Fundamentals of Computing and Data Display

Term paper template

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Introduction

This section outlines the research idea. We can also cite related work here (Wickham 2014; Baumer, Kaplan, and Horton 2017).

Note that compiled term paper (the PDF) is supposed to be more text-centered than the RMarkdown documents we used in class, i.e. the text sections are more detailed and big or redundant code chunks can be hidden.

Data

This section describes the data sources and the data gathering process. The COVIDcast package from the Delphi group at Carnegie Mellon University contains data from 19 sources called signals within the package. Each of these signals represent different sources like the COVID-19 Trends and Impact Facebook survey, the CDC, and others. Within those sources there are many variables represented. I wanted to look at proportions of people with COVID-19, both from PCR test results and also estimates from the facebook survey. Beyond that I wanted to see the differences in the data for variables that showed potential exposure. For the first of those variables I wanted to look at estimated use of public transit. The thought here is that being in tight confined spaces, especially in the first year of the pandemic, would increase your risk of catching COVID-19.

```
#census code chunk that is failing
#cs_key <- "1448b92acdfc46410a020ee82b98af8fad7de580"
#census_pg <- getCensus(name = "acs/acs5",
                   # vintage = 2020,
                  #  vars = c("NAME", "B01001_001E", "B06002_001E", "B19013_001E", "B19301_001E"),
                   # region = "county:*",
                  #  region = "state:24+county:033",
                   # key = cs_key)
#head(census_pg)
```

```
# A code chunk that exemplifies the data gathering process
#code to find the FIPS codes for our counties of interest
pg_fips <- name_to_fips("Prince George's")
moco_fips <- name_to_fips("Montgomery", state = "MD")
#code to find the proportion of positive PCR tests for a county within a certain time period
pg_pcr_pos <- covidcast_signal(data_source = "covid-act-now", signal = "pcr_specimen_positivity_rate",
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_pcr_pos))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
covid-act-now	pcr_specimen_positivity_rate	24033	2020-10-01	2021-08-13	county	day	316	0	0	0	0.077	0.004396	3650.14
covid-act-now	pcr_specimen_positivity_rate	24033	2020-10-02	2021-08-13	county	day	315	0	0	0	0.079	0.004535	3454.00
covid-act-now	pcr_specimen_positivity_rate	24033	2020-10-03	2021-08-13	county	day	314	0	0	0	0.082	0.004802	3261.14
covid-act-now	pcr_specimen_positivity_rate	24033	2020-10-04	2021-08-13	county	day	313	0	0	0	0.078	0.004683	3302.29
covid-act-now	pcr_specimen_positivity_rate	24033	2020-10-05	2021-08-13	county	day	312	0	0	0	0.074	0.004533	3406.71
covid-act-now	pcr_specimen_positivity_rate	24033	2020-10-06	2021-08-13	county	day	311	0	0	0	0.073	0.004528	3407.29

```
moco_pcr_pos <- covidcast_signal(data_source = "covid-act-now", signal = "pcr_specimen_positivity_rate"
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_pcr_pos))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
covid-act-now	pcr_specimen_positivity_rate	24031	2020-10-01	2021-08-13	county	day	316	0	0	0	0.042	0.003034	4284.57
covid-act-now	pcr_specimen_positivity_rate	24031	2020-10-02	2021-08-13	county	day	315	0	0	0	0.043	0.003084	4150.57

data_source	signal	geo_value	time_value	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
covid-act-now	pcr_specimen_positivity_rate	24031	2020-10-03	covid-act-now	county	day	2021-08-13	314	0	0	0	0.044	0.00317	1279.43
covid-act-now	pcr_specimen_positivity_rate	24031	2020-10-04	covid-act-now	county	day	2021-08-13	313	0	0	0	0.040	0.00304	1241.71
covid-act-now	pcr_specimen_positivity_rate	24031	2020-10-05	covid-act-now	county	day	2021-08-13	312	0	0	0	0.037	0.00289	1334.29
covid-act-now	pcr_specimen_positivity_rate	24031	2020-10-06	covid-act-now	county	day	2021-08-13	311	0	0	0	0.037	0.00284	1298.71

```
#code to find the estimated proportion of people with covid-like illnesses from the
#COVID-19 Trends and Impacts survey "Estimated percentage of people with COVID-like illness"
pg_fb_pos <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wcli",
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_fb_pos))
```

data_source	signal	geo_value	time_value	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wcli	24033	2020-10-01	fb-survey	county	day	2020-11-19	49	0	0	0	1.12056	0.775822	269.0416
fb-survey	smoothed_wcli	24033	2020-10-02	fb-survey	county	day	2020-11-19	48	0	0	0	0.747282	0.524782	286.4784
fb-survey	smoothed_wcli	24033	2020-10-03	fb-survey	county	day	2020-11-19	47	0	0	0	0.352581	0.178394	457.2014
fb-survey	smoothed_wcli	24033	2020-10-04	fb-survey	county	day	2020-11-19	46	0	0	0	0.357529	0.178978	385.0670
fb-survey	smoothed_wcli	24033	2020-10-05	fb-survey	county	day	2020-11-19	45	0	0	0	0.354735	0.182927	417.1189
fb-survey	smoothed_wcli	24033	2020-10-06	fb-survey	county	day	2020-11-19	44	0	0	0	0.358140	0.183054	438.5893

```
moco_fb_pos <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wcli",
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_fb_pos))
```

data_source	signal	geo_value	time_value	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wcli	24031	2020-10-01	fb-survey	county	day	2020-11-19	49	0	0	0	0.000000	0.097745	51	8.2781
fb-survey	smoothed_wcli	24031	2020-10-02	fb-survey	county	day	2020-11-19	48	0	0	0	0.000000	0.093858	54	8.1863
fb-survey	smoothed_wcli	24031	2020-10-03	fb-survey	county	day	2020-11-19	47	0	0	0	0.000000	0.093038	53	8.5651
fb-survey	smoothed_wcli	24031	2020-10-04	fb-survey	county	day	2020-11-19	46	0	0	0	0.111187	0.143916	20	20.4416
fb-survey	smoothed_wcli	24031	2020-10-05	fb-survey	county	day	2020-11-19	45	0	0	0	0.108617	0.139235	55	15.4449
fb-survey	smoothed_wcli	24031	2020-10-06	fb-survey	county	day	2020-11-19	44	0	0	0	0.141504	0.144058	86	20.1930

```
#code looking at "Estimated percentage of respondents who "used public transit" in the past 24 hours"
pg_fb_bus <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wpublic_transit_1d",
                              start_day = "2020-10-01", end_day = "2020-12-31",
                              geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_fb_bus))
```

data_source	signal	geo_value	time_value	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wpublic_transit_1d	24033	2020-10-01	fb-survey	county	day	2020-12-09	69	0	0	0	5.447851	1.150638	89	9.0416
fb-survey	smoothed_wpublic_transit_1d	24033	2020-10-02	fb-survey	county	day	2020-12-09	68	0	0	0	5.831581	1.192038	86	6.4784
fb-survey	smoothed_wpublic_transit_1d	24033	2020-10-03	fb-survey	county	day	2020-12-09	67	0	0	0	6.001917	1.203982	89	9.2014
fb-survey	smoothed_wpublic_transit_1d	24033	2020-10-04	fb-survey	county	day	2020-12-09	66	0	0	0	5.614835	1.173148	85	5.0670
fb-survey	smoothed_wpublic_transit_1d	24033	2020-10-05	fb-survey	county	day	2020-12-09	65	0	0	0	6.111265	1.172850	77	7.1189

