Understanding the Role of Trust during COVID-19:

A Time Series Analysis

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Data Science Major Capstone

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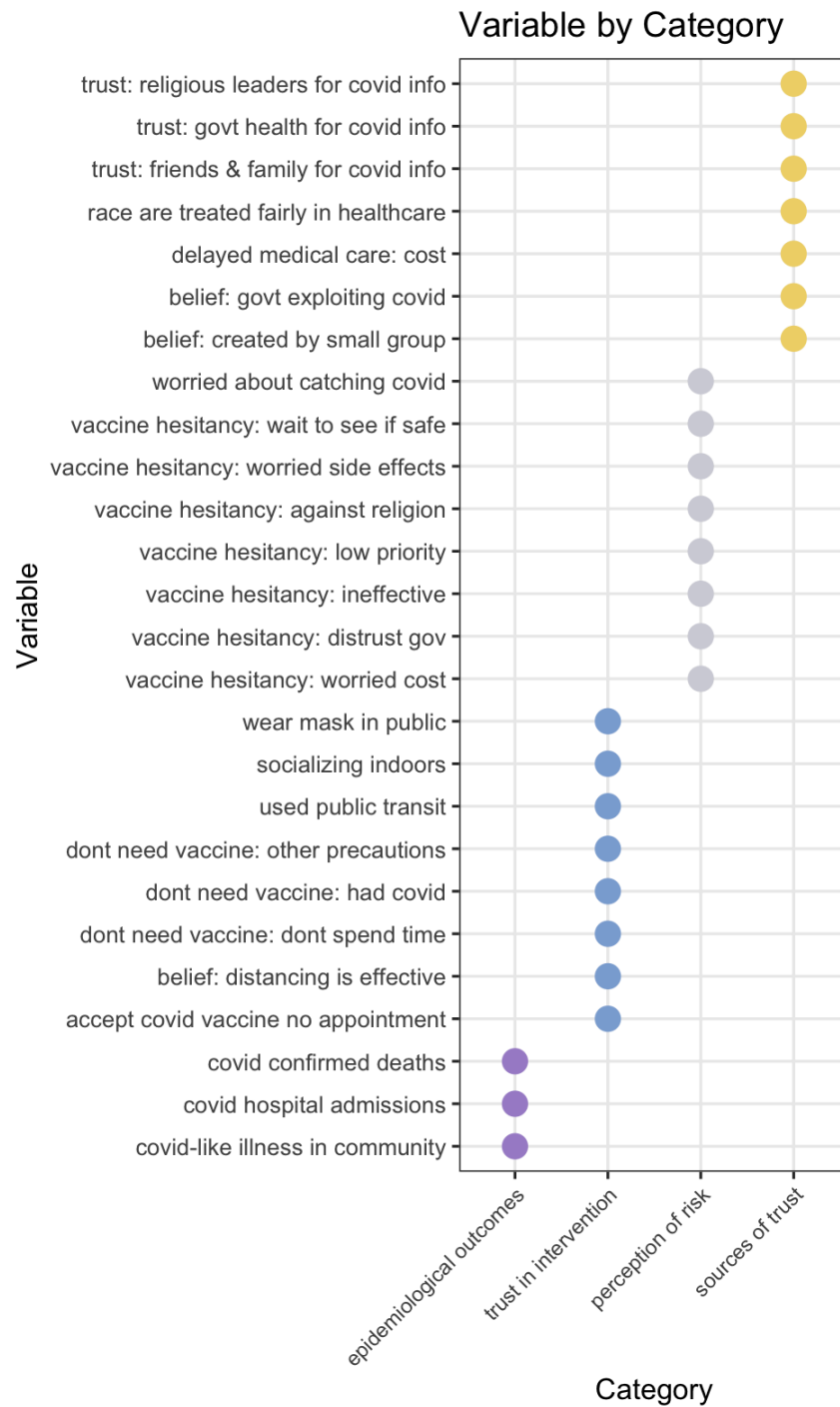
Figure 1: Variable by Category

