A simple *Science* Template

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Abstract

** Things to be edited: Remove any language associating a country's ownership of a variant. It comes off as accusatory. Change Dade figures to Miami-Dade and change South Africa to B.1.351 Maybe save any conclusive commentary for the conclusion. Leave the paragraphs after each section as pure 'results' analysis Holiday/Fatalities missing dallas and houston

Introduction. Explain why the study was necessary and explain what we looked at.

1 The Impact of Virulent COVID-19 Variant Strains

In figures 2-6, the 14 day moving average of daily new COVID-19 cases, hospitalizations, and fatalities per day in 9 counties are displayed on a logarithmic scale (log_{10}) with vertical line overlays representing the dates when five sophisticated COVID-19 variant strains were first detected in their respective population. The counties assessed are Miami-Dade County, Florida; Broward County, Florida; Orange County, Florida; Los Angeles County, California; San Bernardino County, California; San Francisco County, California; Travis County, Texas; Dallas County, Texas; and Harris County, Texas. The genomic isolation dates of the COVID-19 variant strains in figures 2-10 are belonging to: CAL.20C (of lineage B.1.429), first isolated in California; B.1.1.207, first isolated in Nigeria; B.1.1.7 (aka VOC-202012/01, and as lineage B.1.1.7, or 20I/501Y.V1), first isolated in the United Kingdom; B.1.351 (aka 20H/501Y.V2, formerly known as 20C/501Y.V2), first isolated in South Africa; and P.1 (of lineage B.1.1.248), first isolated in Tokyo, and colloquially referred to as the Brazilian variant.

1.1 COVID-19 Variants and Daily New COVID-19 Cases

1: 01-Jul-2020 - Variant CAL.20C first isolated (California)
2: 03-Aug-2020 - Variant B.1.1.207 first isolated (Nigeria)
3: 20-Sep-2020 - Variant B.1.1.7. first isolated (UK)
4: 18-Dec-2020 - Variant 501.V2 first isolated (South Africa)
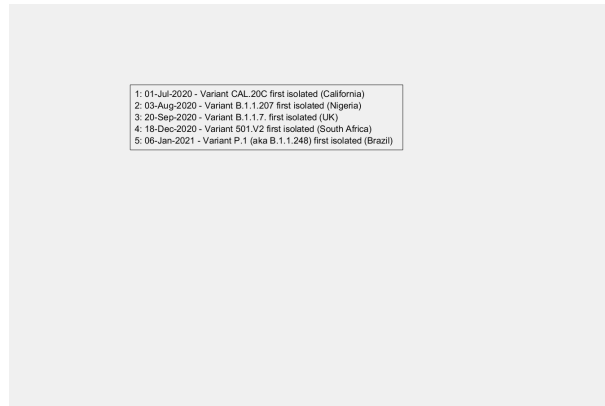5: 06-Jan-2021 - Variant P.1 (aka B.1.1.248) first isolated (Brazil)

Figure 1: Listed above are five uniquely infectious variant strains of COVID-19, listed corresponding to the date in which they were first genetically sequenced and isolated in their respective region.
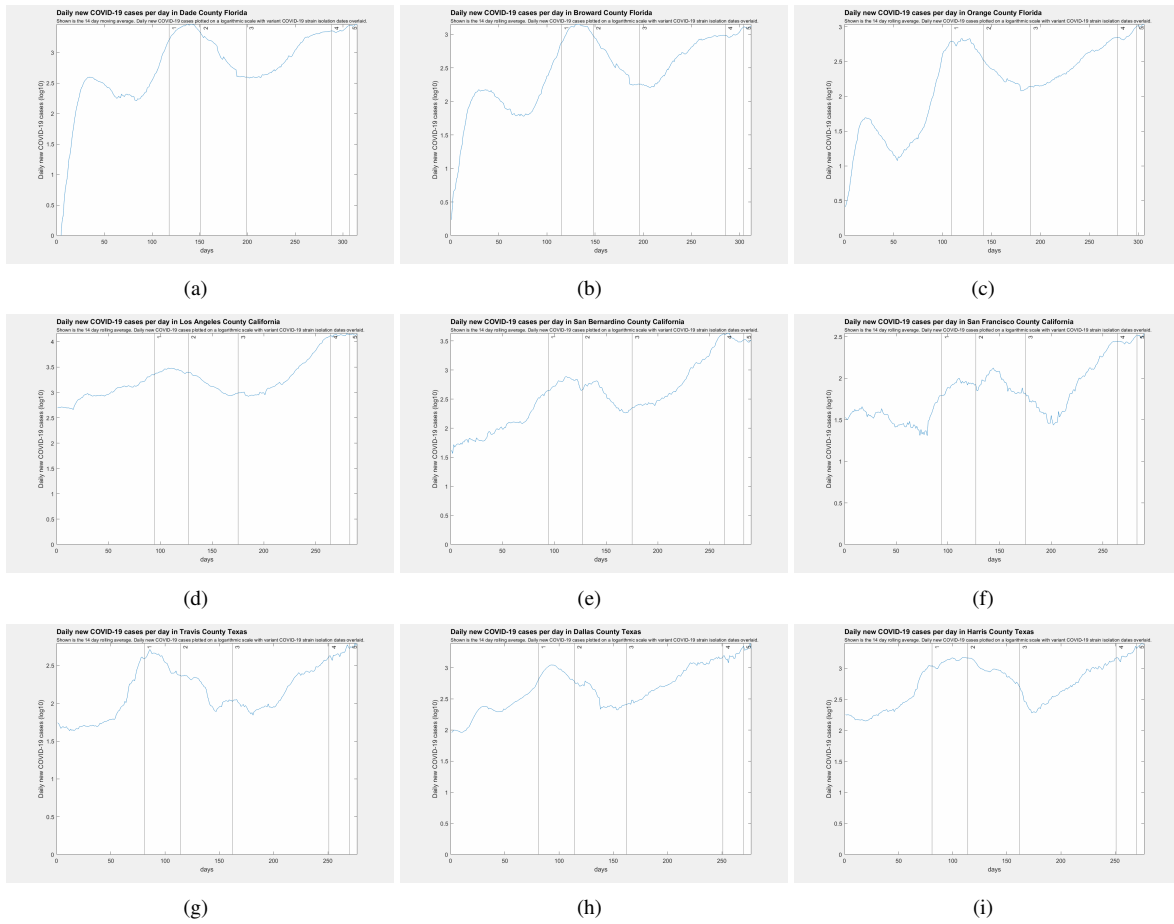
Figure 2: (a) blah (b) blah (c) blah (d) blah

1.2 COVID-19 Variants and Daily New COVID-19 Hospitalizations

1: 01-Jul-2020 - Variant CAL.20C first isolated (California)
2: 03-Aug-2020 - Variant B.1.1.207 first isolated (Nigeria)
3: 20-Sep-2020 - Variant B.1.1.7. first isolated (UK)
4: 18-Dec-2020 - Variant 501.V2 first isolated (South Africa)
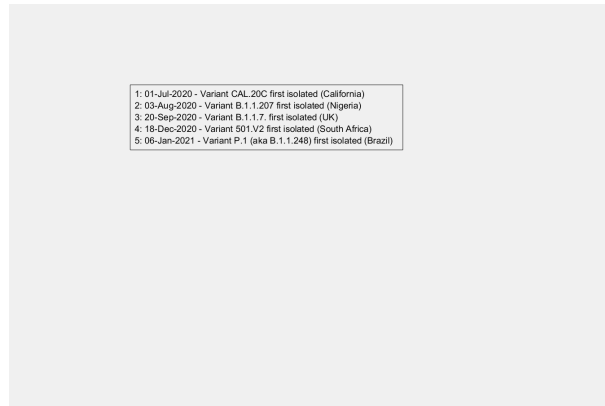5: 06-Jan-2021 - Variant P.1 (aka B.1.1.248) first isolated (Brazil)

Figure 3: Listed above are five uniquely infectious variant strains of COVID-19, listed corresponding to the date in which they were first genetically sequenced and isolated in their respective region.
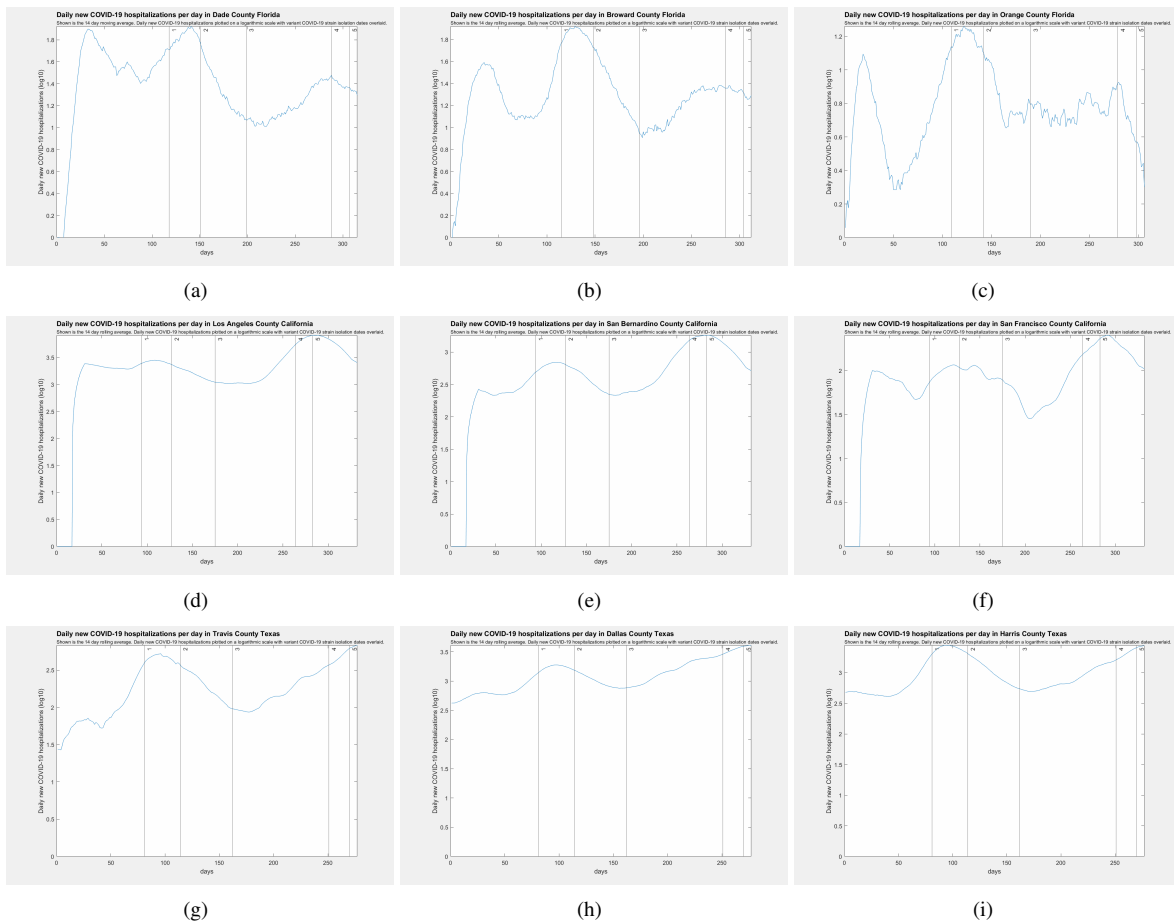
(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

(i)

Figure 4: (a) blah (b) blah (c) blah (d) blah

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1.3 COVID-19 Variants and Daily New COVID-19 Fatalities

1: 01-Jul-2020 - Variant CAL.20C first isolated (California)
2: 03-Aug-2020 - Variant B.1.1.207 first isolated (Nigeria)
3: 20-Sep-2020 - Variant B.1.1.7. first isolated (UK)
4: 18-Dec-2020 - Variant 501.V2 first isolated (South Africa)
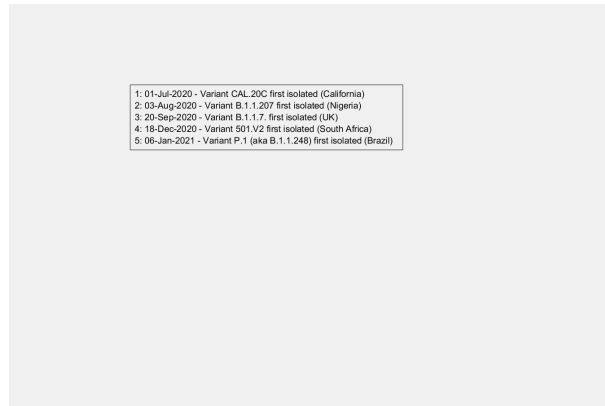5: 06-Jan-2021 - Variant P.1 (aka B.1.1.248) first isolated (Brazil)