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wpublic_transit_1d	24033	2020-10-06	2020-12-09	county	day	64	0	0	0	6.221371	1.533648	48.5893

```
moco_fb_bus <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wpublic_transit_1d",
                        start_day = "2020-10-01", end_day = "2020-12-31",
                        geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_fb_bus))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wpublic_transit_1d	24031	2020-10-01	2020-12-09	county	day	69	0	0	0	3.979163	1.819976	68.2781
fb-survey	smoothed_wpublic_transit_1d	24031	2020-10-02	2020-12-09	county	day	68	0	0	0	4.790498	1.876139	74.1863
fb-survey	smoothed_wpublic_transit_1d	24031	2020-10-03	2020-12-09	county	day	67	0	0	0	4.848172	1.867096	68.5651
fb-survey	smoothed_wpublic_transit_1d	24031	2020-10-04	2020-12-09	county	day	66	0	0	0	4.809215	1.858982	70.4416
fb-survey	smoothed_wpublic_transit_1d	24031	2020-10-05	2020-12-09	county	day	65	0	0	0	4.900251	1.843265	73.4449
fb-survey	smoothed_wpublic_transit_1d	24031	2020-10-06	2020-12-09	county	day	64	0	0	0	4.488456	1.793898	80.1930

```
#looking at "Estimated percentage of respondents who reported feeling "nervous, anxious, or on edge" fo
pg_fb_anxious <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wanxious_5d",
                        start_day = "2020-10-01", end_day = "2020-12-31",
                        geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_fb_anxious))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wanxious_5d	24033	2020-10-01	2020-12-09	county	day	69	0	0	0	10.43303	1.364295	396.1823

data_source	signal	geo_value	time_value	issue	geo_type	time_type	value	lag	missing_value	missing_stderr	missing_sample_size	stderr	sample_size
fb-survey	smoothed_wanxious_5d	24033	2020-10-05	2020-12-09	fb-survey	day	11.62205	68	0	0	0	1.573397	731.6191
fb-survey	smoothed_wanxious_5d	24033	2020-10-06	2020-12-09	fb-survey	day	10.44221	67	0	0	0	1.675099	690.5645
fb-survey	smoothed_wanxious_5d	24033	2020-10-07	2020-12-09	fb-survey	day	9.107911	66	0	0	0	1.955003	654.5623
fb-survey	smoothed_wanxious_5d	24033	2020-10-08	2020-12-09	fb-survey	day	8.536631	65	0	0	0	2.244923	781.7629
fb-survey	smoothed_wanxious_5d	24033	2020-10-09	2020-12-09	fb-survey	day	7.548376	64	0	0	0	2.635118	892.2398

```
moco_fb_anxious <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wanxious_5d",
                        start_day = "2020-10-01", end_day = "2020-12-31",
                        geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_fb_anxious))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	value	lag	missing_value	missing_stderr	missing_sample_size	stderr	sample_size
fb-survey	smoothed_wanxious_5d	24033	2020-10-01	2020-12-09	fb-survey	day	18.01492	69	0	0	0	2.701355	1150.2435
fb-survey	smoothed_wanxious_5d	24033	2020-10-02	2020-12-09	fb-survey	day	17.89208	68	0	0	0	2.652253	1138.1680
fb-survey	smoothed_wanxious_5d	24033	2020-10-03	2020-12-09	fb-survey	day	17.37788	67	0	0	0	2.603596	1068.3455
fb-survey	smoothed_wanxious_5d	24033	2020-10-04	2020-12-09	fb-survey	day	15.86317	66	0	0	0	2.543696	1050.0898
fb-survey	smoothed_wanxious_5d	24033	2020-10-05	2020-12-09	fb-survey	day	16.00815	65	0	0	0	2.508359	990.9807
fb-survey	smoothed_wanxious_5d	24033	2020-10-06	2020-12-09	fb-survey	day	15.99091	64	0	0	0	2.486806	967.7023

```
#looking at "Cumulative number of confirmed deaths due to COVID-19" from the JHU data
pg_jhu_deaths <- covidcast_signal(data_source = "jhu-csse", signal = "deaths_cumulative_num",
                        start_day = "2020-10-01", end_day = "2020-12-31",
                        geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_jhu_deaths))
```

data_source	signal	geo_value	time_value	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
jhu-csse	deaths_cumulative_num	24033	2020-10-01	jhu-csse	county	day	182	0	0	0	828	NA	NA
jhu-csse	deaths_cumulative_num	24033	2020-10-02	jhu-csse	county	day	181	0	0	0	827	NA	NA
jhu-csse	deaths_cumulative_num	24033	2020-10-03	jhu-csse	county	day	180	0	0	0	828	NA	NA
jhu-csse	deaths_cumulative_num	24033	2020-10-04	jhu-csse	county	day	179	0	0	0	830	NA	NA
jhu-csse	deaths_cumulative_num	24033	2020-10-05	jhu-csse	county	day	178	0	0	0	830	NA	NA
jhu-csse	deaths_cumulative_num	24033	2020-10-06	jhu-csse	county	day	177	0	0	0	831	NA	NA

```
moco_jhu_deaths <- covidcast_signal(data_source = "jhu-csse", signal = "deaths_cumulative_num",
                        start_day = "2020-10-01", end_day = "2020-12-31",
                        geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_jhu_deaths))
```

data_source	signal	geo_value	time_value	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
jhu-csse	deaths_cumulative_num	24031	2020-10-01	jhu-csse	county	day	182	0	0	0	850	NA	NA
jhu-csse	deaths_cumulative_num	24031	2020-10-02	jhu-csse	county	day	181	0	0	0	851	NA	NA
jhu-csse	deaths_cumulative_num	24031	2020-10-03	jhu-csse	county	day	180	0	0	0	849	NA	NA
jhu-csse	deaths_cumulative_num	24031	2020-10-04	jhu-csse	county	day	179	0	0	0	849	NA	NA
jhu-csse	deaths_cumulative_num	24031	2020-10-05	jhu-csse	county	day	178	0	0	0	850	NA	NA

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
jhu-csse	deaths_cumulative_num	24031	2020-10-06	jhu-csse	county	day	2021-04-01	177	0	0	0	850	NA	NA