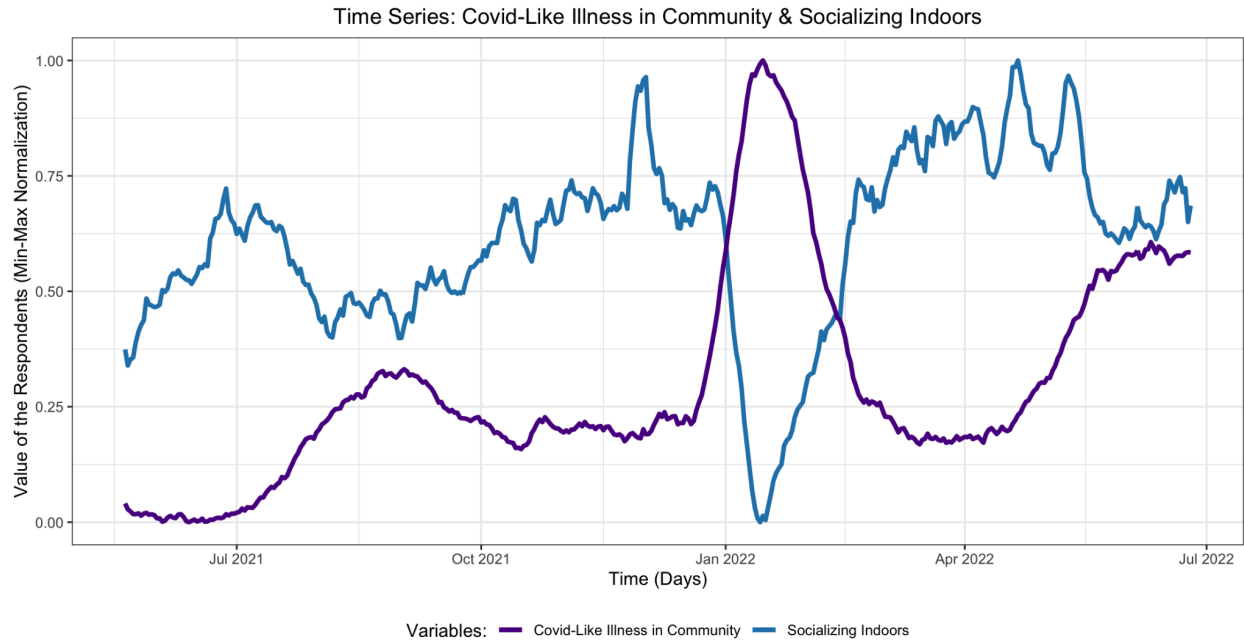| time (days)	accept covid vaccine	belief: created small group	belief: distancing effect
5/20/21	1	0.466	1
5/21/21	0.962	0.131	0.957
5/22/21	0.818	0.158	0.921
5/23/21	0.757	0.287	0.873