Figure 5: Listed above are five uniquely infectious variant strains of COVID-19, listed corresponding to the date in which they were first genetically sequenced and isolated in their respective region.
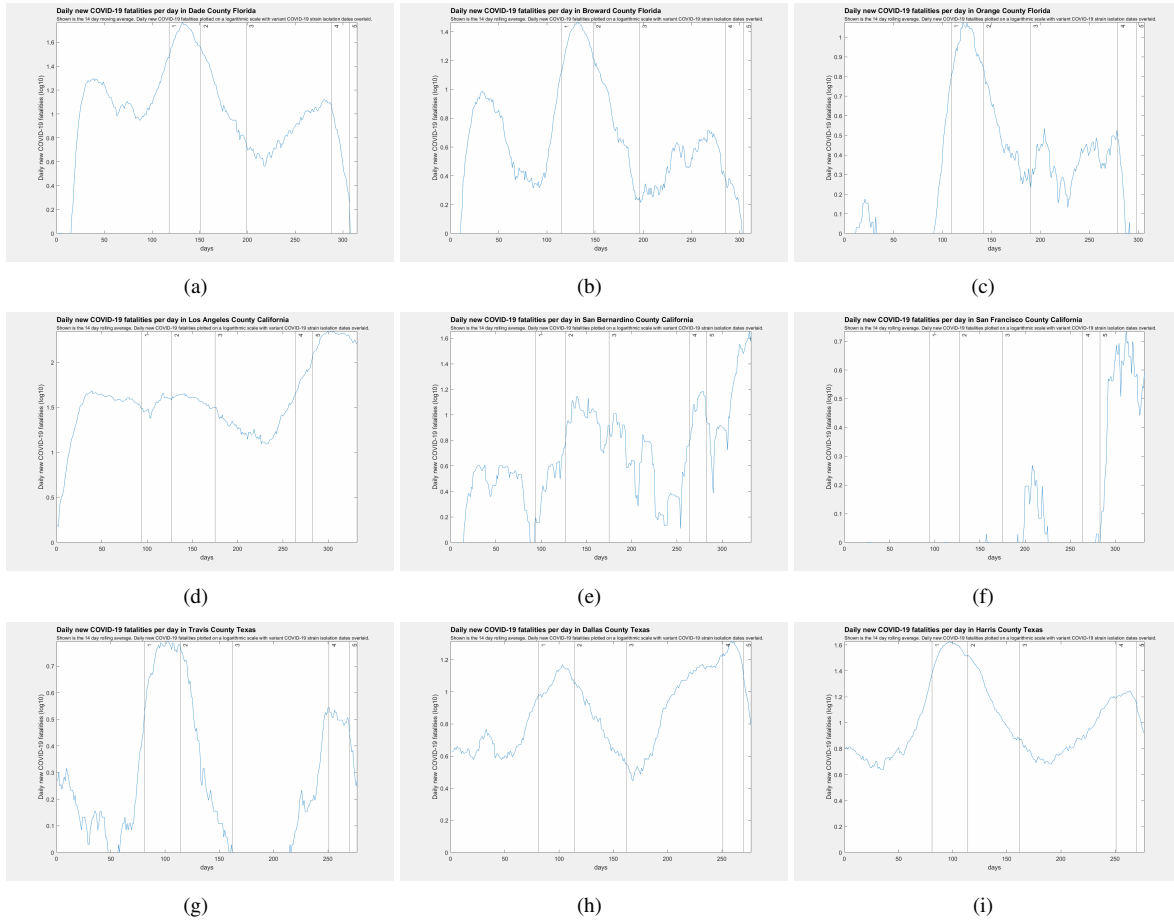
Figure 6: (a) blah (b) blah (c) blah (d) blah

2 The Impact of National Holidays

In figures X-X, the 14 day moving average of daily new COVID-19 cases, hospitalizations and fatalities per day in 9 counties is displayed on a logarithmic scale (log_{10}) with vertical line overlays representing the dates of several national and seasonal holidays have occurred. The counties assessed are Miami-Dade County, Florida; Broward County, Florida; Orange County, Florida; Los Angeles County, California; San Bernardino County, California; San Francisco County, California; Travis County, Texas; Dallas County, Texas; and Harris County, Texas.

2.1 Holidays and Daily New COVID-19 Cases

1: 16-Mar-2020 - Spring Break starts
2: 01-May-2020 - Labor Day
3: 04-Jul-2020 - July 4th
4: 31-Oct-2020 - Halloween
5: 26-Nov-2020 - Thanksgiving
6: 25-Dec-2020 - Christmas
7: 01-Jan-2021 - New Years Day

Figure 7

(a)   (b)   (c)

(d)   (e)   (f)

(g)   (h)   (i)
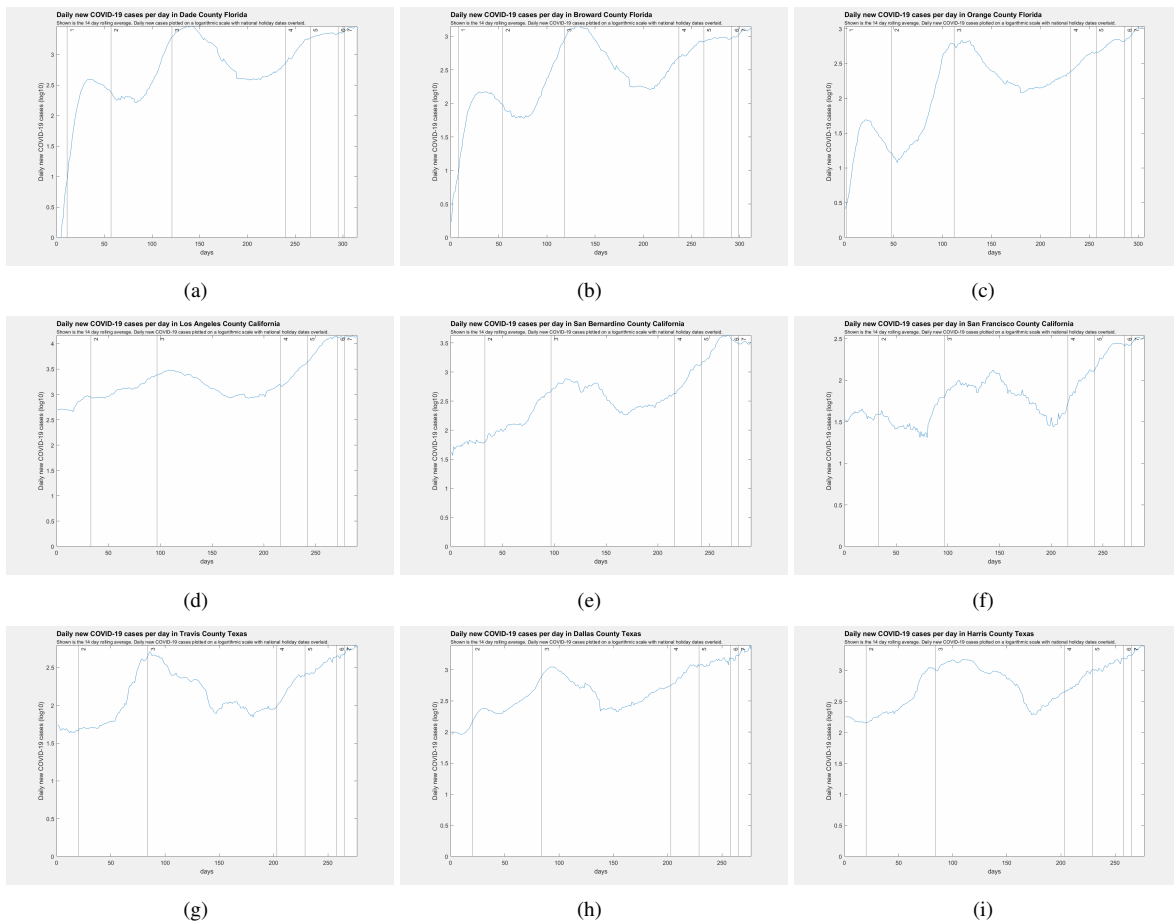
Figure 8: (a) blah (b) blah (c) blah (d) blah

2.2 Holidays and Daily New COVID-19 Hospitalizations

1: 16-Mar-2020 - Spring Break starts
2: 01-May-2020 - Labor Day
3: 04-Jul-2020 - July 4th
4: 31-Oct-2020 - Halloween
5: 26-Nov-2020 - Thanksgiving
6: 25-Dec-2020 - Christmas
7: 01-Jan-2021 - New Years Day

Figure 9

(a)

(b)

(c)

(d)

(e)

(f)

(g)

(h)

(i)
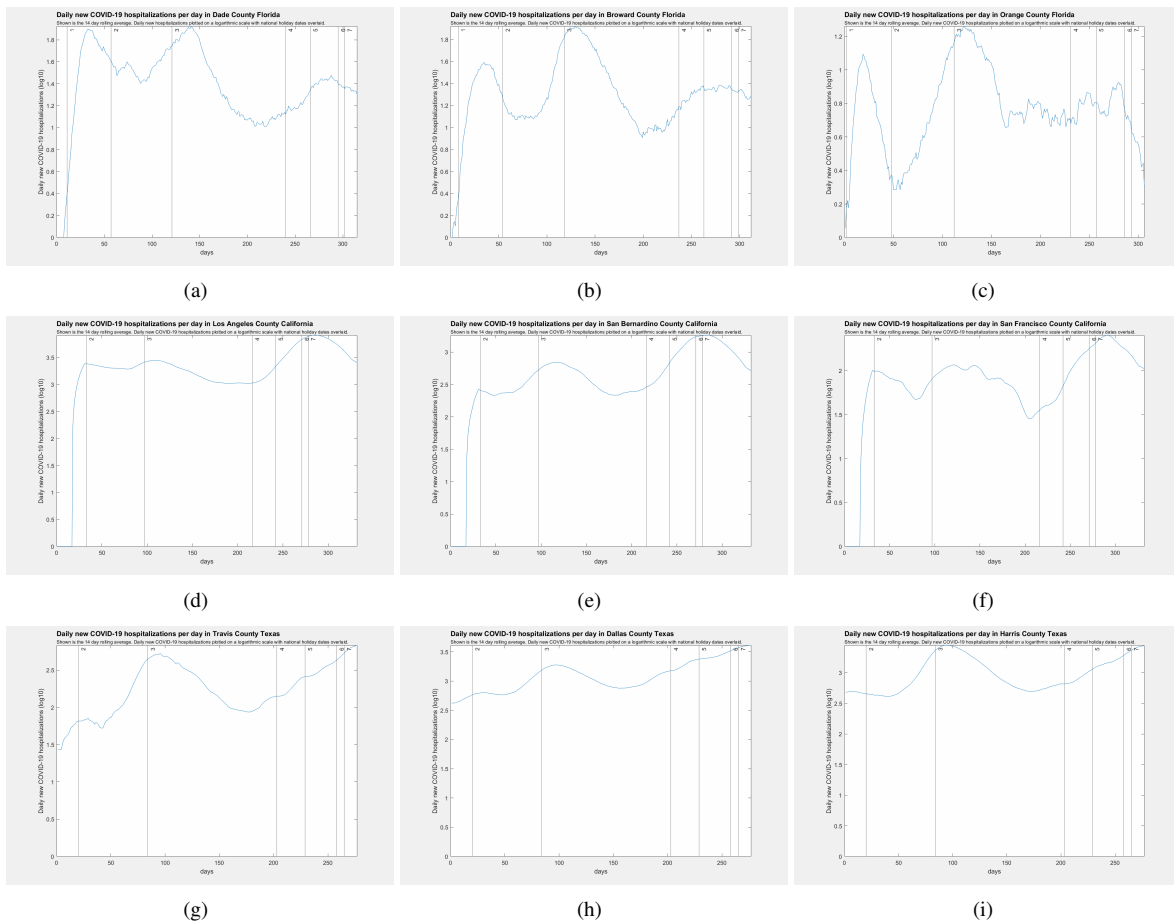
Figure 10: (a) blah (b) blah (c) blah (d) blah