```
#Estimated percentage of people who wore a mask for most or all of the time while in public in the past
pg_fb_mask <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wwearing_mask",
                           start_day = "2020-10-01", end_day = "2020-12-31",
                           geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_fb_mask))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wwearing_mask	24033	2020-10-01	fb-survey	county	day	2020-12-09	69	0	0	0	96.59749	0.9807734	1.6956
fb-survey	smoothed_wwearing_mask	24033	2020-10-02	fb-survey	county	day	2020-12-09	68	0	0	0	97.15269	0.9045338	3.1204
fb-survey	smoothed_wwearing_mask	24033	2020-10-03	fb-survey	county	day	2020-12-09	67	0	0	0	95.52754	1.1277337	3.9149
fb-survey	smoothed_wwearing_mask	24033	2020-10-04	fb-survey	county	day	2020-12-09	66	0	0	0	95.63788	1.1303286	3.7555
fb-survey	smoothed_wwearing_mask	24033	2020-10-05	fb-survey	county	day	2020-12-09	65	0	0	0	95.69659	1.0650303	3.0860
fb-survey	smoothed_wwearing_mask	24033	2020-10-06	fb-survey	county	day	2020-12-09	64	0	0	0	94.38246	1.1961378	3.5629

```
moco_fb_mask <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wwearing_mask",
                           start_day = "2020-10-01", end_day = "2020-12-31",
                           geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_fb_mask))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wwearing_mask	24031	2020-10-01	fb-survey	county	day	2020-12-09	69	0	0	0	94.81161	0.9812750	0.8723

data_source	signal	geo_value	time_value	issue	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wwearing_mask	24031	2020-10-02	2020-12-09	fb-survey	county	day	68	0	0	0	95.4922	2.893673	38.9780
fb-survey	smoothed_wwearing_mask	24031	2020-10-03	2020-12-09	fb-survey	county	day	67	0	0	0	95.7624	2.185419	36.1614
fb-survey	smoothed_wwearing_mask	24031	2020-10-04	2020-12-09	fb-survey	county	day	66	0	0	0	96.0888	1.821423	37.0509
fb-survey	smoothed_wwearing_mask	24031	2020-10-05	2020-12-09	fb-survey	county	day	65	0	0	0	96.2947	1.775187	37.7574
fb-survey	smoothed_wwearing_mask	24031	2020-10-06	2020-12-09	fb-survey	county	day	64	0	0	0	96.3466	1.758164	42.4790

```
#Estimated percentage of respondents who worked or went to school outside their home in the past 24 hou
pg_fb_out <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wwork_outside_home_1d",
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_fb_out))
```

data_source	signal	geo_value	time_value	issue	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wwork_outside_home_1d	24033	2020-10-01	2020-12-09	fb-survey	county	day	69	0	0	0	31.4928	2.354938	39.0416
fb-survey	smoothed_wwork_outside_home_1d	24033	2020-10-02	2020-12-09	fb-survey	county	day	68	0	0	0	32.1306	2.375388	36.4784
fb-survey	smoothed_wwork_outside_home_1d	24033	2020-10-03	2020-12-09	fb-survey	county	day	67	0	0	0	32.0842	2.366138	39.2014
fb-survey	smoothed_wwork_outside_home_1d	24033	2020-10-04	2020-12-09	fb-survey	county	day	66	0	0	0	31.4352	2.365838	35.0670
fb-survey	smoothed_wwork_outside_home_1d	24033	2020-10-05	2020-12-09	fb-survey	county	day	65	0	0	0	31.1052	2.266634	37.1189
fb-survey	smoothed_wwork_outside_home_1d	24033	2020-10-06	2020-12-09	fb-survey	county	day	64	0	0	0	29.1412	2.169803	38.5893

```
moco_fb_out <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wwork_outside_home_1d",
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_fb_out))
```

data_source	signal	geo_value	time_value	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wwearing_mask_7d	24031	2020-10-01	fb-survey	county	day	2020-12-09	69	0	0	0	24.86467	1.8131546	8.2781
fb-survey	smoothed_wwearing_mask_7d	24031	2020-10-02	fb-survey	county	day	2020-12-09	68	0	0	0	24.16587	1.7561594	4.1863
fb-survey	smoothed_wwearing_mask_7d	24031	2020-10-03	fb-survey	county	day	2020-12-09	67	0	0	0	25.48577	1.7592923	3.5651
fb-survey	smoothed_wwearing_mask_7d	24031	2020-10-04	fb-survey	county	day	2020-12-09	66	0	0	0	25.46726	1.7490928	0.4416
fb-survey	smoothed_wwearing_mask_7d	24031	2020-10-05	fb-survey	county	day	2020-12-09	65	0	0	0	24.63832	1.6831655	5.4449
fb-survey	smoothed_wwearing_mask_7d	24031	2020-10-06	fb-survey	county	day	2020-12-09	64	0	0	0	24.06116	1.6389688	0.1930

```
#Estimated percentage of respondents who report being very or somewhat worried about their "household's
pg_fb_money <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wworried_finances",
                        start_day = "2020-10-01", end_day = "2020-12-31",
                        geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_fb_money))
```

data_source	signal	geo_value	time_value	source	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wworried_finances	24033	2020-10-01	fb-survey	county	day	2020-12-09	69	0	0	0	43.71526	2.6645946	6.5473
fb-survey	smoothed_wworried_finances	24033	2020-10-02	fb-survey	county	day	2020-12-09	68	0	0	0	42.75126	2.6673993	3.9841
fb-survey	smoothed_wworried_finances	24033	2020-10-03	fb-survey	county	day	2020-12-09	67	0	0	0	44.81428	2.6885463	2.9295
fb-survey	smoothed_wworried_finances	24033	2020-10-04	fb-survey	county	day	2020-12-09	66	0	0	0	42.65426	2.6558247	6.7880
fb-survey	smoothed_wworried_finances	24033	2020-10-05	fb-survey	county	day	2020-12-09	65	0	0	0	43.68926	2.6613794	4.9886

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wworried_finances	24033	2020-10-06	2020-12-09	county	day	64	0	0	0	45.6772	2.537188	385.4655

```
moco_fb_money <- covidcast_signal(data_source = "fb-survey", signal = "smoothed_wworried_finances",
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_fb_money))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
fb-survey	smoothed_wworried_finances	24031	2020-10-01	2020-12-09	county	day	69	0	0	0	32.7762	2.958659	569.8785
fb-survey	smoothed_wworried_finances	24031	2020-10-02	2020-12-09	county	day	68	0	0	0	32.8958	3.007392	527.8030
fb-survey	smoothed_wworried_finances	24031	2020-10-03	2020-12-09	county	day	67	0	0	0	32.9572	3.074056	506.9805
fb-survey	smoothed_wworried_finances	24031	2020-10-04	2020-12-09	county	day	66	0	0	0	32.0407	3.059956	506.8641
fb-survey	smoothed_wworried_finances	24031	2020-10-05	2020-12-09	county	day	65	0	0	0	33.0679	3.092425	497.7550
fb-survey	smoothed_wworried_finances	24031	2020-10-06	2020-12-09	county	day	64	0	0	0	33.5026	3.399466	467.4766

```
#Estimated percentage of new hospital admissions with COVID-associated diagnoses, based on claims data
pg_hhs_hospital <- covidcast_signal(data_source = "hospital-admissions", signal = "smoothed_covid19_fro
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = pg_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(pg_hhs_hospital))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
hospital-admissions	smoothed_covid19_from_claims	24033	2020-10-01	2020-11-28	county	day	788	0	5	5	4.98089	NA	NA

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
hospital-admissions	smoothed_covid19_from_hospital_admissions	24033	2020-10-02	2022-11-28	county	day	787	0	5	5	5.328849	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24033	2020-10-03	2022-11-28	county	day	786	0	5	5	5.701405	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24033	2020-10-04	2022-11-28	county	day	785	0	5	5	5.827876	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24033	2020-10-05	2022-11-28	county	day	784	0	5	5	5.878814	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24033	2020-10-06	2022-11-28	county	day	783	0	5	5	5.760586	NA	NA