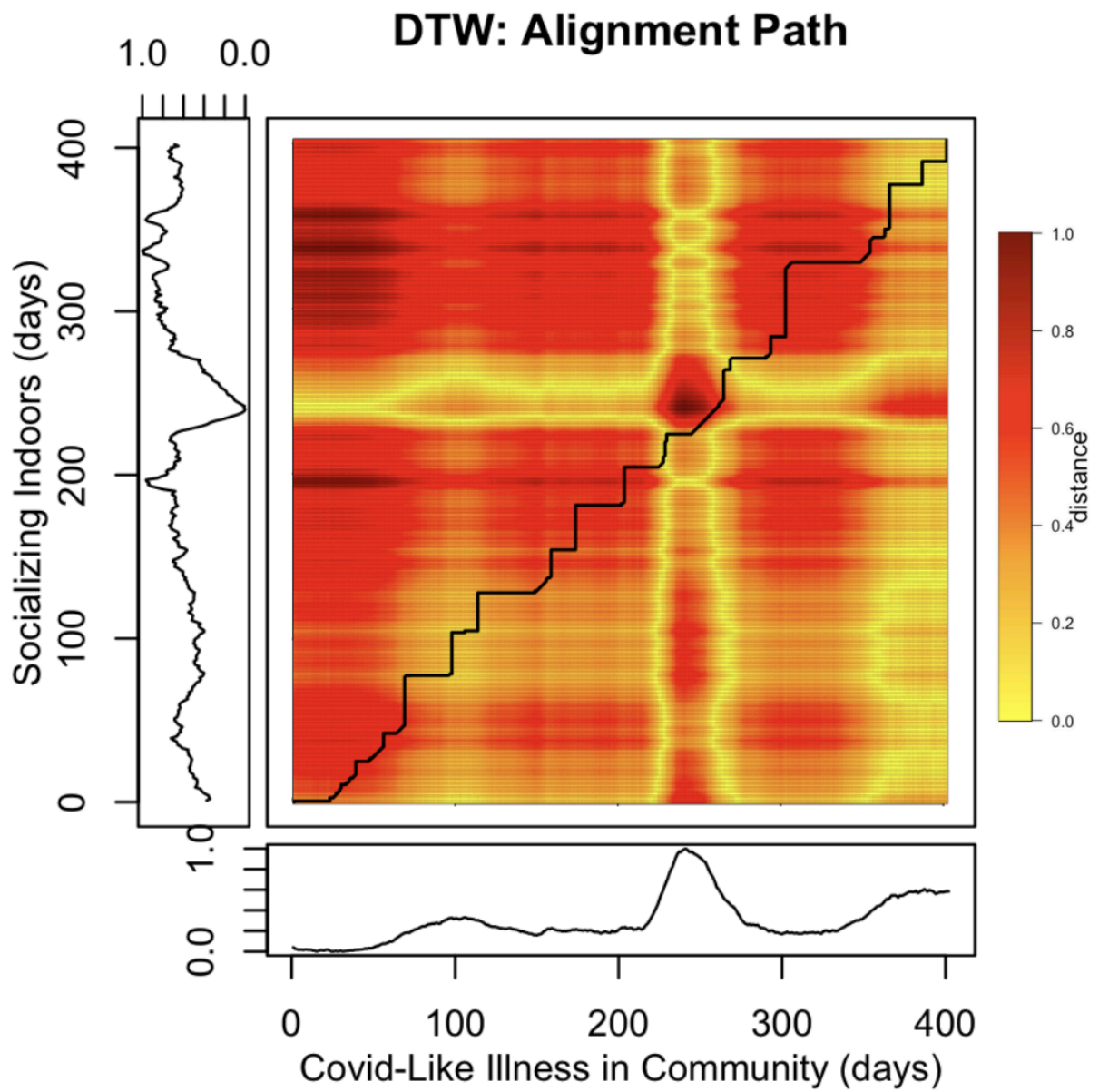*Table 1:* Dataset Example for California

