Project

Load packages and data

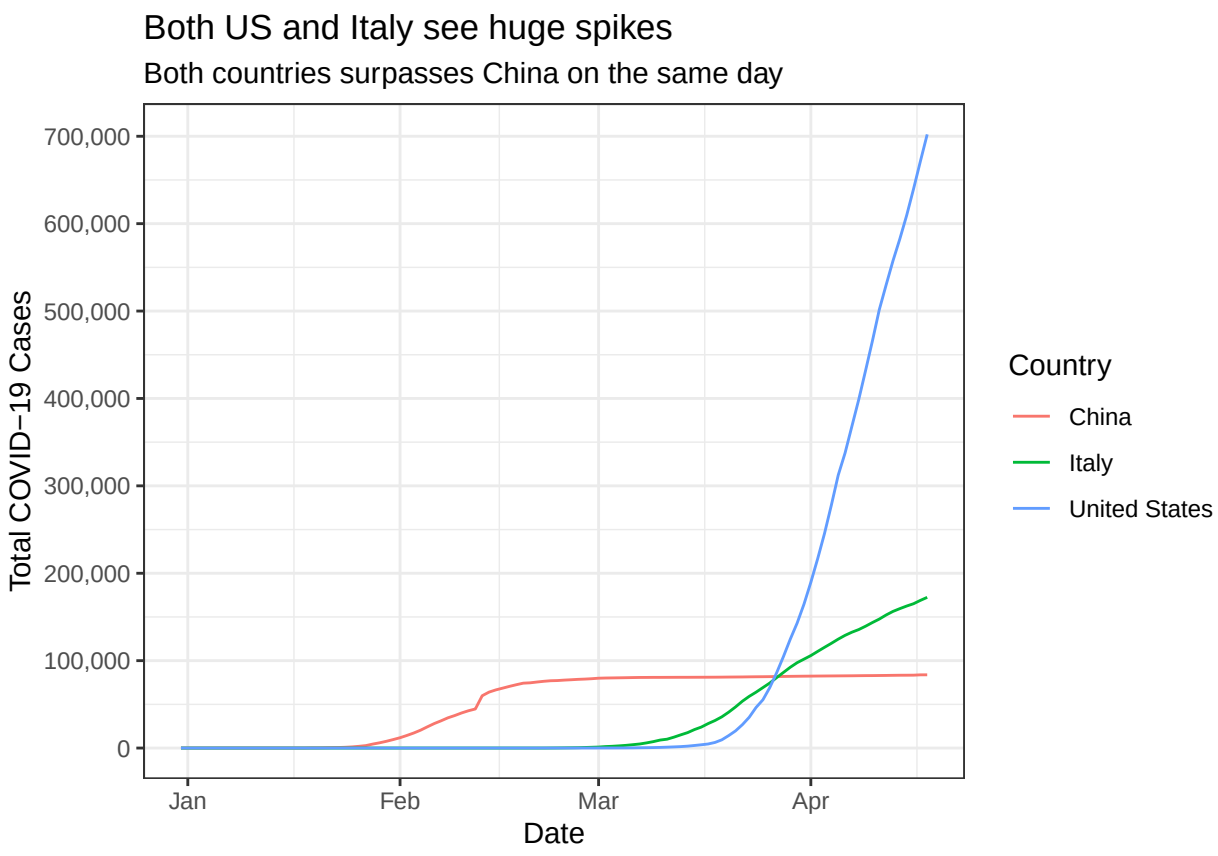
Y'all, the data file is just called data and cases is cases.