```
moco_hhs_hospital <- covidcast_signal(data_source = "hospital-admissions", signal = "smoothed_covid19_fr
                          start_day = "2020-10-01", end_day = "2020-12-31",
                          geo_type = "county", geo_value = moco_fips)
```

```
## Fetched day 2020-10-01 to 2020-12-31: num_entries = 92
```

```
knitr::kable(head(moco_hhs_hospital))
```

data_source	signal	geo_value	time_value	issue	geo_type	time_type	lag	missing_value	missing_stderr	missing_sample_size	value	stderr	sample_size
hospital-admissions	smoothed_covid19_from_hospital_admissions	24031	2020-10-01	2022-11-28	county	day	788	0	5	5	4.081638	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24031	2020-10-02	2022-11-28	county	day	787	0	5	5	4.357004	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24031	2020-10-03	2022-11-28	county	day	786	0	5	5	4.675541	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24031	2020-10-04	2022-11-28	county	day	785	0	5	5	5.113851	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24031	2020-10-05	2022-11-28	county	day	784	0	5	5	5.646182	NA	NA
hospital-admissions	smoothed_covid19_from_hospital_admissions	24031	2020-10-06	2022-11-28	county	day	783	0	5	5	6.104638	NA	NA

Results

This section presents the main results.

Data exploration

The results section may have a data exploration part, but in general the structure here depends on the specific project.

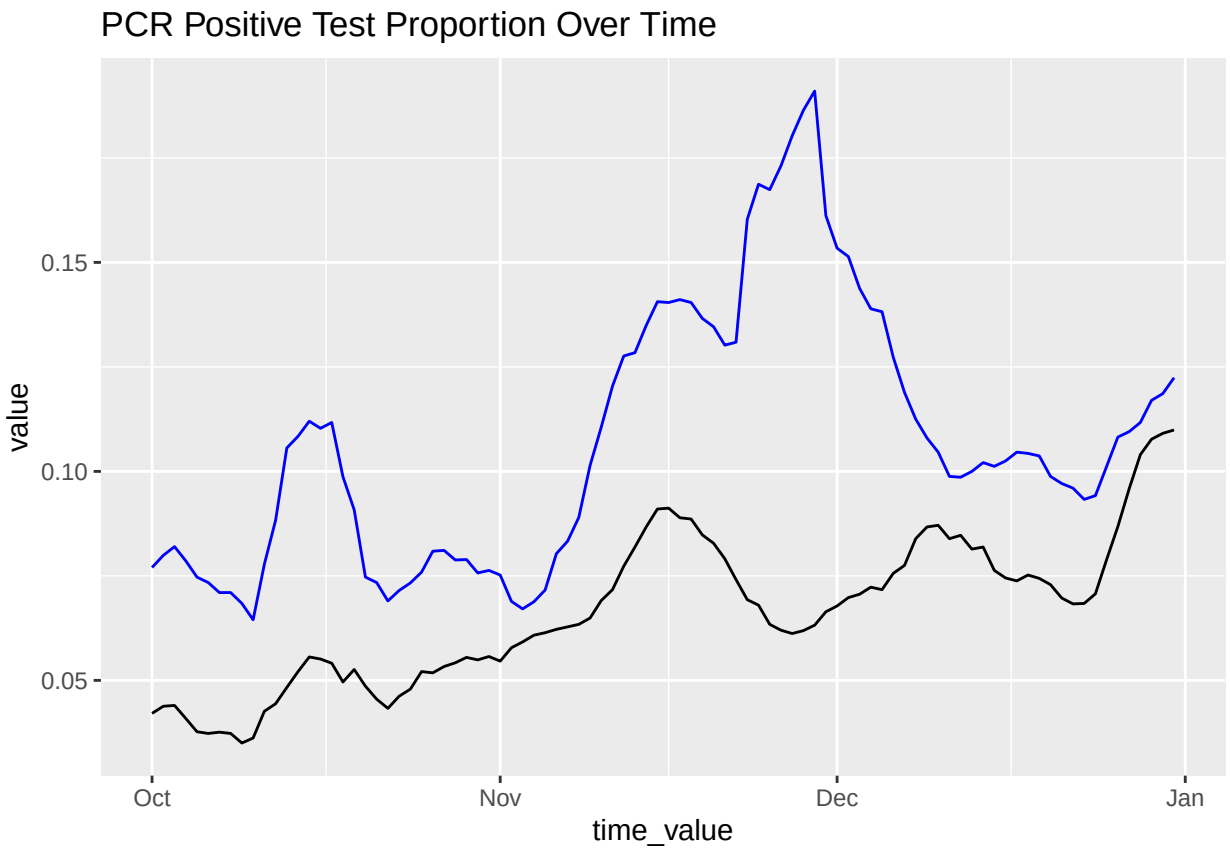
```
# What happens here depends on the specific project
```