2.3 Holidays and Daily New COVID-19 Fatalities

1: 16-Mar-2020 - Spring Break starts
2: 01-May-2020 - Labor Day
3: 04-Jul-2020 - July 4th
4: 31-Oct-2020 - Halloween
5: 26-Nov-2020 - Thanksgiving
6: 25-Dec-2020 - Christmas
7: 01-Jan-2021 - New Years Day
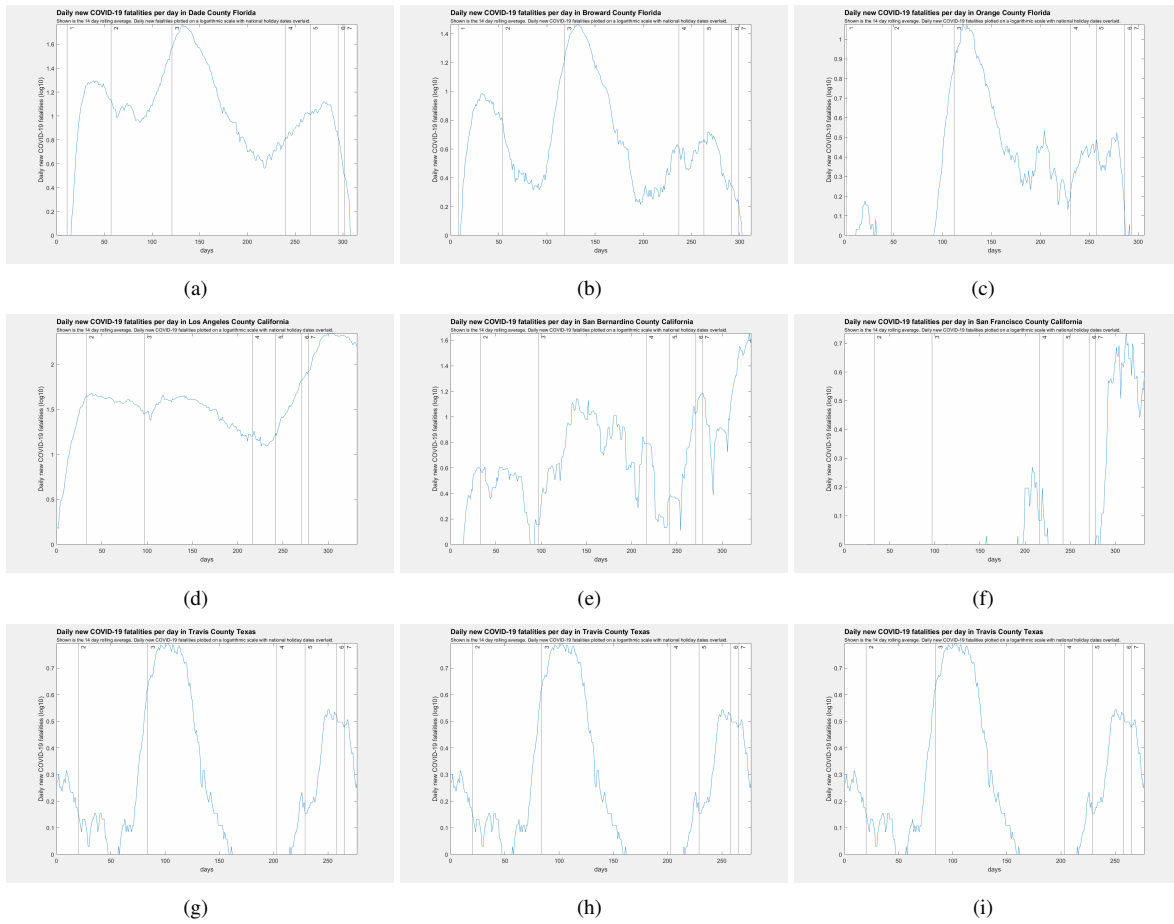
Figure 11

Figure 12: (a) blah (b) blah (c) blah (d) blah * add dallas and harris county here

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3 Government Mask Order Mandates

In figures XX-XX, the 14 day moving average of daily new COVID-19 cases, hospitalizations, and fatalities per day in 9 counties is displayed on a logarithmic scale (log_{10}) with vertical line overlays representing the dates in which local and state mask order dates were initiated. The counties assessed are Miami-Dade County, Florida; Broward County, Florida; Orange County, Florida; Los Angeles County, California; San Bernardino County, California; San Francisco County, California; Travis County, Texas; Dallas County, Texas; and Harris County, Texas.

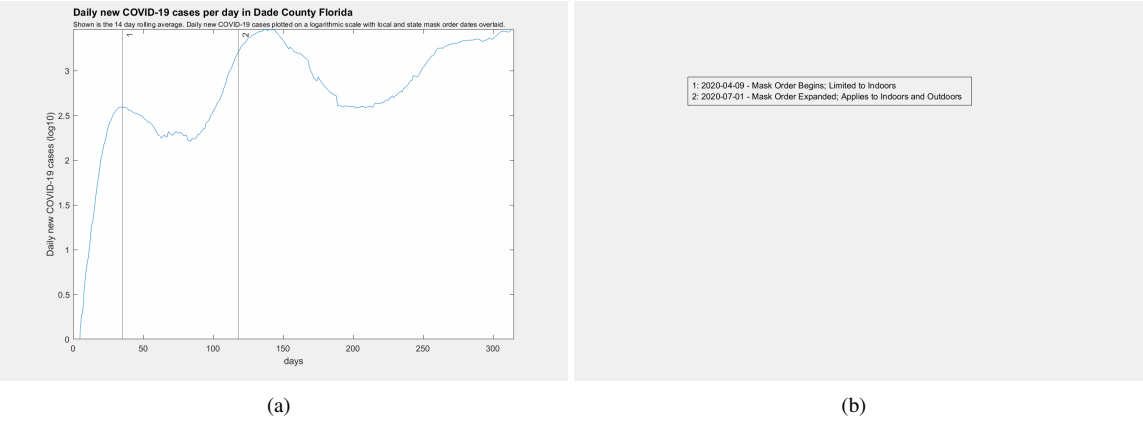## 3.1 Mask Order Mandates and Daily New COVID-19 Cases

Daily new COVID-19 cases per day in Dade County Florida
Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-04-09 - Mask Order Begins; Limited to Indoors
2: 2020-07-01 - Mask Order Expanded; Applies to Indoors and Outdoors

(a)   (b)

Figure 13: (a) blah (b) blah

Daily new COVID-19 cases per day in Broward County Florida
Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-04-10 - Mask Mandate Begins; Only Required When Visiting Essential Businesses
2: 2020-07-02 - Mask Mandate Expanded; Required Everywhere Where Social Distancing Cannot be Maintained

(a)   (b)

Figure 14: (a) blah (b) blah

Daily new COVID-19 cases per day in Orange County Florida
Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-06-20 - Mask Mandate Begins

(a)   (b)
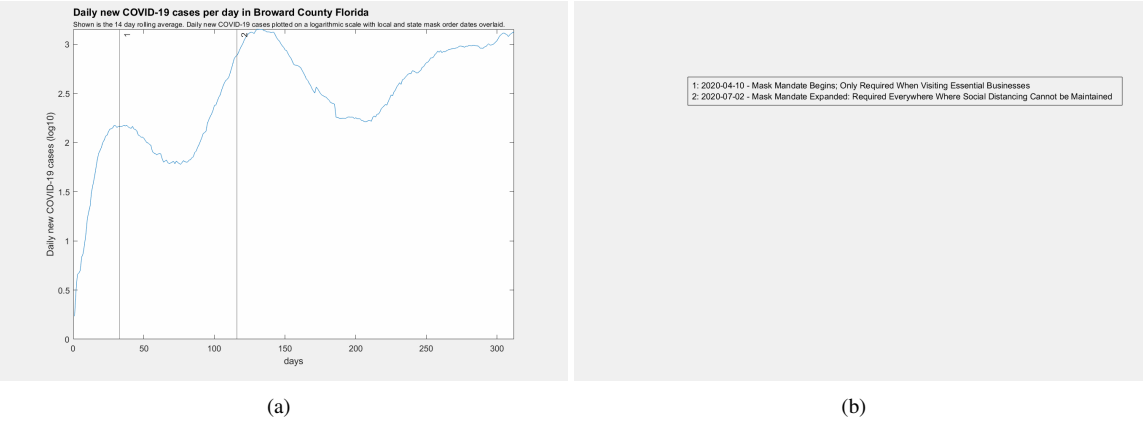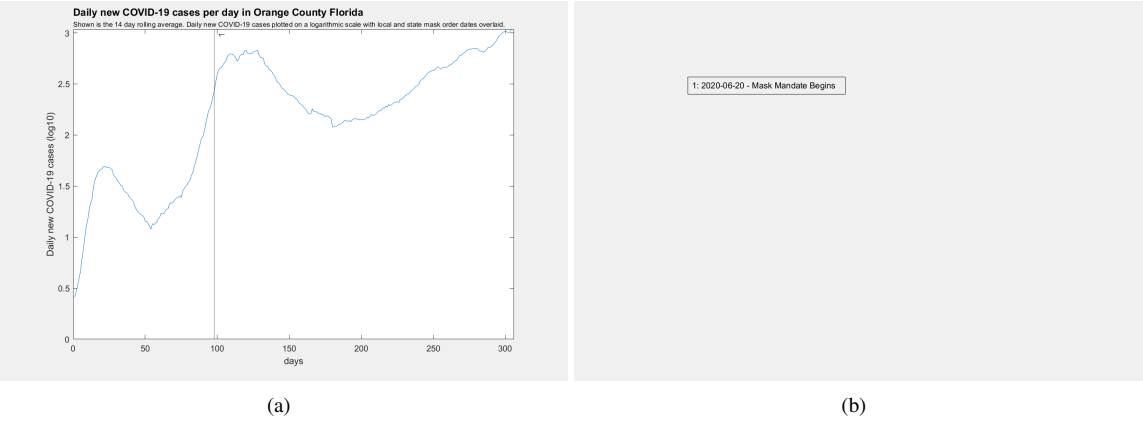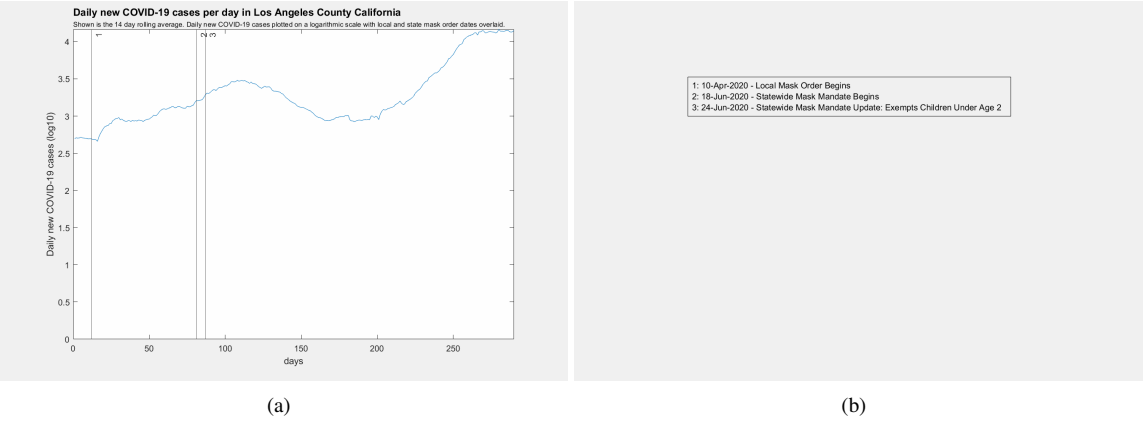
Figure 15: (a) blah (b) blah

