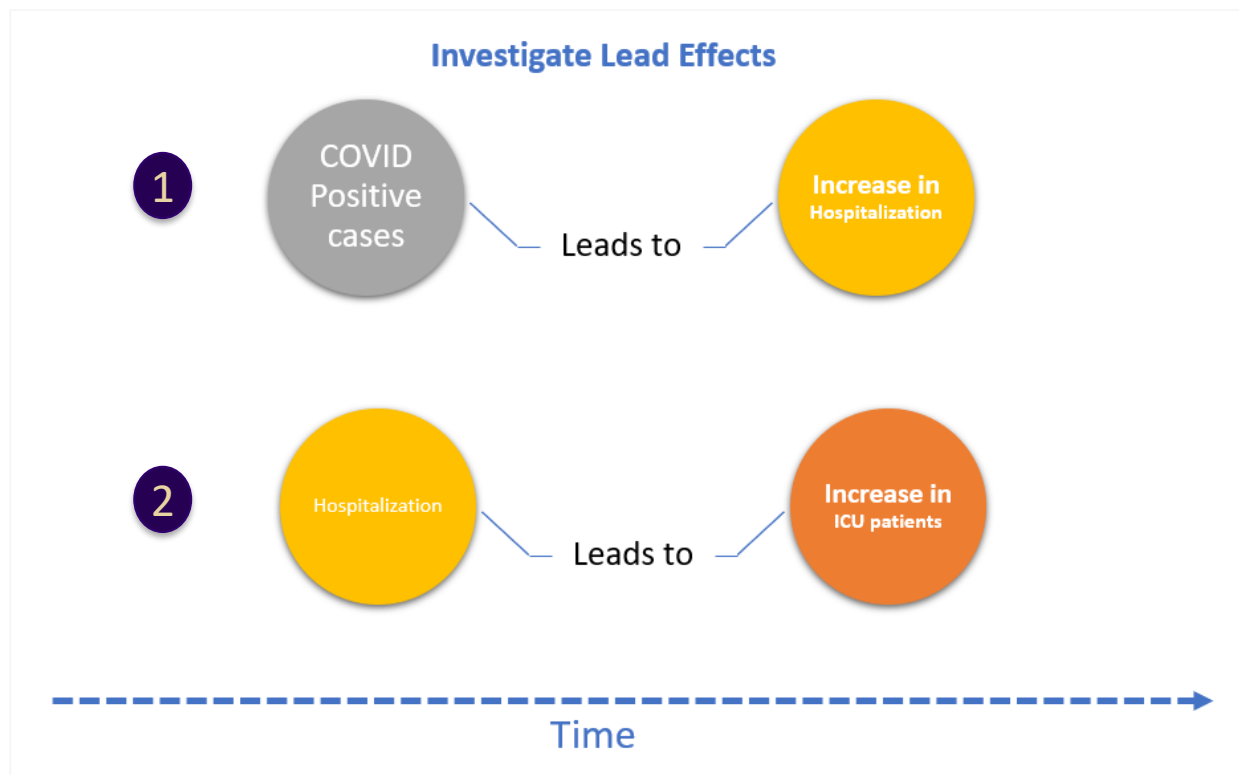
- > Unprecedented public health and economic crisis in the U.S due to COVID-19
- > Texas has surpassed California in recording highest number of positive cases
- > Identifying early indicators for proactive planning of health care resources in Texas



Source: [NBC news article](#)

# Research questions:

- 1 Is there a statistically significant relationship between COVID cases in Texas and hospitalization X days later?
- 2 Is there a statistically significant relationship between hospitalization in Texas and ICU patients X days later?



# Methodology:

1 **Question:** Is there a statistically significant relationship between COVID cases in Texas and hospitalization X days later?

- **Null hypothesis:** Increase in positive cases in Texas do not lead to an increase in hospitalization X days later
- **Alternate hypothesis:** Increase in positive cases in Texas lead to an increase in hospitalization X days later

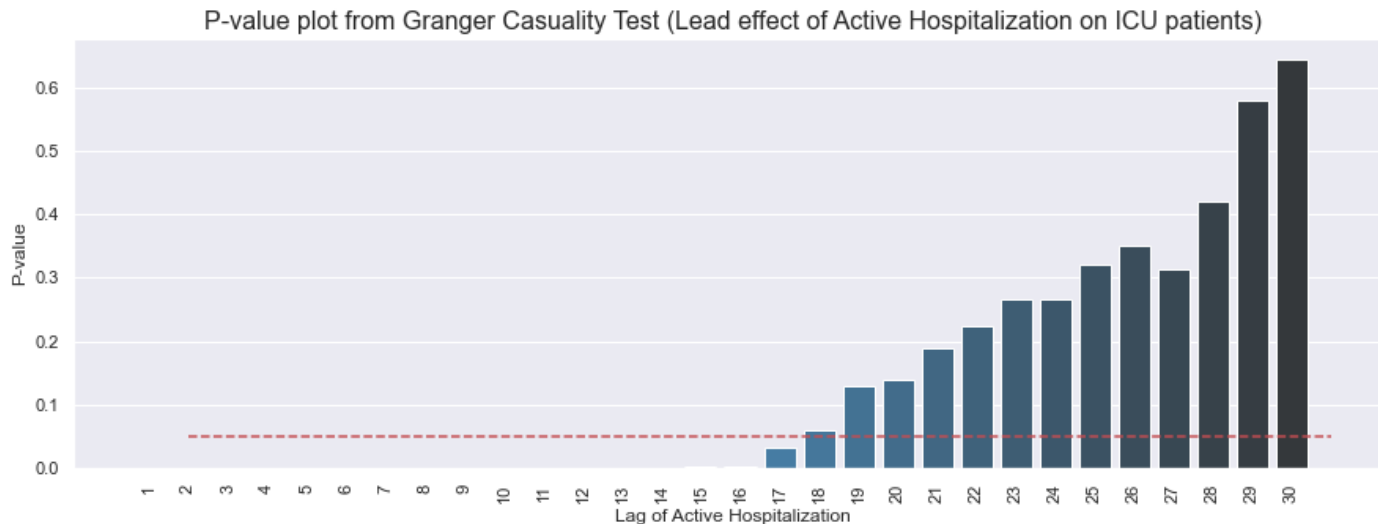
2 **Question:** Is there a statistically significant relationship between hospitalization in Texas and ICU patients X days later?

- **Null hypothesis:** Increase in hospitalization in Texas do not lead to an increase in ICU patients X days later
- **Alternate hypothesis:** Increase in hospitalization in Texas lead to an increase in ICU Patients X days later

# Findings:

- 1 We did not find any evidence that increase in positive cases leads to an increase in hospitalization for any lead day
- 2 We did find evidence that increase in hospitalization leads to an increase in ICU patients up to 17 days later

2



# Implications:

- > The outcome of study can potentially help Texas department of state and health services:
  - Proactive planning for ICU beds for next 17 days when see an increase in hospitalization
- > Encourages other researchers to identify and investigate other confounding factors that can impact hospitalization such as the role of weather

# THANK YOU

#weareallinthis together

[GitHub link for the project](#)