```
# What happens here depends on the specific project
```

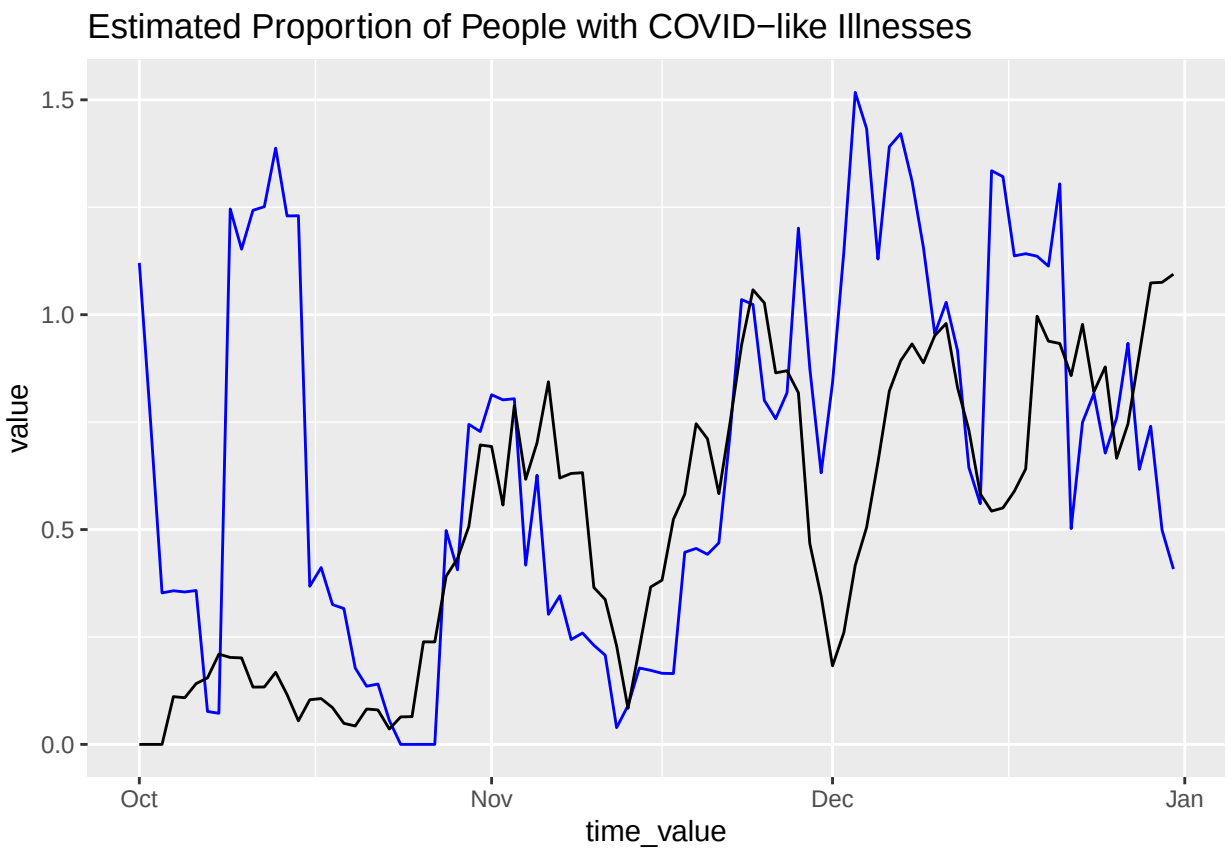
Analysis

This section presents the main results, such as (for example) stats and graphs that show relationships, model results and/or clustering, PCA, etc.

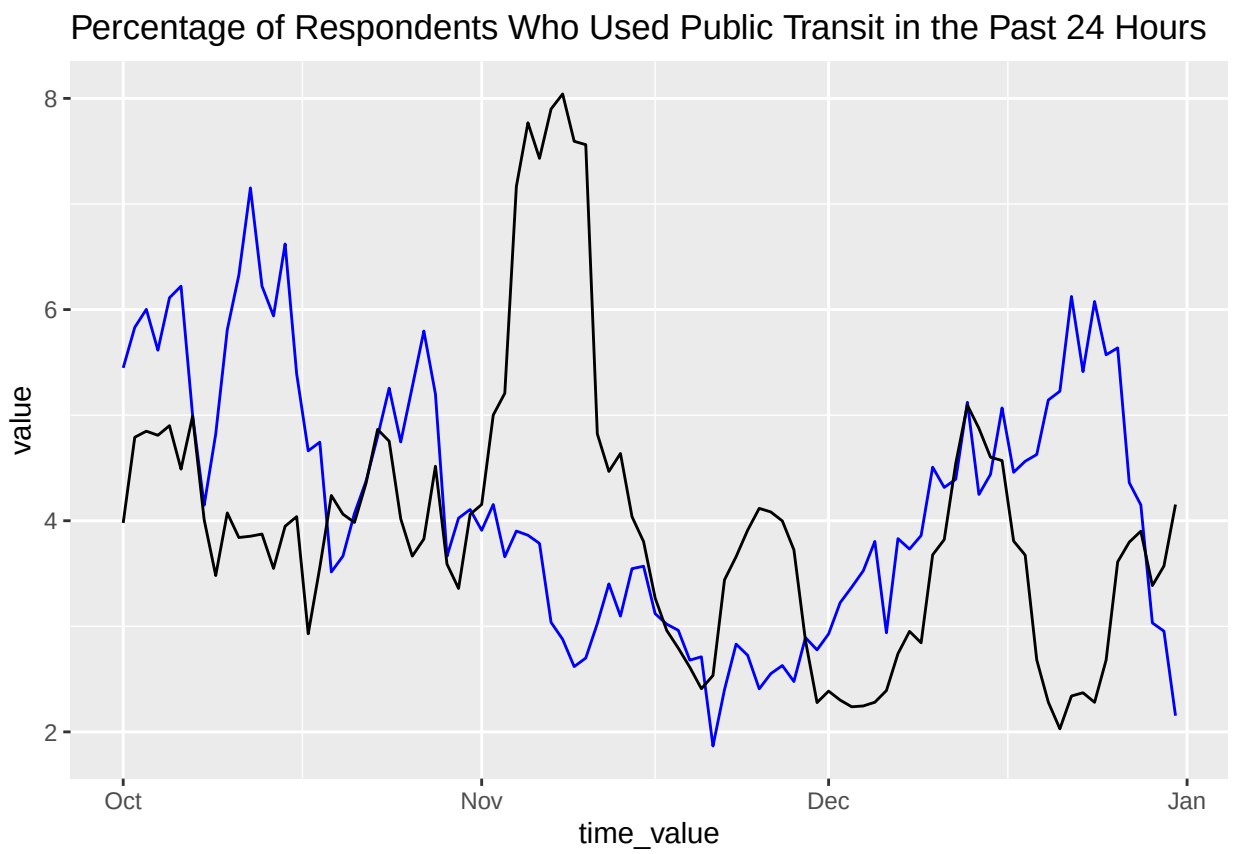
```
# What happens here depends on the specific project
#Graph of PCR positive proportion over time for Prince George's County vs Montgomery County
pos_pg <- pg_pcr_pos %>%
  group_by(time_value, value)
pos_moco <- moco_pcr_pos %>%
  group_by(time_value, value)
pos <- ggplot()+geom_line(data=pos_pg, aes(time_value,value), color="blue") +
  geom_line(data=pos_moco, aes(time_value,value), color="black") + labs(title= "PCR Positive Test Propo
pos
```



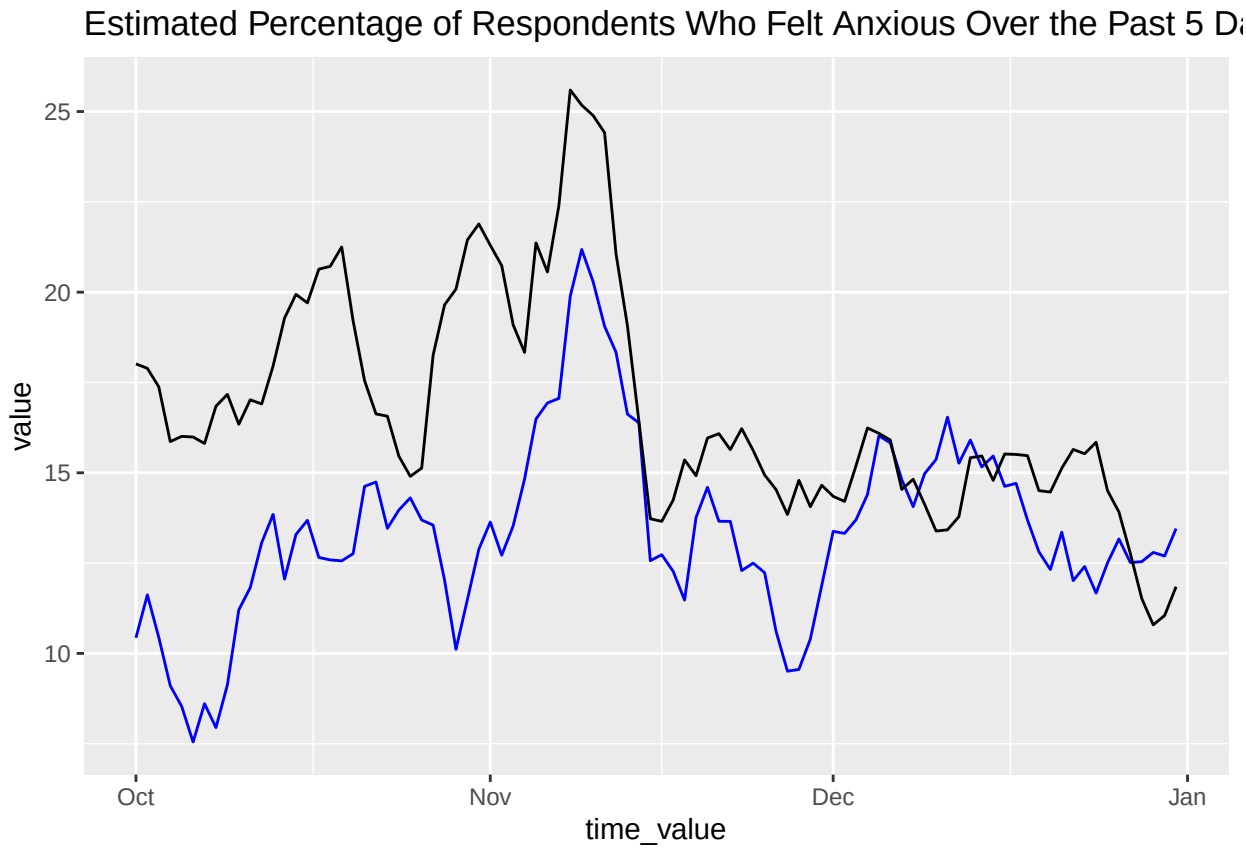
```
# What happens here depends on the specific project
fb_pg <- pg_fb_pos %>%
  group_by(time_value, value)
fb_moco <- moco_fb_pos %>%
  group_by(time_value, value)
pos_fb <- ggplot()+geom_line(data=fb_pg, aes(time_value,value), color="blue") +
  geom_line(data=fb_moco, aes(time_value,value), color="black") + labs(title= "Estimated Proportion of
pos_fb
```



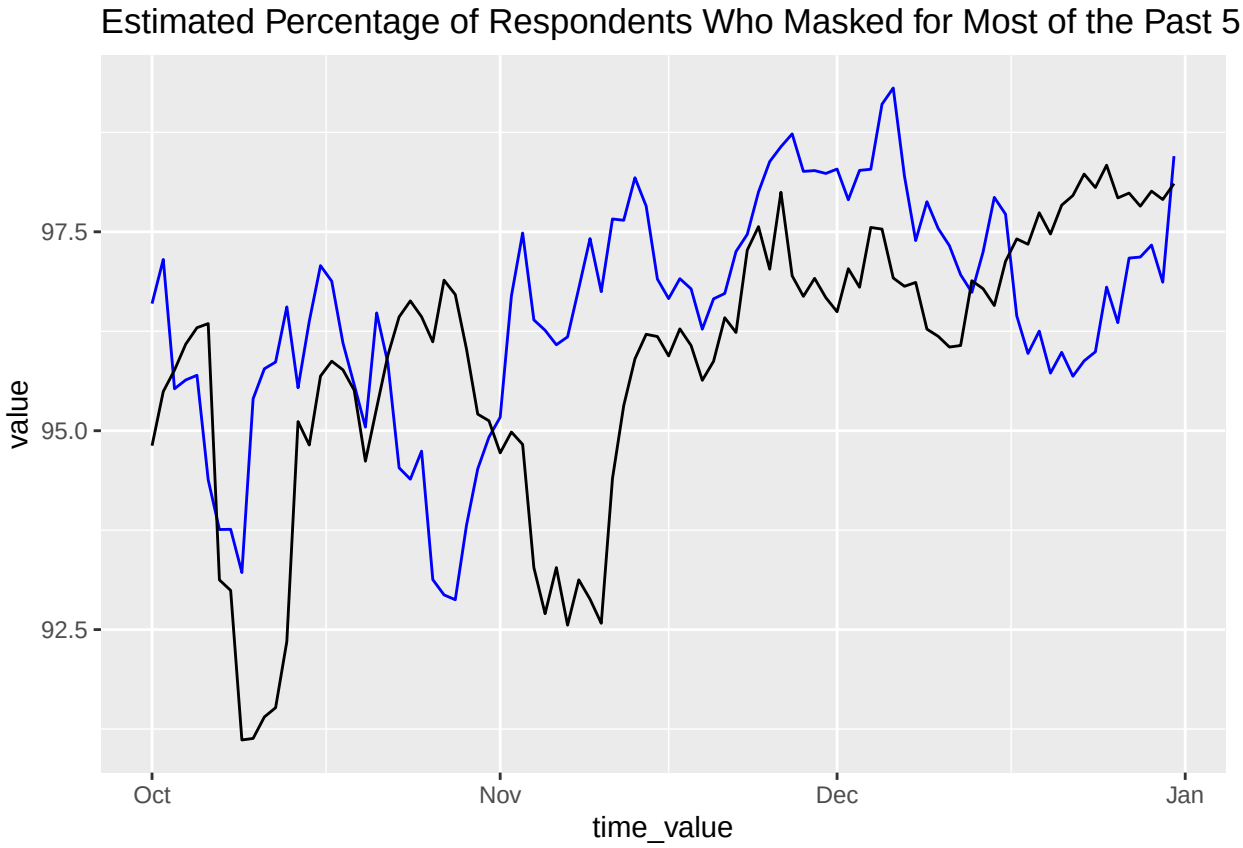