Figure 16: (a) blah (b) blah

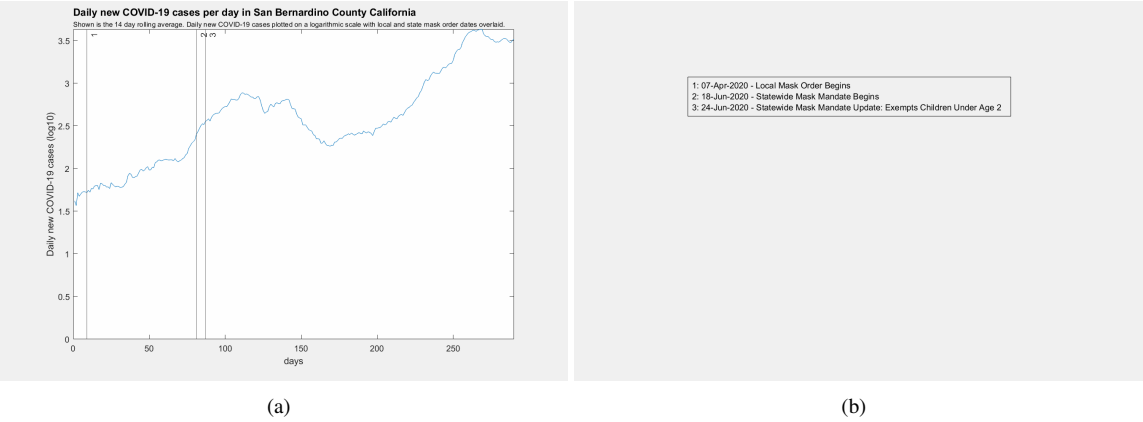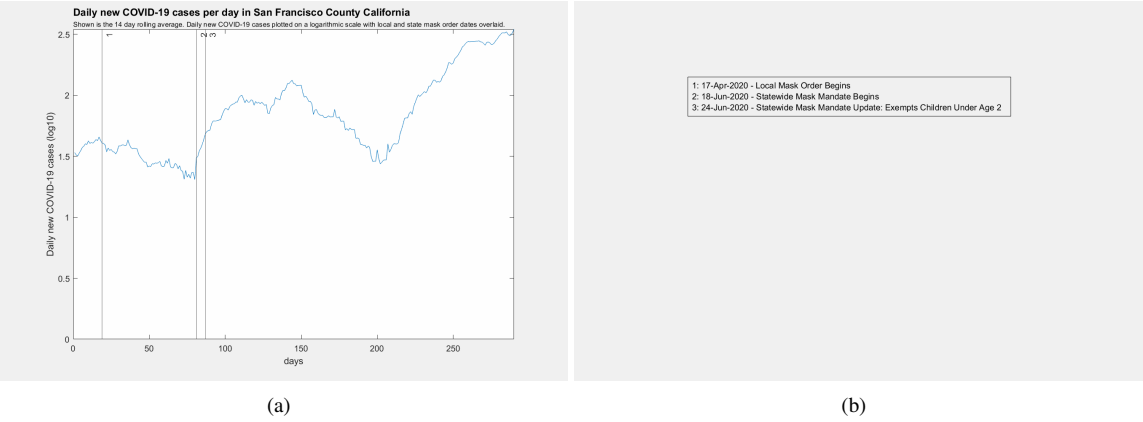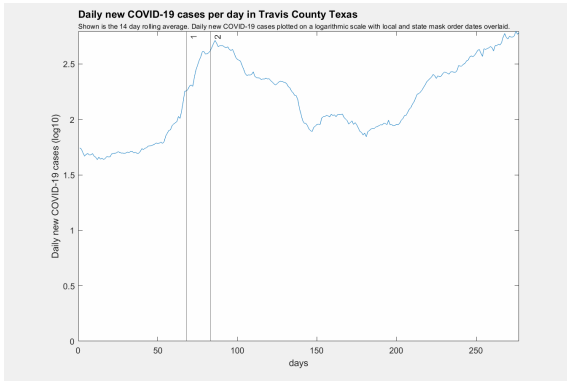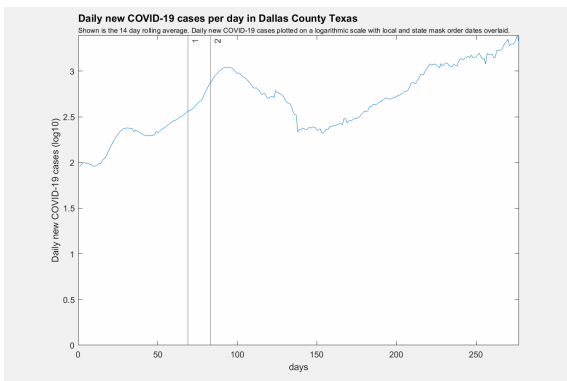Figure 17: (a) blah (b) blah

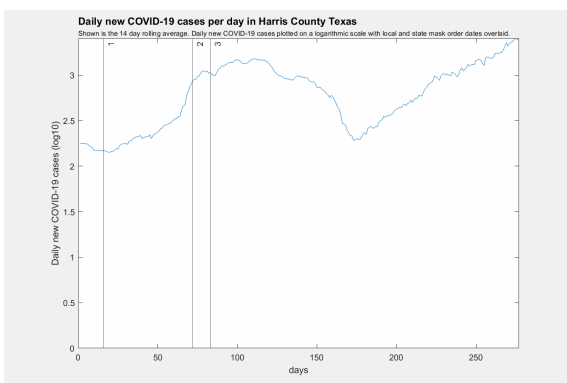Figure 18: (a) blah (b) blah

Daily new COVID-19 cases per day in Travis County Texas

Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 18-Jun-2020 - Mask Order
2: 03-Jul-2020 - Statewide Mask Order

(a)

(b)

Figure 19: (a) blah (b) blah

Daily new COVID-19 cases per day in Dallas County Texas

Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 19-Jun-2020 - Mask Order
2: 03-Jul-2020 - Statewide Mask Order

(a)

(b)

Figure 20: (a) blah (b) blah

Daily new COVID-19 cases per day in Harris County Texas

Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 27-Apr-2020 - Mask Suggestion
2: 22-Jun-2020 - Mask Order Mandatory
3: 03-Jul-2020 - Statewide Mask Order

(a)

(b)

Figure 21: (a) blah (b) blah

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3.2 Mask Order Mandates and Daily New COVID-19 Hospitalizations

Daily new COVID-19 hospitalizations per day in Dade County Florida
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-04-09 - Mask Order Begins; Limited to Indoors
2: 2020-07-01 - Mask Order Expanded; Applies to Indoors and Outdoors

(a)   (b)

Figure 22: (a) blah (b) blah

Daily new COVID-19 hospitalizations per day in Broward County Florida
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-04-10 - Mask Mandate Begins; Only Required When Visiting Essential Businesses
2: 2020-07-02 - Mask Mandate Expanded; Required Everywhere Where Social Distancing Cannot be Maintained

(a)   (b)

Figure 23: (a) blah (b) blah

Daily new COVID-19 hospitalizations per day in Orange County Florida
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-06-20 - Mask Mandate Begins

(a)   (b)

Figure 24: (a) blah (b) blah

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Daily new COVID-19 hospitalizations per day in Los Angeles County California
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 10-Apr-2020 - Local Mask Order Begins
2: 18-Jun-2020 - Statewide Mask Mandate Begins
3: 24-Jun-2020 - Statewide Mask Mandate Update: Exempts Children Under Age 2

(a) (b)

Figure 25: (a) blah (b) blah

Daily new COVID-19 hospitalizations per day in San Bernardino County California
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 07-Apr-2020 - Local Mask Order Begins
2: 18-Jun-2020 - Statewide Mask Mandate Begins
3: 24-Jun-2020 - Statewide Mask Mandate Update: Exempts Children Under Age 2

(a) (b)

Figure 26: (a) blah (b) blah

Daily new COVID-19 hospitalizations per day in San Francisco County California
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 17-Apr-2020 - Local Mask Order Begins
2: 18-Jun-2020 - Statewide Mask Mandate Begins
3: 24-Jun-2020 - Statewide Mask Mandate Update: Exempts Children Under Age 2

(a) (b)

Figure 27: (a) blah (b) blah

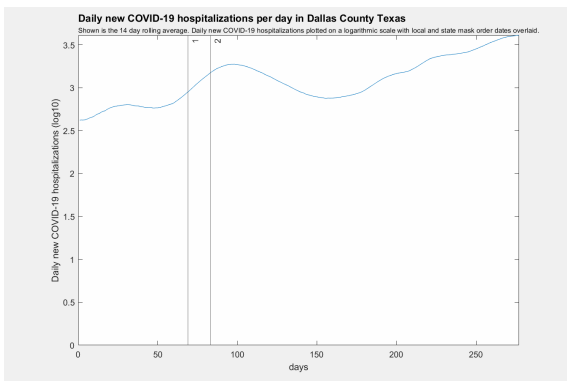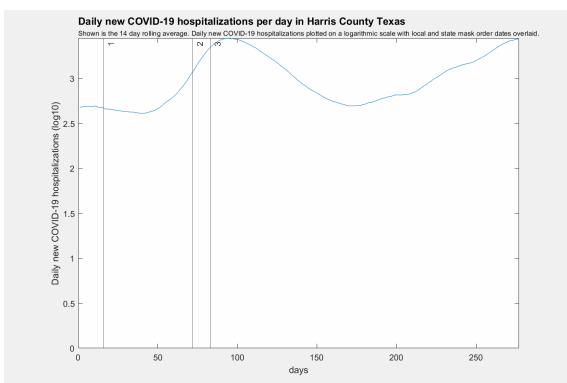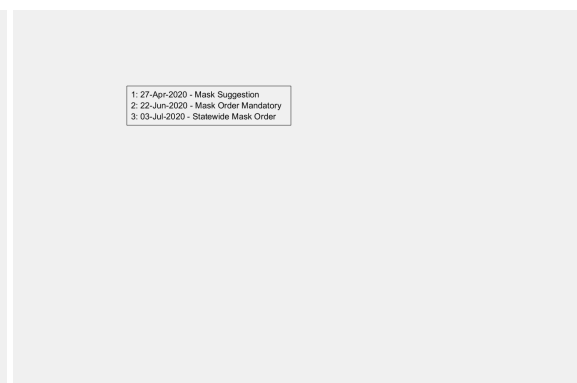Figure 28: (a) blah (b) blah

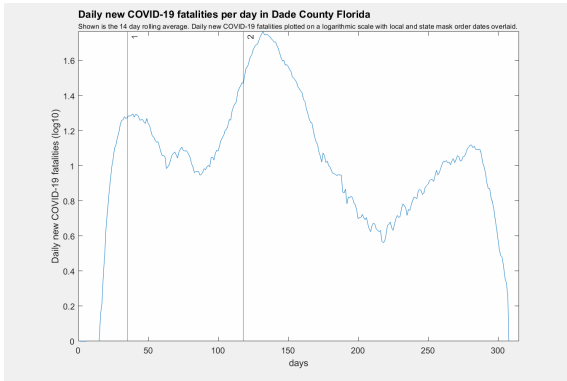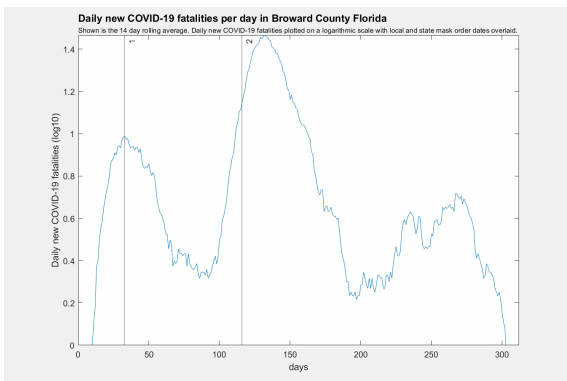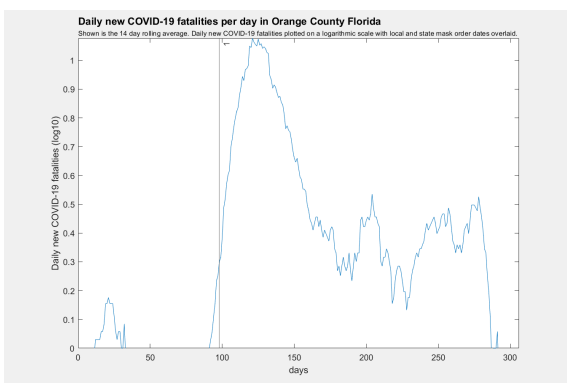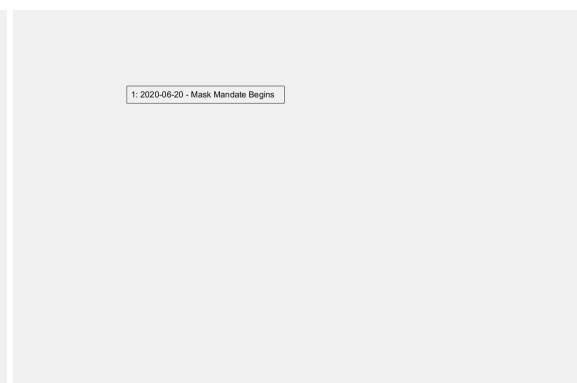Figure 29: (a) blah (b) blah

Figure 30: (a) blah (b) blah

3.3 Mask Order Mandates and Daily New COVID-19 Cases

Daily new COVID-19 fatalities per day in Dade County Florida
Shown is the 14 day rolling average. Daily new COVID-19 fatalities plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-04-09 - Mask Order Begins; Limited to Indoors
2: 2020-07-01 - Mask Order Expanded; Applies to Indoors and Outdoors

(a)   (b)

Figure 31: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Broward County Florida
Shown is the 14 day rolling average. Daily new COVID-19 fatalities plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-04-10 - Mask Mandate Begins; Only Required When Visiting Essential Businesses
2: 2020-07-02 - Mask Mandate Expanded: Required Everywhere Where Social Distancing Cannot be Maintained

(a)   (b)

Figure 32: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Orange County Florida
Shown is the 14 day rolling average. Daily new COVID-19 fatalities plotted on a logarithmic scale with local and state mask order dates overlaid.