Figure 2: Time Series: Covid-Like Illness in Community & Socializing Indoors

Figure 3: Dynamic Time Warping alignment path with distance matrix represented through heatmap.
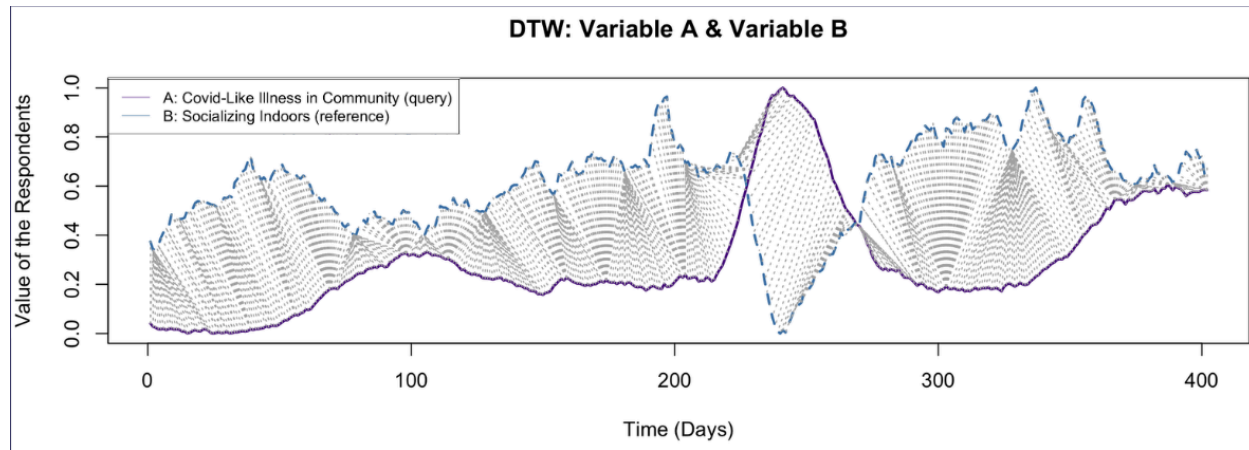
Figure 4: Dynamic Time Warping when Variable A is the query and Variable B is the reference.
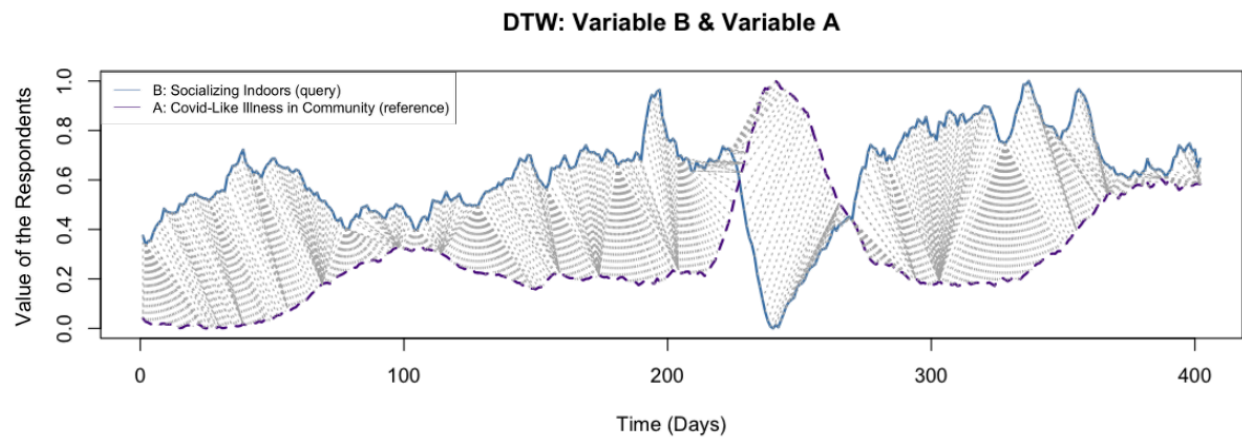