```
# What happens here depends on the specific project
bus_pg <- pg_fb_bus %>%
  group_by(time_value, value)
bus_moco <- moco_fb_bus %>%
  group_by(time_value, value)
bus <- ggplot()+geom_line(data=bus_pg, aes(time_value,value), color="blue") +
  geom_line(data=bus_moco, aes(time_value,value), color="black") + labs(title= "Percentage of Responden
bus
```



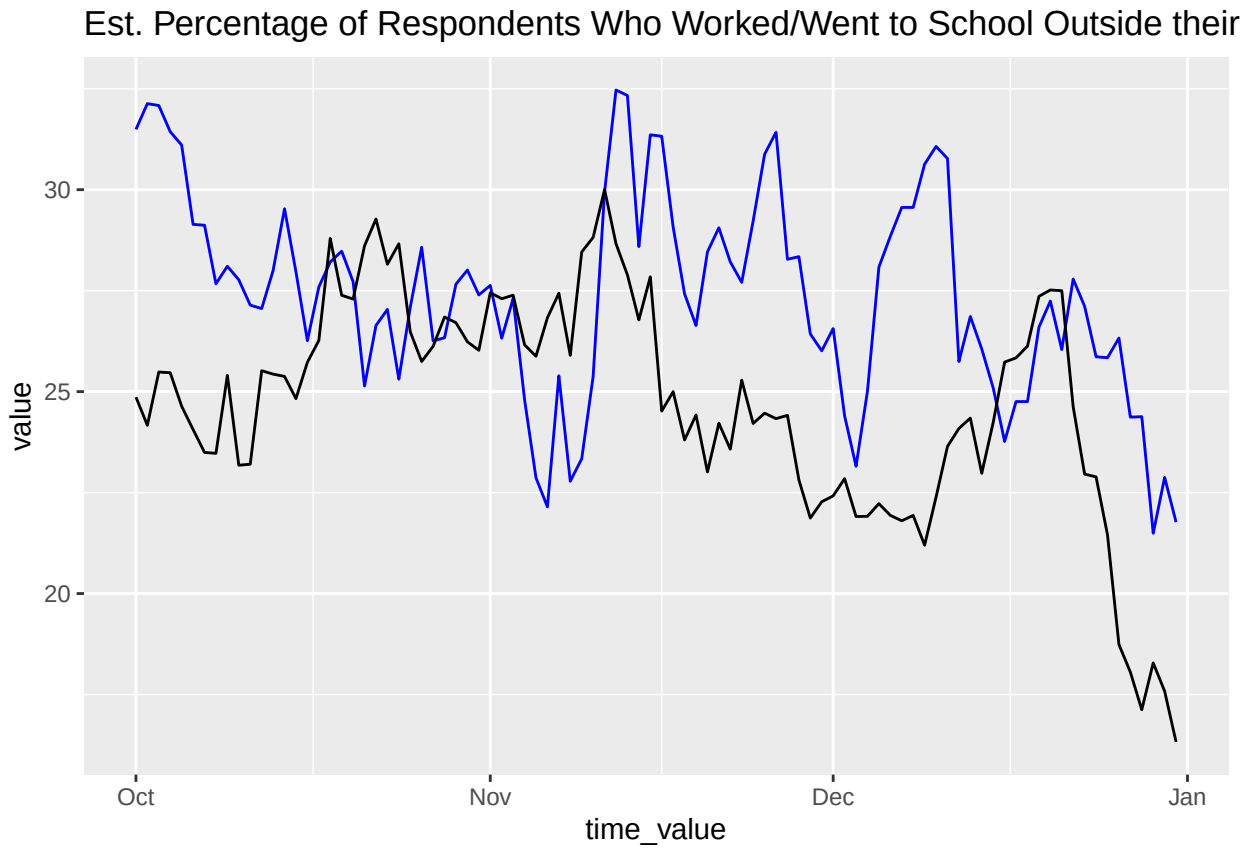