Matt's stuff

```
countries <- c("United States", "China", "Italy")

matt_data <- cases %>%
  filter(location %in% countries) %>%
  select(location, date, total_cases, new_cases)

ggplot(matt_data, aes(x = date, y = total_cases, color = location)) +
  geom_line() +
  labs(y = "Total COVID-19 Cases",
       x = "Date",
       color = "Country",
       title = "Both US and Italy see huge spikes",
       subtitle = "Both countries surpasses China on the same day") +
  scale_y_continuous(breaks=seq(0, 700000, 100000),
                     labels = comma) +
  theme_bw()
```



Larry's stuff

```
countries <- c("United States", "China", "Italy")

data_use <- data %>%
  filter(
    CountryName %in% countries
  )
data_use
```

```
# A tibble: 323 x 40
   CountryName CountryCode   Date `S1_School clos~ S1_IsGeneral S1_Notes
   <chr>       <chr>        <dbl>            <dbl>        <dbl> <chr>
 1 China       CHN         2.02e7                0            0 <NA>
 2 China       CHN         2.02e7                0            0 <NA>
 3 China       CHN         2.02e7                0            0 <NA>
 4 China       CHN         2.02e7                0            0 <NA>
 5 China       CHN         2.02e7                0            0 <NA>
 6 China       CHN         2.02e7                0            0 <NA>
 7 China       CHN         2.02e7                0            0 <NA>
 8 China       CHN         2.02e7                0            0 <NA>
 9 China       CHN         2.02e7                0            0 <NA>
10 China       CHN         2.02e7                0            0 <NA>
# ... with 313 more rows, and 34 more variables: `S2_Workplace closing` <dbl>,
#   S2_IsGeneral <dbl>, S2_Notes <chr>, `S3_Cancel public events` <dbl>,
#   S3_IsGeneral <dbl>, S3_Notes <chr>, `S4_Close public transport` <dbl>,
#   S4_IsGeneral <dbl>, S4_Notes <chr>, `S5_Public information
#   campaigns` <dbl>, S5_IsGeneral <dbl>, S5_Notes <chr>, `S6_Restrictions on
#   internal movement` <dbl>, S6_IsGeneral <dbl>, S6_Notes <chr>,
#   `S7_International travel controls` <dbl>, S7_Notes <chr>, `S8_Fiscal
#   measures` <dbl>, S8_Notes <chr>, `S9_Monetary measures` <dbl>,
#   S9_Notes <chr>, `S10_Emergency investment in health care` <dbl>,
#   S10_Notes <chr>, `S11_Investment in Vaccines` <dbl>, S11_Notes <chr>,
#   `S12_Testing framework` <dbl>, S12_Notes <chr>, `S13_Contact
#   tracing` <dbl>, S13_Notes <chr>, ConfirmedCases <dbl>,
#   ConfirmedDeaths <dbl>, StringencyIndex <dbl>,
#   StringencyIndexForDisplay <dbl>, X40 <lgl>
```

```
data_use %>%
  filter(
    `S1_School closing` == 1
  )
```

```
# A tibble: 2 x 40
  CountryName CountryCode   Date `S1_School clos~ S1_IsGeneral S1_Notes
  <chr>       <chr>        <dbl>            <dbl>        <dbl> <chr>
1 United Sta~ USA         2.02e7                1            0 "Depart~