Figure 5: Dynamic Time Warping when Variable B is the query and Variable A is the reference.
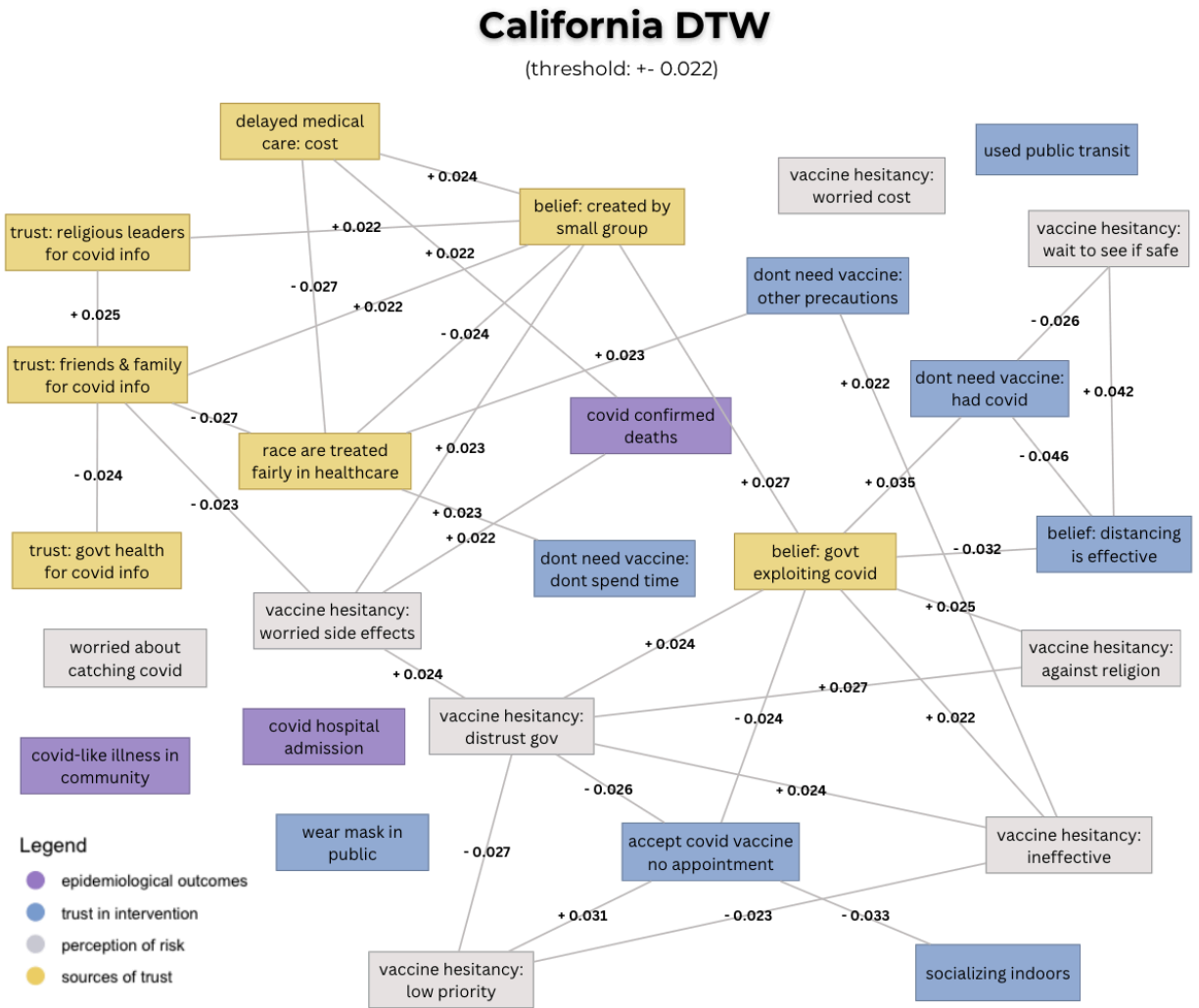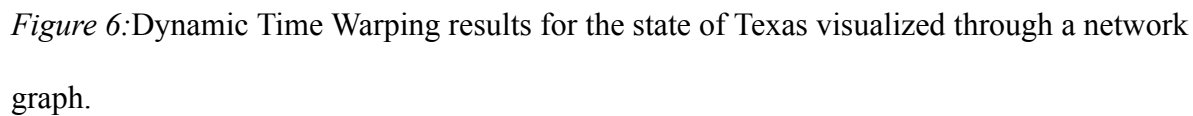
*Figure 5:*Dynamic Time Warping results for the state of California visualized through a network graph.

Figure 6: Dynamic Time Warping results for the state of Texas visualized through a network graph.

Variable Definitions

#	Variable	Definition
1	vaccine hesitancy: worried cost	Estimated percentage of respondents who say they are hesitant to get vaccinated because they are worried about the cost, among respondents who answered "Yes, probably", "No, probably not", or "No, definitely not" when asked if they would get vaccinated if offered (item V3). This series was shown to respondents starting in Wave 8.
2	vaccine hesitancy: distrust gov	Estimated percentage of respondents who say they are hesitant to get vaccinated because they don't trust the government, among respondents who answered "Yes, probably", "No, probably not", or "No, definitely not" when asked if they would get vaccinated if offered (item V3). This series of items was shown to respondents starting in Wave 8.