```
anxious_pg <- pg_fb_anxious %>%
  group_by(time_value, value)
anxious_moco <- moco_fb_anxious %>%
  group_by(time_value, value)
anxious <- ggplot()+geom_line(data=anxious_pg, aes(time_value,value), color="blue") +
  geom_line(data=anxious_moco, aes(time_value,value), color="black") + labs(title= "Estimated Percentag
anxious
```



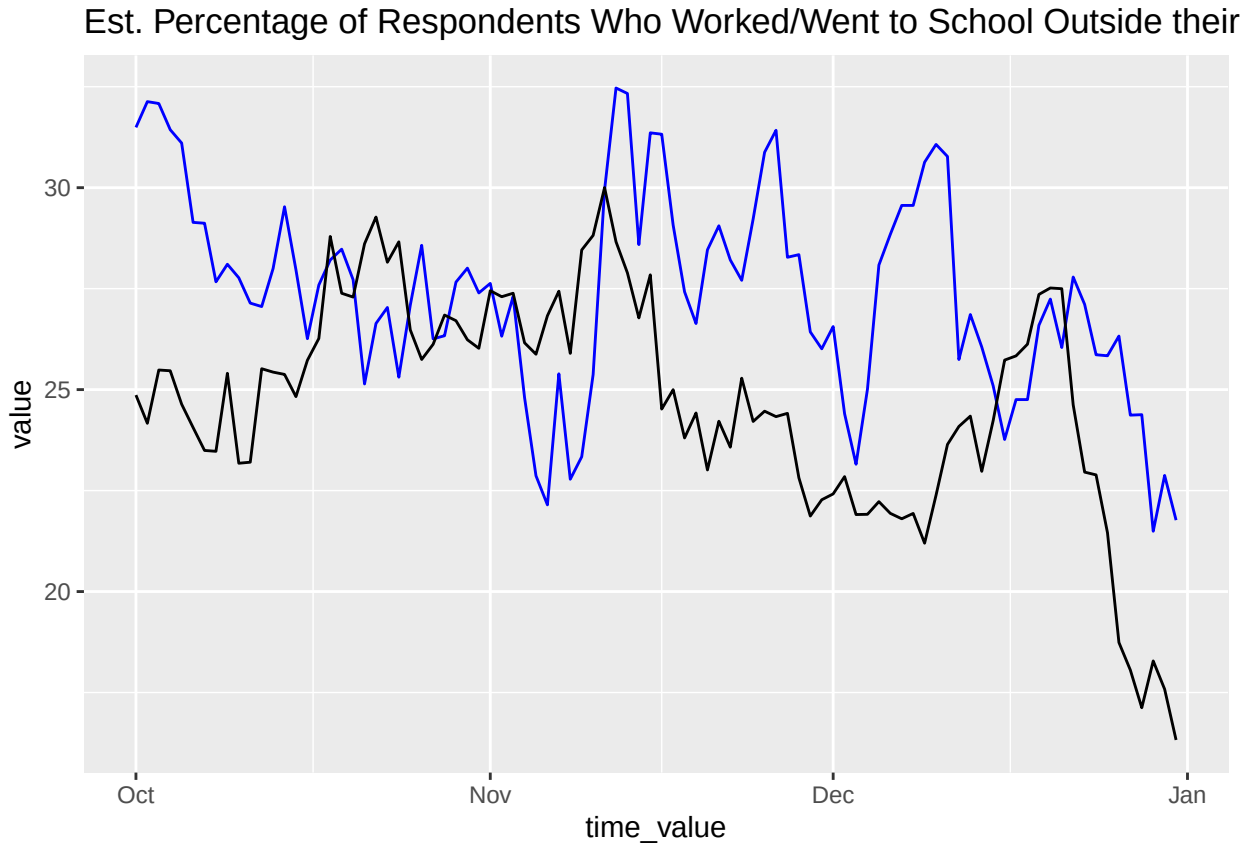