2 United Sta~ USA         2.02e7                1            0  <NA>
# ... with 34 more variables: `S2_Workplace closing` <dbl>, S2_IsGeneral <dbl>,
#   S2_Notes <chr>, `S3_Cancel public events` <dbl>, S3_IsGeneral <dbl>,
#   S3_Notes <chr>, `S4_Close public transport` <dbl>, S4_IsGeneral <dbl>,
#   S4_Notes <chr>, `S5_Public information campaigns` <dbl>,
#   S5_IsGeneral <dbl>, S5_Notes <chr>, `S6_Restrictions on internal
#   movement` <dbl>, S6_IsGeneral <dbl>, S6_Notes <chr>, `S7_International
```

```
#   travel controls` <dbl>, S7_Notes <chr>, `S8_Fiscal measures` <dbl>,
#   S8_Notes <chr>, `S9_Monetary measures` <dbl>, S9_Notes <chr>,
#   `S10_Emergency investment in health care` <dbl>, S10_Notes <chr>,
#   `S11_Investment in Vaccines` <dbl>, S11_Notes <chr>, `S12_Testing
#   framework` <dbl>, S12_Notes <chr>, `S13_Contact tracing` <dbl>,
#   S13_Notes <chr>, ConfirmedCases <dbl>, ConfirmedDeaths <dbl>,
#   StringencyIndex <dbl>, StringencyIndexForDisplay <dbl>, X40 <lgl>
```

```
data_use %>%
  filter(
    `S1_School closing` == 2
  )
```

```
# A tibble: 179 x 40
   CountryName CountryCode   Date `S1_School clos~ S1_IsGeneral S1_Notes
   <chr>       <chr>        <dbl>            <dbl>        <dbl> <chr>
 1 China       CHN         2.02e7                2            1 http://~
 2 China       CHN         2.02e7                2            1 <NA>
 3 China       CHN         2.02e7                2            1 <NA>
 4 China       CHN         2.02e7                2            1 <NA>
 5 China       CHN         2.02e7                2            1 <NA>
 6 China       CHN         2.02e7                2            1 <NA>
 7 China       CHN         2.02e7                2            1 <NA>
 8 China       CHN         2.02e7                2            1 <NA>
 9 China       CHN         2.02e7                2            1 <NA>
10 China       CHN         2.02e7                2            1 <NA>
# ... with 169 more rows, and 34 more variables: `S2_Workplace closing` <dbl>,
#   S2_IsGeneral <dbl>, S2_Notes <chr>, `S3_Cancel public events` <dbl>,
#   S3_IsGeneral <dbl>, S3_Notes <chr>, `S4_Close public transport` <dbl>,
#   S4_IsGeneral <dbl>, S4_Notes <chr>, `S5_Public information
#   campaigns` <dbl>, S5_IsGeneral <dbl>, S5_Notes <chr>, `S6_Restrictions on
#   internal movement` <dbl>, S6_IsGeneral <dbl>, S6_Notes <chr>,
#   `S7_International travel controls` <dbl>, S7_Notes <chr>, `S8_Fiscal
#   measures` <dbl>, S8_Notes <chr>, `S9_Monetary measures` <dbl>,
#   S9_Notes <chr>, `S10_Emergency investment in health care` <dbl>,
#   S10_Notes <chr>, `S11_Investment in Vaccines` <dbl>, S11_Notes <chr>,
#   `S12_Testing framework` <dbl>, S12_Notes <chr>, `S13_Contact
#   tracing` <dbl>, S13_Notes <chr>, ConfirmedCases <dbl>,
#   ConfirmedDeaths <dbl>, StringencyIndex <dbl>,
#   StringencyIndexForDisplay <dbl>, X40 <lgl>
```