3	vaccine hesitancy: ineffective	Estimated percentage of respondents who say they are hesitant to get vaccinated because they don't know if a COVID-19 vaccine will work, among respondents who answered "Yes, probably", "No, probably not", or "No, definitely not" when asked if they would get vaccinated if offered (item V3). This series of items was shown to respondents starting in Wave 8.
4	vaccine hesitancy: low priority	Estimated percentage of respondents who say they are hesitant to get vaccinated because they think other people need it more than they do, among respondents who answered "Yes, probably", "No, probably not", or "No, definitely not" when asked if they would get vaccinated if offered (item V3). This series of items was shown to respondents starting in Wave 8.
5	vaccine hesitancy: against religion	Estimated percentage of respondents who say they are hesitant to get vaccinated

		because it is against their religious beliefs, among respondents who answered "Yes, probably", "No, probably not", or "No, definitely not" when asked if they would get vaccinated if offered (item V3). This series of items was shown to respondents starting in Wave 8.
6	vaccine hesitancy: worried side effects	Estimated percentage of respondents who say they are hesitant to get vaccinated because they are worried about side effects, among respondents who answered "Yes, probably", "No, probably not", or "No, definitely not" when asked if they would get vaccinated if offered (item V3). This series of items was shown to respondents starting in Wave 8.
7	vaccine hesitancy: wait to see if safe	Estimated percentage of respondents who say they are hesitant to get vaccinated because they want to wait to see if the COVID-19 vaccines are safe, among respondents who answered "Yes, probably", "No, probably not", or "No,

		definitely not" when asked if they would get vaccinated if offered (item V3). This series of items was shown to respondents starting in Wave 8.
8	dont need vaccine: dont spend time	Estimated percentage of respondents who say they don't need to get a COVID-19 vaccine because they don't spend time with high-risk people, among respondents who provided at least one reason for why they believe a COVID-19 vaccine is unnecessary.
9	dont need vaccine: had covid	Estimated percentage of respondents who say they don't need to get a COVID-19 vaccine because they already had the illness, among respondents who provided at least one reason for why they believe a COVID-19 vaccine is unnecessary.
10	dont need vaccine: other precautions	Estimated percentage of respondents who say they don't need to get a COVID-19 vaccine because they will use other precautions, such as a mask, instead,

		among respondents who provided at least one reason for why they believe a COVID-19 vaccine is unnecessary.
11	accept covid vaccine no appointment	Estimated percentage of respondents who would definitely or probably choose to get vaccinated, if a vaccine were offered to them today, among respondents who have not yet been vaccinated and do not have an appointment to do so.
12	worried about catching covid	Estimated percentage of respondents worrying either a great deal or a moderate amount about catching COVID-19.
13	belief: created by small group	Estimated percentage of people who believe that the statement "COVID-19 was deliberately created by a small group of people who secretly manipulate world events" is definitely or probably true.
14	belief: distancing is effective	Estimated percentage of respondents who believe that social distancing is either very or moderately effective for

		preventing the spread of COVID-19.
15	belief: govt exploiting covid	Estimated percentage of people who indicate that the statement "The COVID-19 pandemic is being exploited by the government to control people" is definitely or probably true.
16	delayed medical care: cost	Estimated percentage of respondents who have ever delayed or not sought medical care in the past year because of cost.
17	race are treated fairly in healthcare	Estimated percentage of respondents who somewhat or strongly agree that people of their race are treated fairly in a healthcare setting.
18	trust: friends & family for covid info	Estimated percentage of respondents who trust friends and family to provide accurate news and information about COVID-19.
19	trust: govt health for covid info	Estimated percentage of respondents who trust government health officials to provide accurate news and information about COVID-19.

20	trust: religious leaders for covid info	Estimated percentage of respondents who trust religious leaders to provide accurate news and information about COVID-19.
21	covid-like illness in community	Estimated percentage of people reporting illness in their local community, as described below, including their household
22	used public transit	Estimated percentage of respondents who "used public transit" in the past 24 hours
23	wear mask in public	Estimated percentage of people who wore a mask for most or all of the time while in public in the past 7 days; those not in public in the past 7 days are not counted.
24	socializing indoors	Estimated percentage of respondents who "spent time indoors with someone who isn't currently staying with you" in the past 24 hours
25	covid confirmed deaths	Number of new confirmed deaths due to COVID-19, daily

26	covid hospital admissions	Sum of adult and pediatric confirmed COVID-19 hospital admissions occurring each day.

Table 2: Definitions of the 26 variables used in this research. Variable names have been adapted from their original name found in covidcast for clarity.