1: 2020-06-20 - Mask Mandate Begins

(a)   (b)
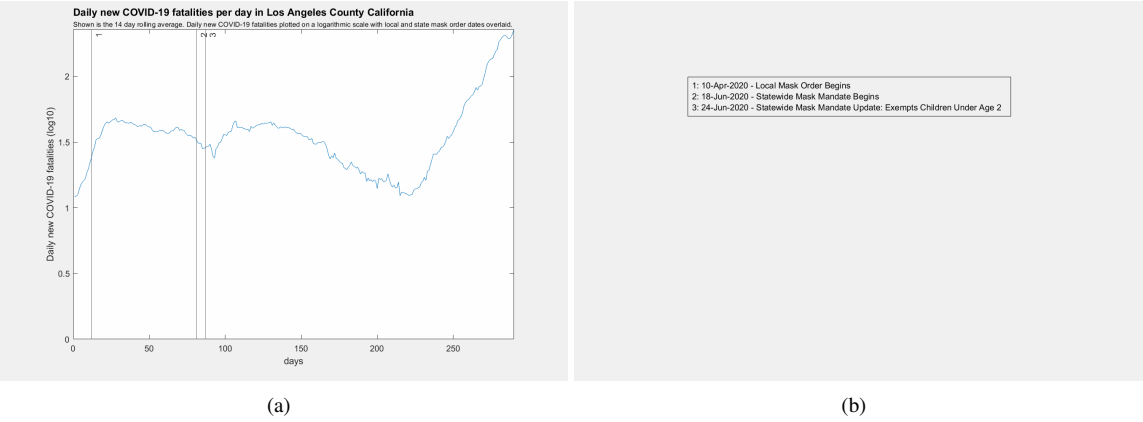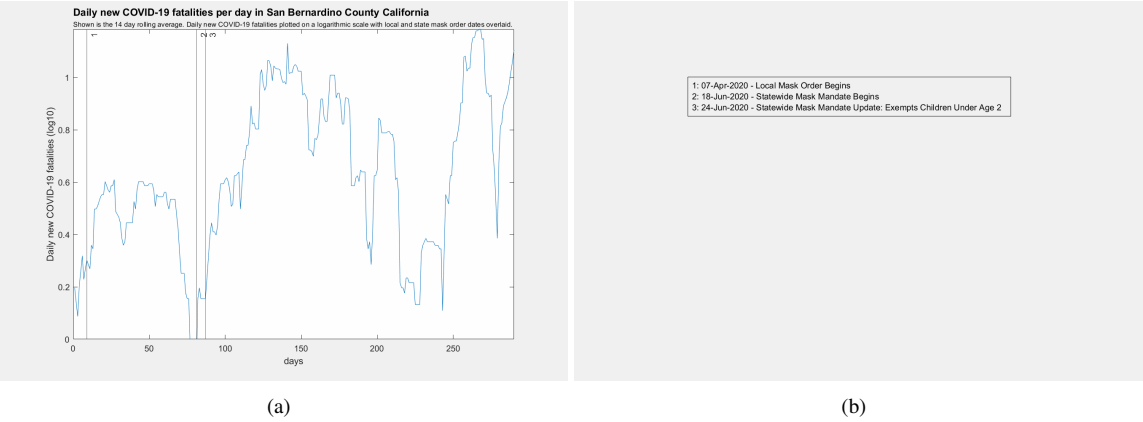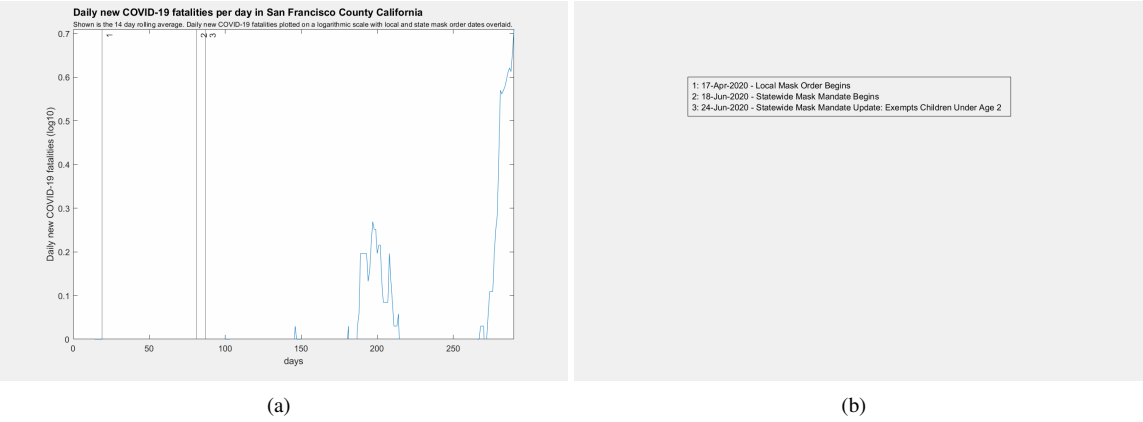
Figure 33: (a) blah (b) blah

Figure 34: (a) blah (b) blah

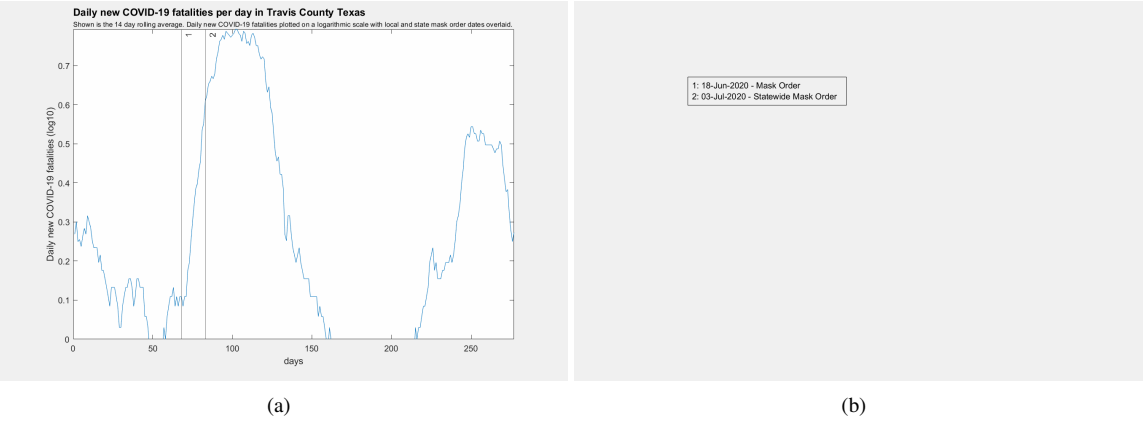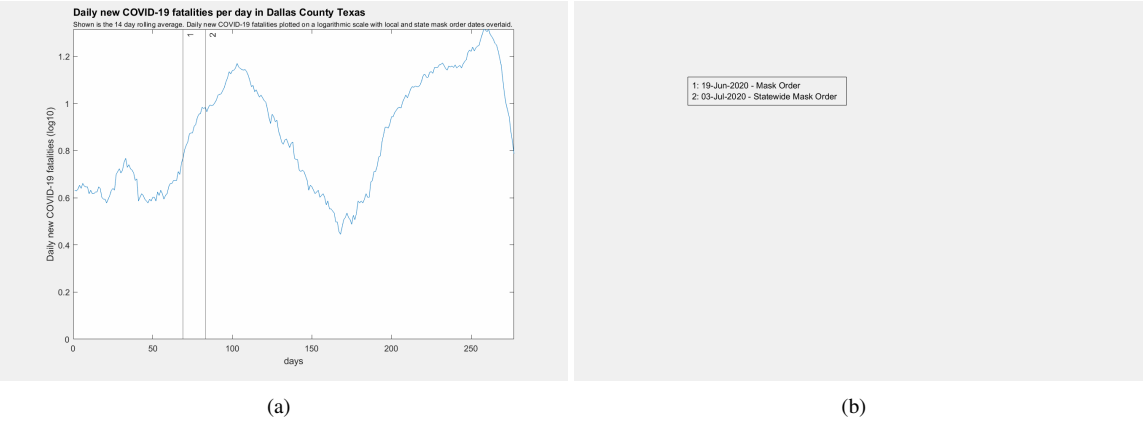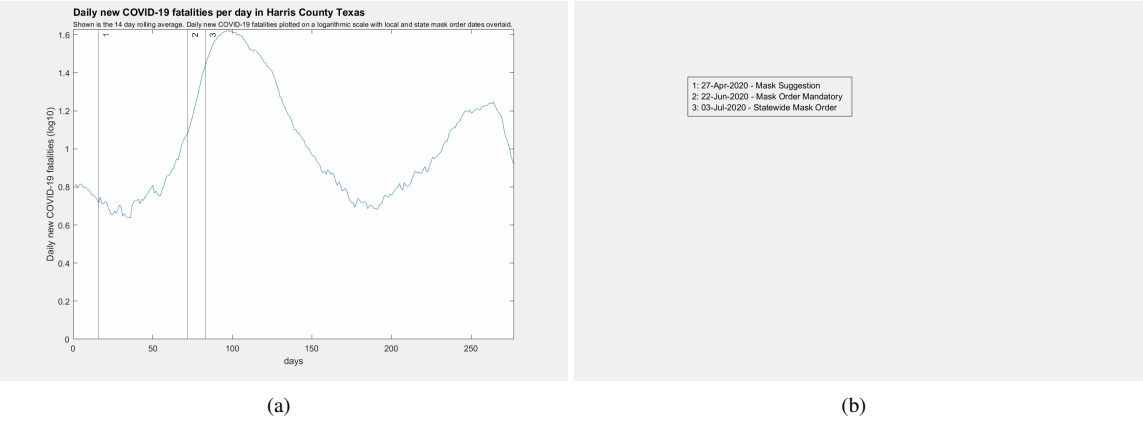Figure 35: (a) blah (b) blah

Figure 36: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Travis County Texas

1: 18-Jun-2020 - Mask Order
2: 03-Jul-2020 - Statewide Mask Order

(a)   (b)

Figure 37: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Dallas County Texas

1: 19-Jun-2020 - Mask Order
2: 03-Jul-2020 - Statewide Mask Order

(a)   (b)

Figure 38: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Harris County Texas

1: 27-Apr-2020 - Mask Suggestion
2: 22-Jun-2020 - Mask Order Mandatory
3: 03-Jul-2020 - Statewide Mask Order

(a)   (b)

Figure 39: (a) blah (b) blah

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3.4   County-Level Statistics on COVID-19 and Government Mask Orders

3.5   The Impact of a Mask Order on the Spread of COVID-19

COVID-19 Cases Per-Day After Local & State Mask Order Implementation

22%

78%

- Decrease in Cases
- Increase in Cases
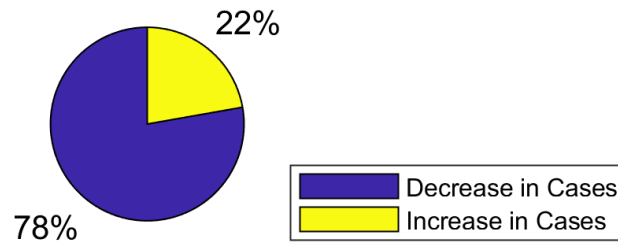
COVID-19 Hospitalizations Per-Day After Local & State Mask Order Implementation

33%

67%

- Dramatic Decrease in Hospitalizations
- Mild Decrease in Hospitalizations
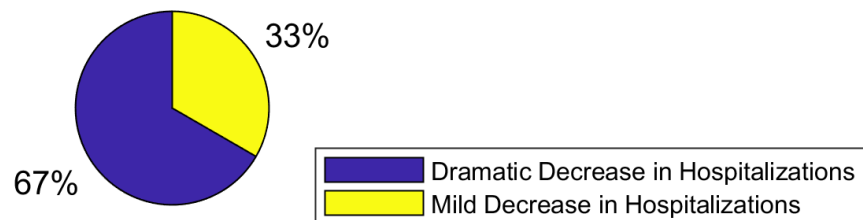
COVID-19 Fatalities Per-Day After Mask Order Implementation

11%

11%

78%

- Decrease in Fatalities
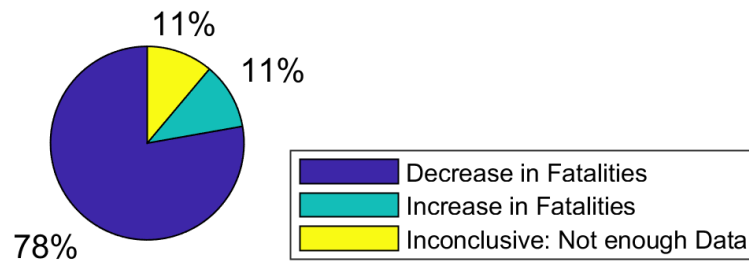- Increase in Fatalities
- Inconclusive: Not enough Data

Figure 40: County-level COVID-19 case, hospitalization, and fatality statistics after local and state mask mandates are implemented (note: some counties do not have statewide mask mandates in place).