Recommended Closing schools: USA only one out of them that recommended closing before requiring closing, during 20200303

Required Closing schools: CHN 20200126 first day ITA 20200223 first day USA 20200305 first day

```
data_use %>%
  filter(
    `S2_Workplace closing` == 1
  )
```

```
# A tibble: 6 x 40
  CountryName CountryCode   Date `S1_School clos~ S1_IsGeneral S1_Notes
  <chr>       <chr>        <dbl>            <dbl>        <dbl> <chr>
1 China       CHN         2.02e7                2            0 "'Over ~
2 China       CHN         2.02e7                2            0 "'Over ~
3 China       CHN         2.02e7                2            0 "'Over ~
```

```
4 China       CHN         2.02e7                2            0 "'Over ~
5 China       CHN         2.02e7                2            0 "'Local~
6 China       CHN         2.02e7                2            0 "'Local~
# ... with 34 more variables: `S2_Workplace closing` <dbl>, S2_IsGeneral <dbl>,
#   S2_Notes <chr>, `S3_Cancel public events` <dbl>, S3_IsGeneral <dbl>,
#   S3_Notes <chr>, `S4_Close public transport` <dbl>, S4_IsGeneral <dbl>,
#   S4_Notes <chr>, `S5_Public information campaigns` <dbl>,
#   S5_IsGeneral <dbl>, S5_Notes <chr>, `S6_Restrictions on internal
#   movement` <dbl>, S6_IsGeneral <dbl>, S6_Notes <chr>, `S7_International
#   travel controls` <dbl>, S7_Notes <chr>, `S8_Fiscal measures` <dbl>,
#   S8_Notes <chr>, `S9_Monetary measures` <dbl>, S9_Notes <chr>,
#   `S10_Emergency investment in health care` <dbl>, S10_Notes <chr>,
#   `S11_Investment in Vaccines` <dbl>, S11_Notes <chr>, `S12_Testing
#   framework` <dbl>, S12_Notes <chr>, `S13_Contact tracing` <dbl>,
#   S13_Notes <chr>, ConfirmedCases <dbl>, ConfirmedDeaths <dbl>,
#   StringencyIndex <dbl>, StringencyIndexForDisplay <dbl>, X40 <lgl>
```

```
data_use %>%
  filter(
    `S2_Workplace closing` == 2
  )
```

```
# A tibble: 152 x 40
   CountryName CountryCode   Date `S1_School clos~ S1_IsGeneral S1_Notes
   <chr>       <chr>        <dbl>            <dbl>        <dbl> <chr>
 1 China       CHN         2.02e7                2            1 http://~
 2 China       CHN         2.02e7                2            1 <NA>
 3 China       CHN         2.02e7                2            1 <NA>
 4 China       CHN         2.02e7                2            1 <NA>
 5 China       CHN         2.02e7                2            1 <NA>
 6 China       CHN         2.02e7                2            1 <NA>
 7 China       CHN         2.02e7                2            1 <NA>
 8 China       CHN         2.02e7                2            1 <NA>
 9 China       CHN         2.02e7                2            1 <NA>
10 China       CHN         2.02e7                2            1 <NA>
# ... with 142 more rows, and 34 more variables: `S2_Workplace closing` <dbl>,
#   S2_IsGeneral <dbl>, S2_Notes <chr>, `S3_Cancel public events` <dbl>,
#   S3_IsGeneral <dbl>, S3_Notes <chr>, `S4_Close public transport` <dbl>,
#   S4_IsGeneral <dbl>, S4_Notes <chr>, `S5_Public information
#   campaigns` <dbl>, S5_IsGeneral <dbl>, S5_Notes <chr>, `S6_Restrictions on
#   internal movement` <dbl>, S6_IsGeneral <dbl>, S6_Notes <chr>,
#   `S7_International travel controls` <dbl>, S7_Notes <chr>, `S8_Fiscal
#   measures` <dbl>, S8_Notes <chr>, `S9_Monetary measures` <dbl>,
#   S9_Notes <chr>, `S10_Emergency investment in health care` <dbl>,
#   S10_Notes <chr>, `S11_Investment in Vaccines` <dbl>, S11_Notes <chr>,
#   `S12_Testing framework` <dbl>, S12_Notes <chr>, `S13_Contact
#   tracing` <dbl>, S13_Notes <chr>, ConfirmedCases <dbl>,
#   ConfirmedDeaths <dbl>, StringencyIndex <dbl>,
#   StringencyIndexForDisplay <dbl>, X40 <lgl>
```

Recommended Closing workplaces: CHN 20200403 first day

Required Closing workplaces: CHN 20200126 first day ITA 20200222 first day USA 20200319 first day

```
countries <- c("United States", "China", "Italy")
```

```
cases_use <- cases %>%
  filter(
    location %in% countries
  )
cases_use
```

```
# A tibble: 330 x 16
   iso_code location date       total_cases new_cases total_deaths new_deaths
   <chr>    <chr>    <date>           <dbl>     <dbl>        <dbl>      <dbl>
 1 CHN      China    2019-12-31          27        27            0          0
 2 CHN      China    2020-01-01          27         0            0          0
 3 CHN      China    2020-01-02          27         0            0          0
 4 CHN      China    2020-01-03          44        17            0          0
 5 CHN      China    2020-01-04          44         0            0          0
 6 CHN      China    2020-01-05          59        15            0          0
 7 CHN      China    2020-01-06          59         0            0          0
 8 CHN      China    2020-01-07          59         0            0          0
 9 CHN      China    2020-01-08          59         0            0          0
10 CHN      China    2020-01-09          59         0            0          0
# ... with 320 more rows, and 9 more variables: total_cases_per_million <dbl>,
#   new_cases_per_million <dbl>, total_deaths_per_million <dbl>,
#   new_deaths_per_million <dbl>, total_tests <dbl>, new_tests <dbl>,
#   total_tests_per_thousand <dbl>, new_tests_per_thousand <dbl>,
#   tests_units <chr>
```