```
mask_pg <- pg_fb_mask %>%
  group_by(time_value, value)
mask_moco <- moco_fb_mask %>%
  group_by(time_value, value)
mask <- ggplot()+geom_line(data=mask_pg, aes(time_value,value), color="blue") +
  geom_line(data=mask_moco, aes(time_value,value), color="black") + labs(title= "Estimated Percentage o
mask
```



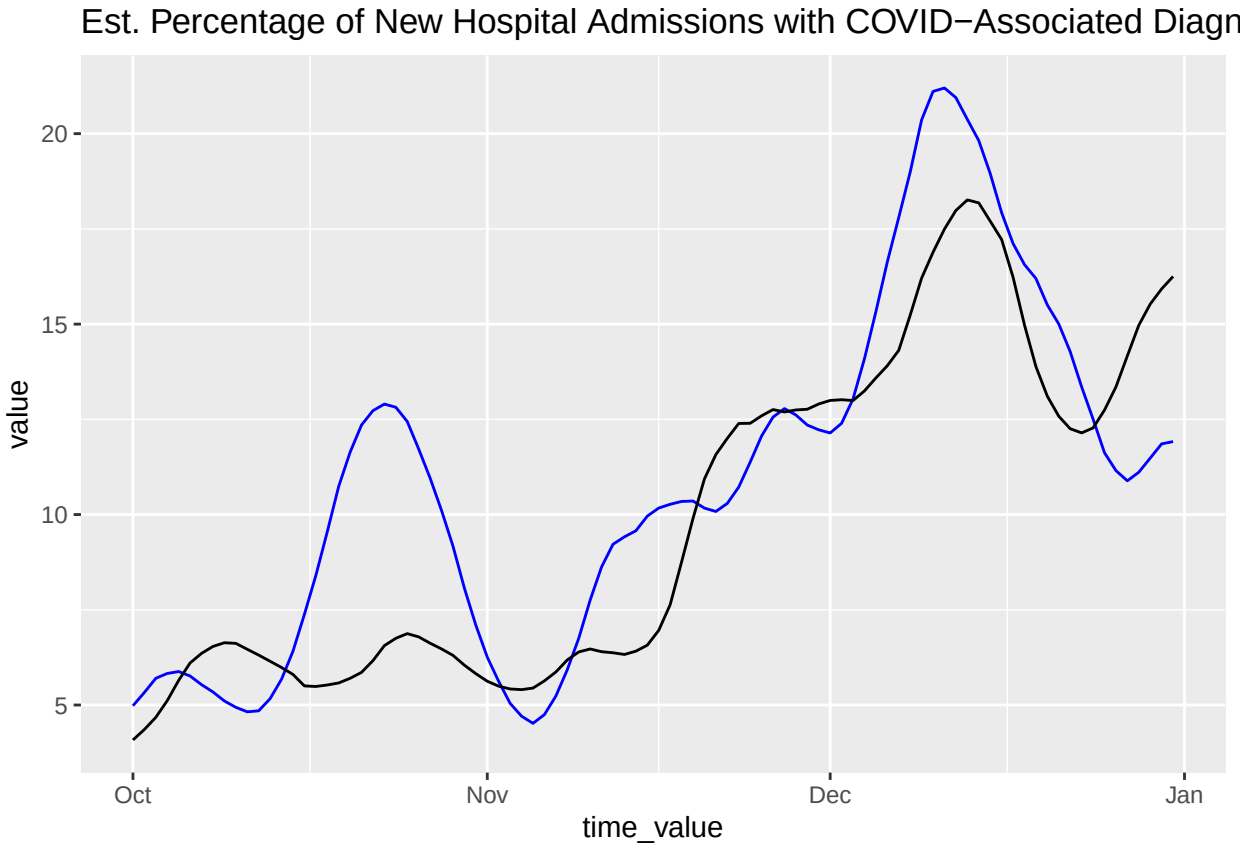

```
out_pg <- pg_fb_out %>%
  group_by(time_value, value)
out_moco <- moco_fb_out %>%
  group_by(time_value, value)
out <- ggplot()+geom_line(data=out_pg, aes(time_value,value), color="blue") +
  geom_line(data=out_moco, aes(time_value,value), color="black") + labs(title= "Est. Percentage of Resp
out
```



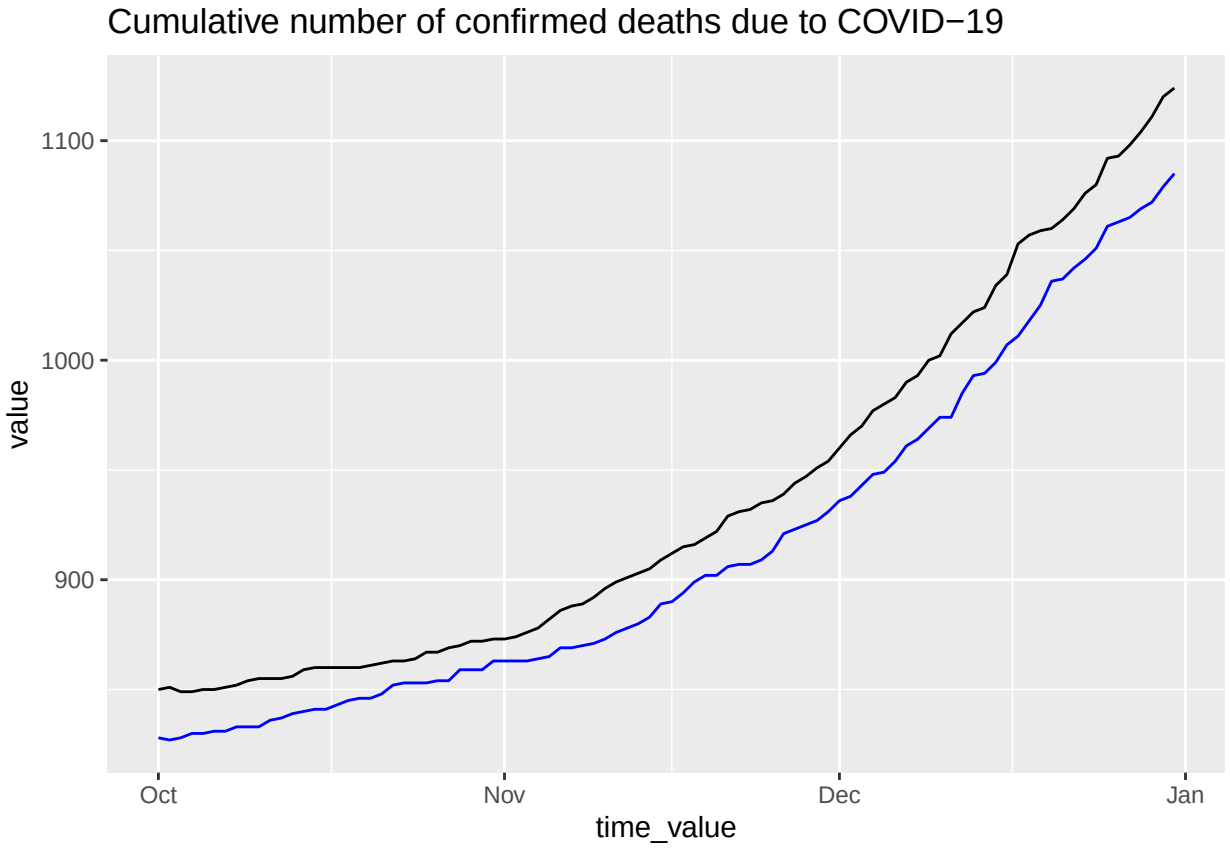

```
money_pg <- pg_fb_money %>%
  group_by(time_value, value)
money_moco <- moco_fb_money %>%
  group_by(time_value, value)
money <- ggplot()+geom_line(data=money_pg, aes(time_value,value), color="blue") +
  geom_line(data=money_moco, aes(time_value,value), color="black") + labs(title= "Est. Percentage of Res
out
```




```
hospitals_pg <- pg_hhs_hospital %>%
  group_by(time_value, value)
hospitals_moco <- moco_hhs_hospital %>%
  group_by(time_value, value)
hospitals <- ggplot()+geom_line(data=hospitals_pg, aes(time_value,value), color="blue") +
  geom_line(data=hospitals_moco, aes(time_value,value), color="black") + labs(title= "Est. Percentage o
hospitals
```




```
deaths_pg <- pg_jhu_deaths %>%
  group_by(time_value, value)
deaths_moco <- moco_jhu_deaths %>%
  group_by(time_value, value)
deaths <- ggplot()+geom_line(data=deaths_pg, aes(time_value,value), color="blue") +
  geom_line(data=deaths_moco, aes(time_value,value), color="black") + labs(title= "Cumulative number of
deaths
```



Discussion

This section summarizes the results and may briefly outline advantages and limitations of the work presented.

References

Baumer, Benjamin S., Daniel T. Kaplan, and Nicholas J. Horton. 2017. *Modern Data Science with R*. Chapman & Hall/CRC Press.

Wickham, Hadley. 2014. "Tidy Data." *Journal of Statistical Software* 59 (10): 1–23.