4 School Closings, and School Re-openings

In figures XX-XX, the 14 day moving average of daily new COVID-19 cases,hospitalizations and fatalities per day in 9 counties is displayed on a logarithmic scale (log_{10}) with vertical line overlays representing the dates in which local school openings and closings have occurred. The counties assessed are Miami-Dade County, Florida; Broward County, Florida; Orange County, Florida; Los Angeles County, California; San Bernardino County, California; San Francisco County, California; Travis County, Texas; Dallas County, Texas; and Harris County, Texas.
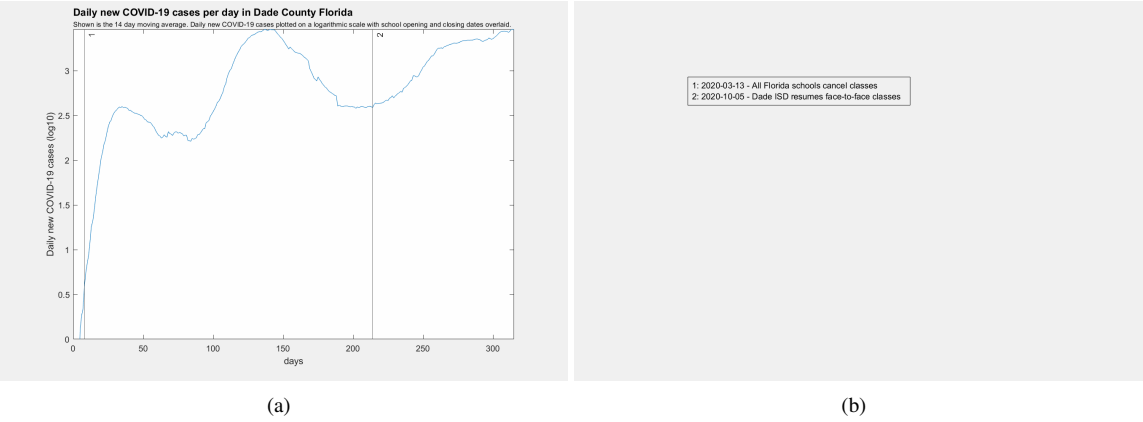
4.1 Schools and Daily New COVID-19 Cases

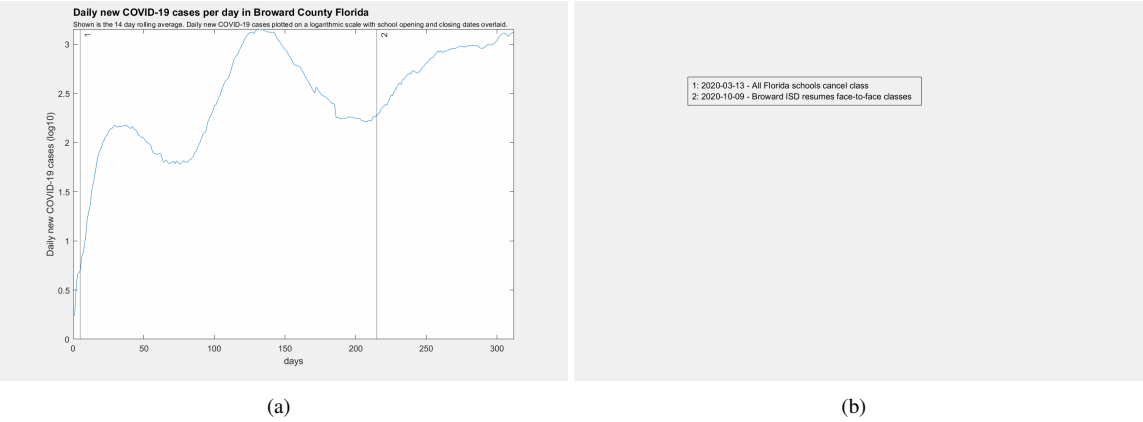**Daily new COVID-19 cases per day in Dade County Florida**
Shown is the 14 day moving average. Daily new COVID-19 cases plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 2020-03-13 - All Florida schools cancel classes
2: 2020-10-05 - Dade ISD resumes face-to-face classes

(a)

(b)

Figure 41: (a) blah (b) blah

Daily new COVID-19 cases per day in Broward County Florida
Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 2020-03-13 - All Florida schools cancel class
2: 2020-10-09 - Broward ISD resumes face-to-face classes

(a)

(b)

Figure 42: (a) blah (b) blah

Daily new COVID-19 cases per day in Orange County Florida
Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 2020-03-13 - All Florida schools cancel classes
2: 2020-08-21 - Orange ISD resumes face-to-face classes

(a)

(b)

Figure 43: (a) blah (b) blah

29

Daily new COVID-19 cases per day in Los Angeles County California
Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 13-Mar-2020 - Los Angeles ISD cancels classes
2: 09-Oct-2020 - Los Angeles ISD resumes face-to-face classes

(a)　　　　　(b)

Figure 44: (a) blah (b) blah

Daily new COVID-19 cases per day in San Bernardino County California
Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 16-Mar-2020 - San Bernardino ISD cancels classes

(a)　　　　　(b)

Figure 45: (a) blah (b) blah

Daily new COVID-19 cases per day in San Francisco County California
Shown is the 14 day rolling average. Daily new COVID-19 cases plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 16-Mar-2020 - San Francisco ISD cancels classes

(a)　　　　　(b)

Figure 46: (a) blah (b) blah

30

Figure 47: (a) blah (b) blah

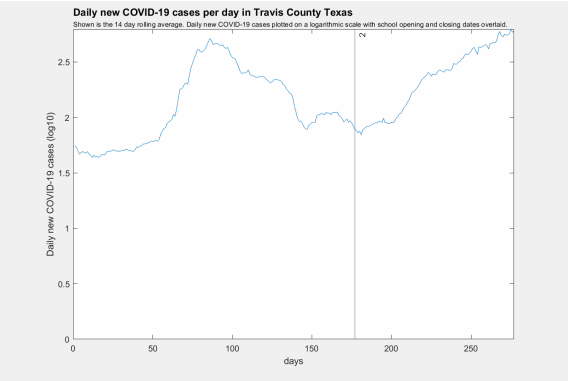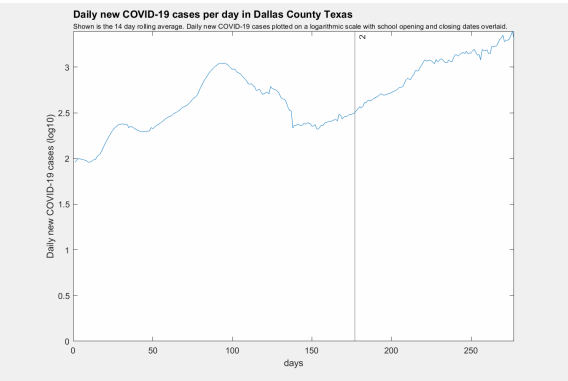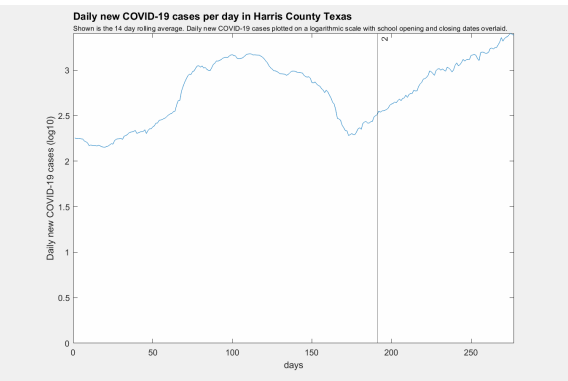Figure 48: (a) blah (b) blah

Figure 49: (a) blah (b) blah

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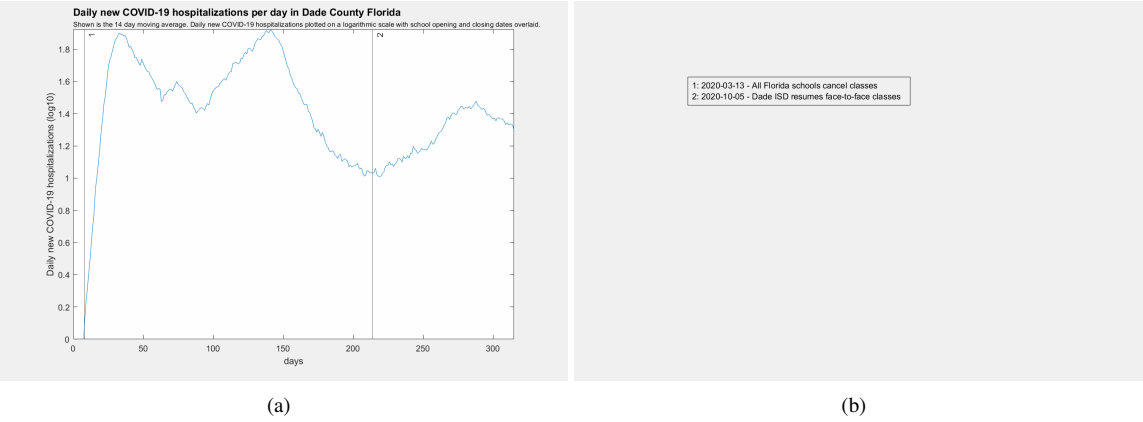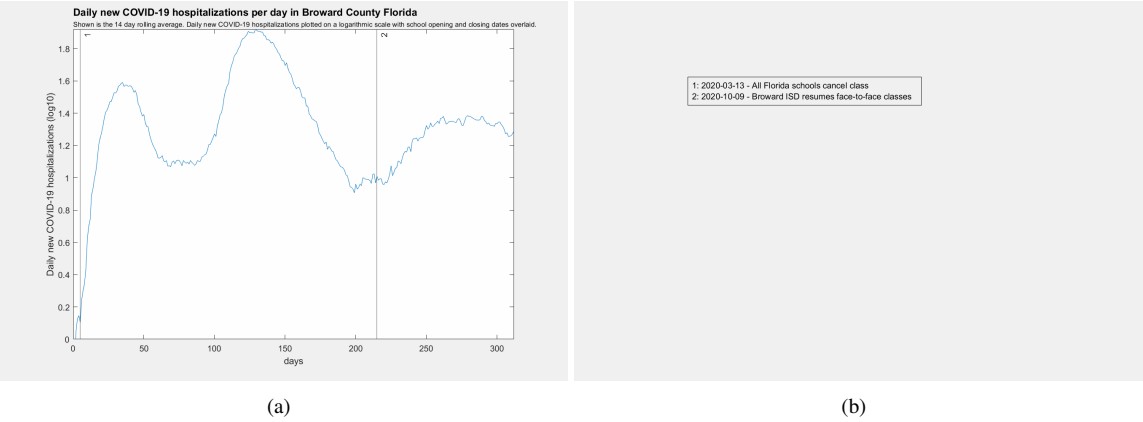## 4.2 Schools and Daily New COVID-19 Hospitalizations