Required Closing workplaces: CHN 20200126 first day ITA 20200222 first day USA 20200319 first day

Required Closing schools: CHN 20200126 first day ITA 20200223 first day USA 20200305 first day

```
cases_work <- cases_use %>%
  filter(
    date == ("2020-01-26") & location == "China" | date == ("2020-02-22") & location == "Italy" | date =
  ) %>%
  select(location, date, total_cases)

cases_school <- cases_use %>%
  filter(
    date == ("2020-01-26") & location == "China" | date == ("2020-02-23") & location == "Italy" | date =
  ) %>%
select(location, date, total_cases)

cases_work
```

```
# A tibble: 3 x 3
  location      date       total_cases
  <chr>         <date>           <dbl>
1 China         2020-01-26        1988
2 Italy         2020-02-22          17
3 United States 2020-03-19        9415
```

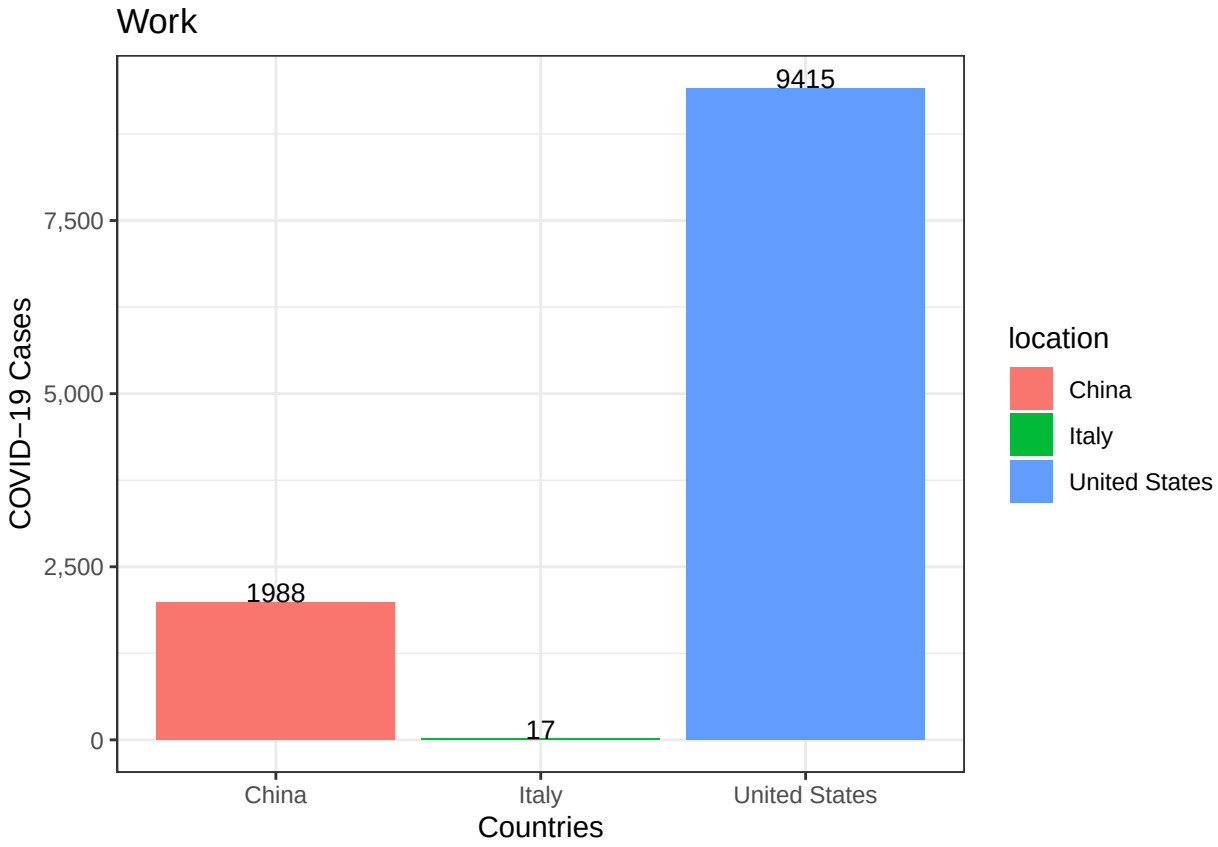
```
cases_school
```

```
# A tibble: 3 x 3
  location      date       total_cases
  <chr>         <date>           <dbl>
1 China         2020-01-26        1988
```