Figure 50: (a) blah (b) blah

Figure 51: (a) blah (b) blah
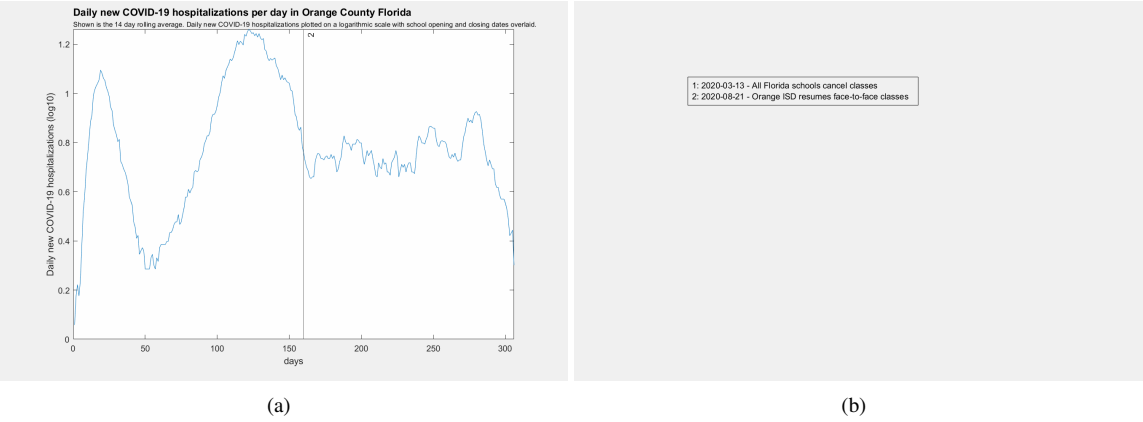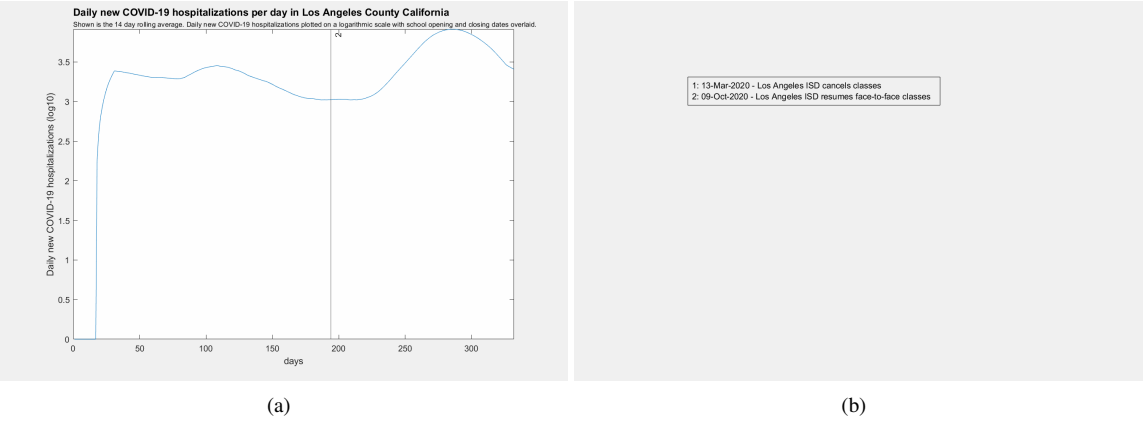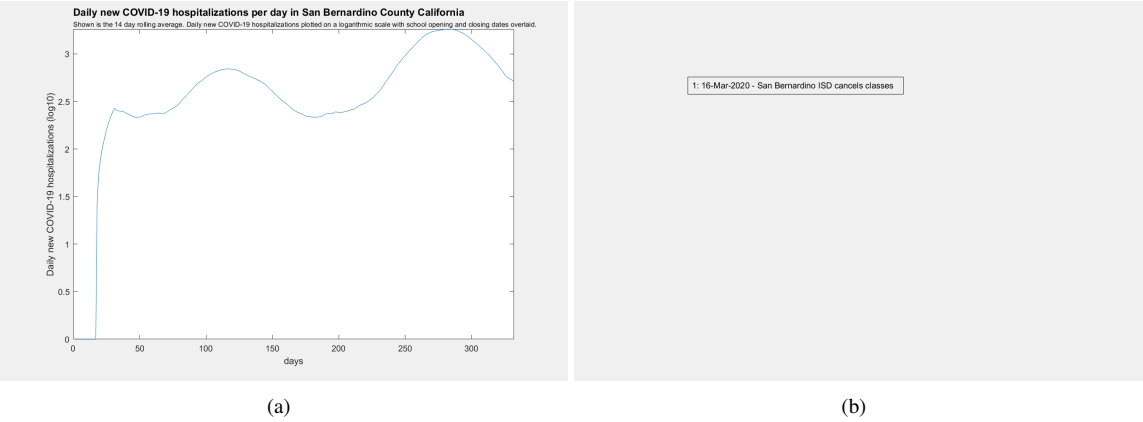

Figure 52: (a) blah (b) blah

Daily new COVID-19 hospitalizations per day in Los Angeles County California
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 13-Mar-2020 - Los Angeles ISD cancels classes
2: 09-Oct-2020 - Los Angeles ISD resumes face-to-face classes

(a)   (b)

Figure 53: (a) blah (b) blah

Daily new COVID-19 hospitalizations per day in San Bernardino County California
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 16-Mar-2020 - San Bernardino ISD cancels classes

(a)   (b)

Figure 54: (a) blah (b) blah

Daily new COVID-19 hospitalizations per day in San Francisco County California
Shown is the 14 day rolling average. Daily new COVID-19 hospitalizations plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 16-Mar-2020 - San Francisco ISD cancels classes

(a)   (b)
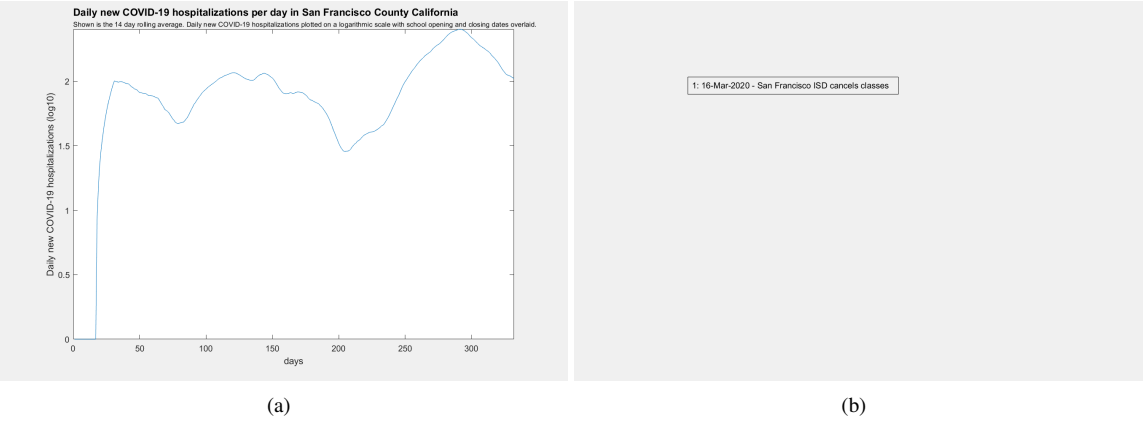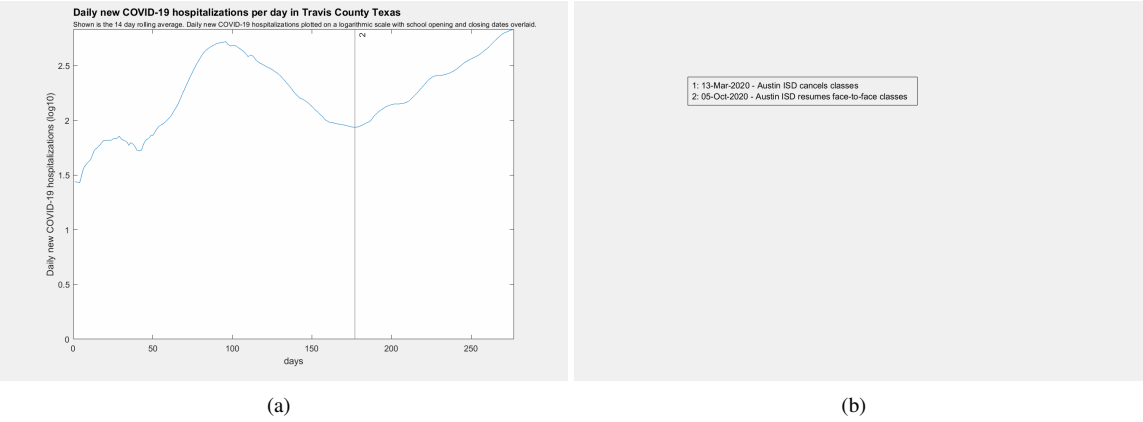
Figure 55: (a) blah (b) blah

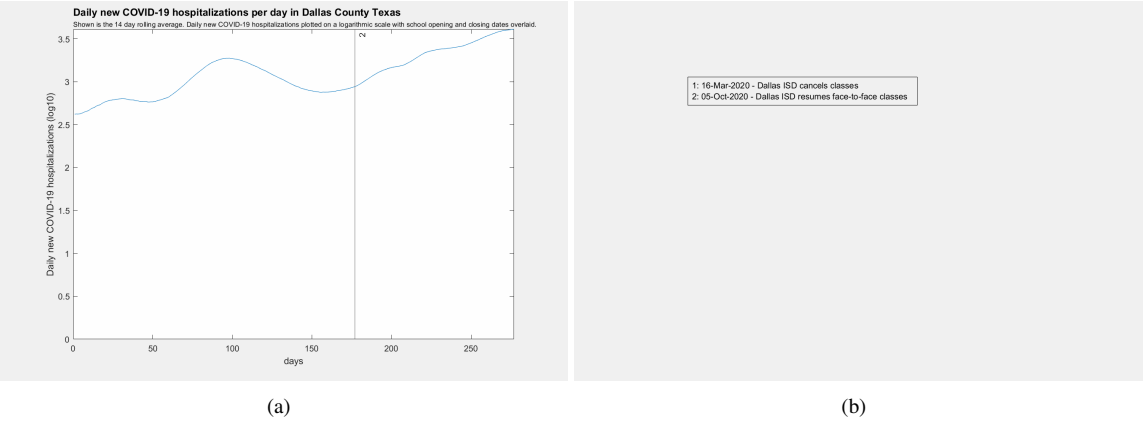Figure 56: (a) blah (b) blah

Figure 57: (a) blah (b) blah
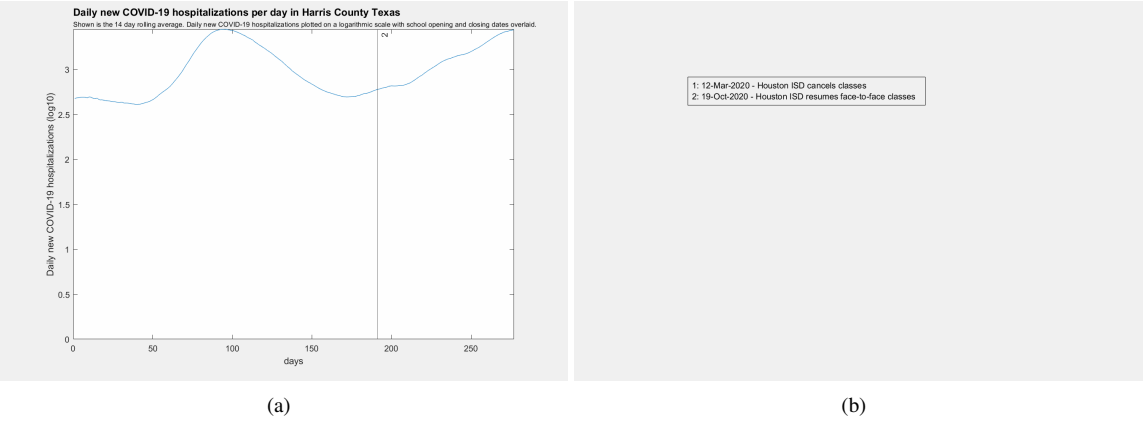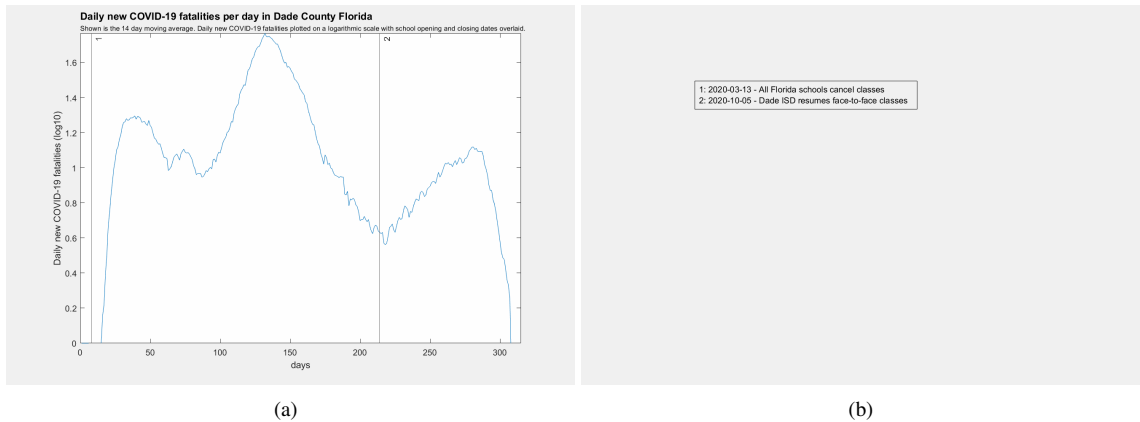

Figure 58: (a) blah (b) blah

4.3 Schools and Daily New COVID-19 Fatalities

Daily new COVID-19 fatalities per day in Dade County Florida
Shown is the 14 day moving average. Daily new COVID-19 fatalities plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 2020-03-13 - All Florida schools cancel classes
2: 2020-10-05 - Dade ISD resumes face-to-face classes

(a)   (b)

Figure 59: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Broward County Florida
Shown is the 14 day rolling average. Daily new COVID-19 fatalities plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 2020-03-13 - All Florida schools cancel class
2: 2020-10-09 - Broward ISD resumes face-to-face classes

(a)   (b)

Figure 60: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Orange County Florida
Shown is the 14 day rolling average. Daily new COVID-19 fatalities plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 2020-03-13 - All Florida schools cancel classes
2: 2020-08-21 - Orange ISD resumes face-to-face classes

(a)   (b)

Figure 61: (a) blah (b) blah

Figure 62: (a) blah (b) blah
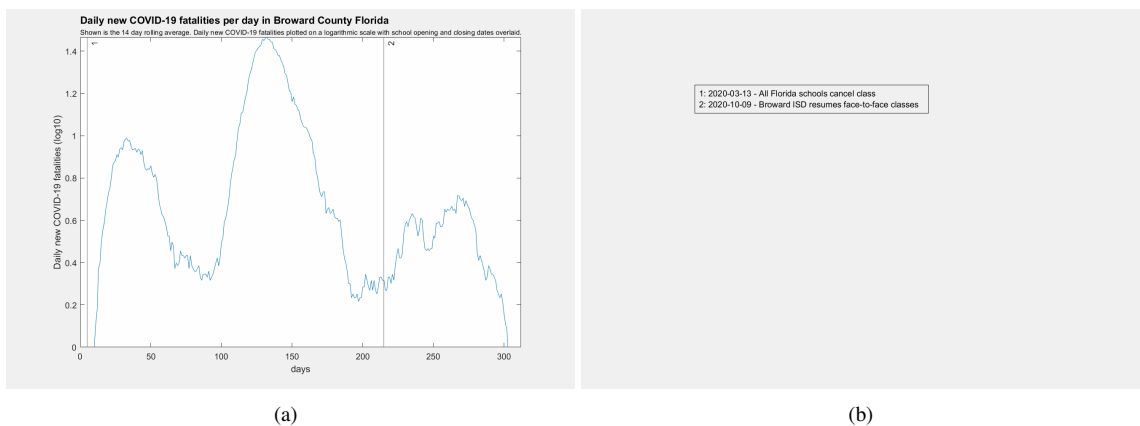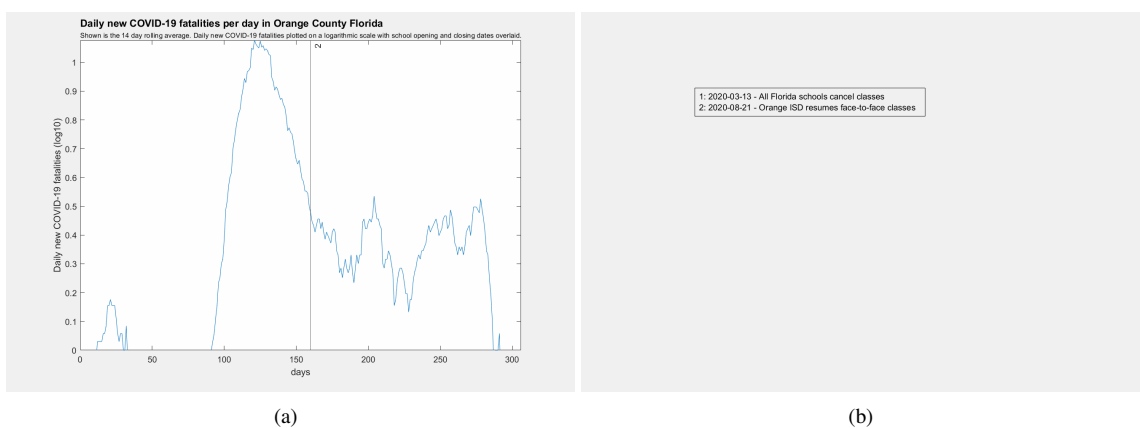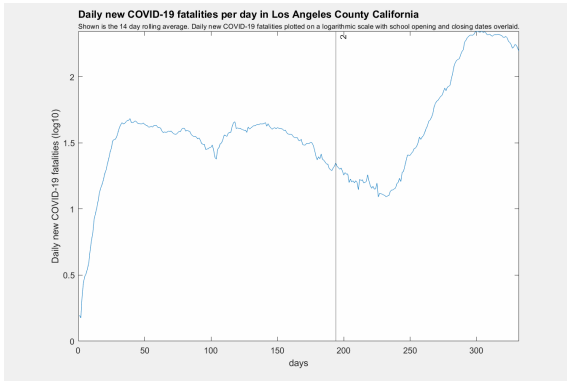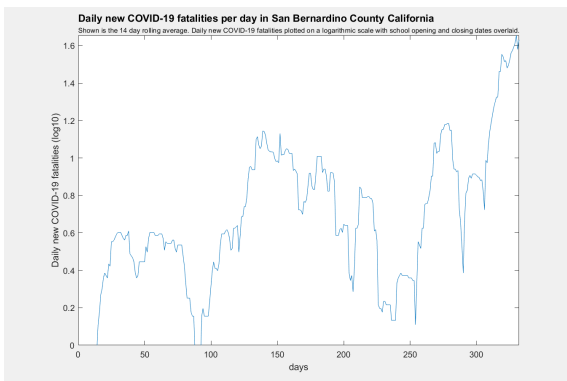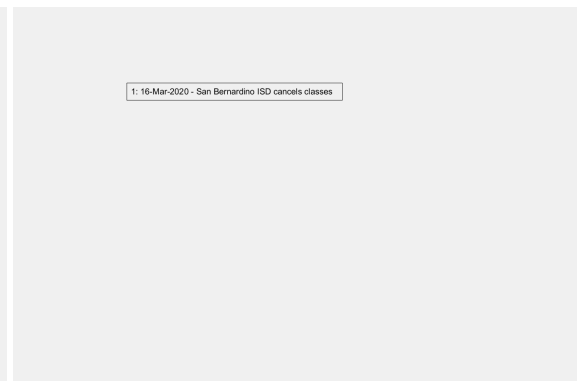

Figure 63: (a) blah (b) blah

Figure 64: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Travis County Texas
Shown is the 14 day rolling average. Daily new COVID-19 fatalities plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 13-Mar-2020 - Austin ISD cancels classes
2: 05-Oct-2020 - Austin ISD resumes face-to-face classes

(a)   (b)

Figure 65: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Dallas County Texas
Shown is the 14 day rolling average. Daily new COVID-19 fatalities plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 16-Mar-2020 - Dallas ISD cancels classes
2: 05-Oct-2020 - Dallas ISD resumes face-to-face classes

(a)   (b)

Figure 66: (a) blah (b) blah

Daily new COVID-19 fatalities per day in Harris County Texas
Shown is the 14 day rolling average. Daily new COVID-19 fatalities plotted on a logarithmic scale with school opening and closing dates overlaid.

1: 12-Mar-2020 - Houston ISD cancels classes
2: 19-Oct-2020 - Houston ISD resumes face-to-face classes

(a)   (b)

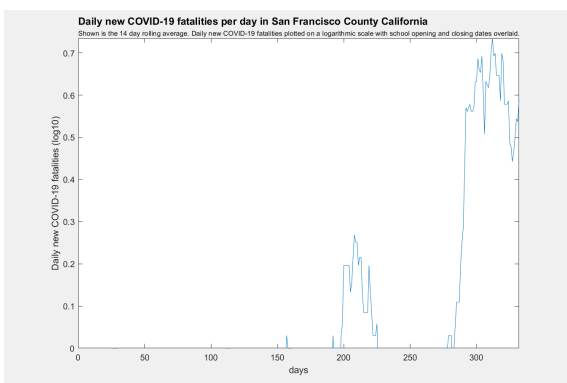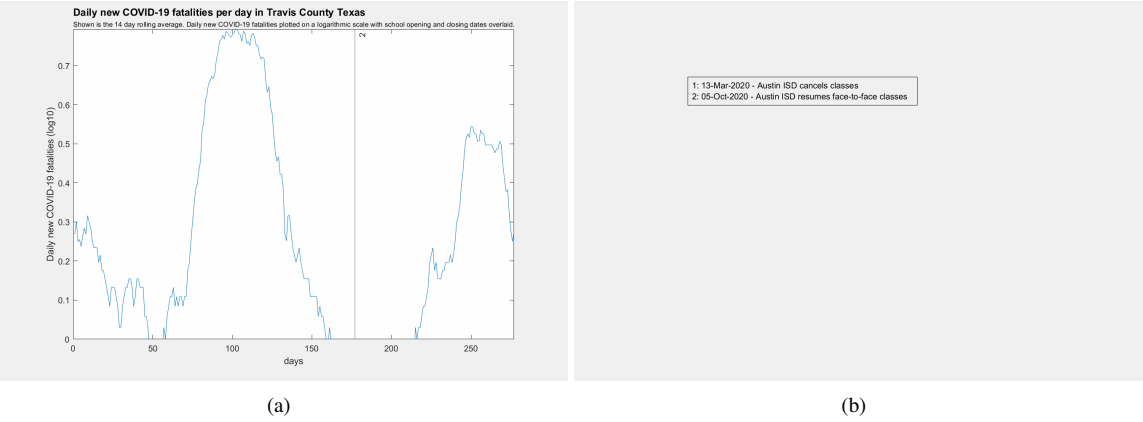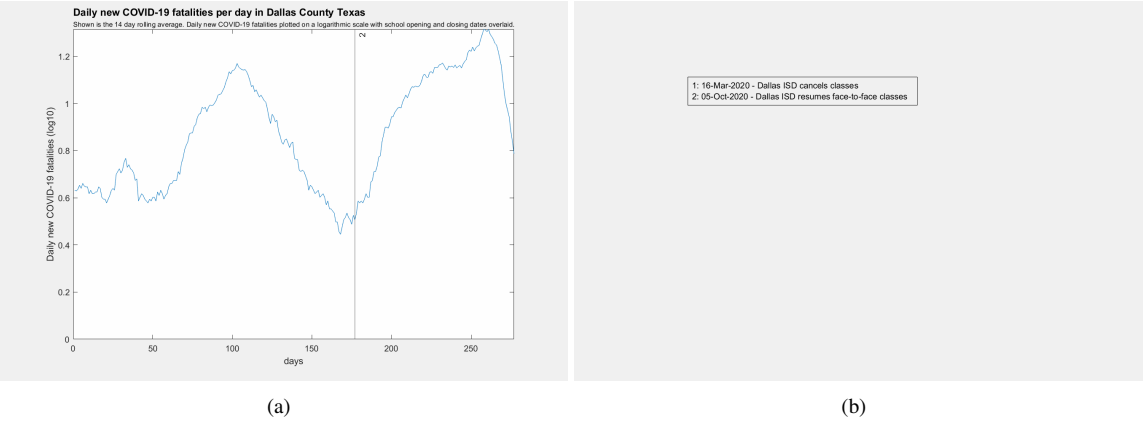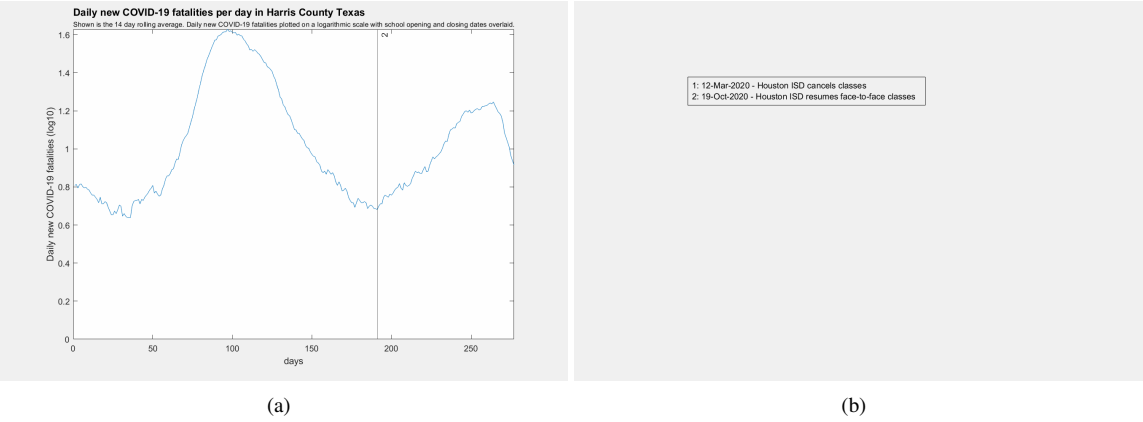Figure 67: (a) blah (b) blah