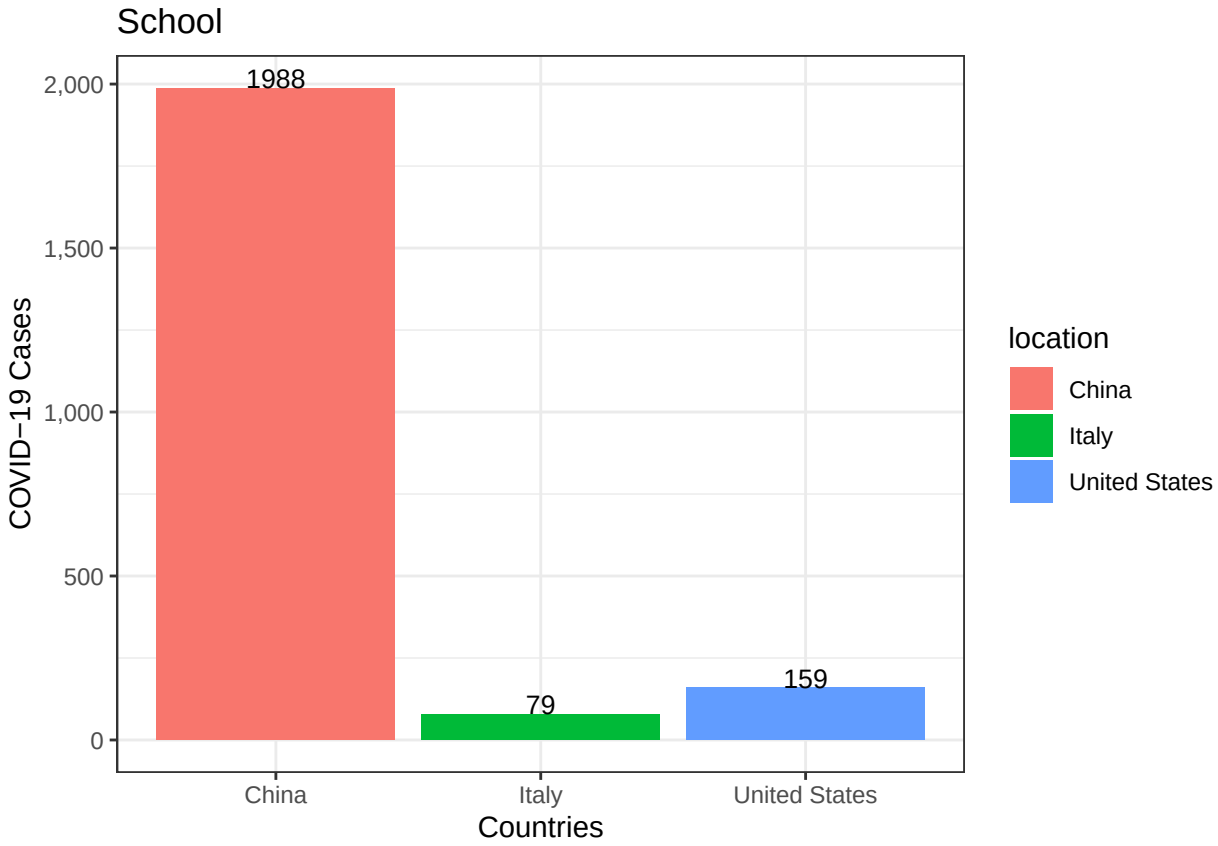
```
2 Italy         2020-02-23          79
3 United States 2020-03-05         159
```

```
cases_use_new <- cases_use %>%
  filter(
    date == ("2020-04-18")
  )

ggplot(data = cases_work,
  aes(x = location, y = total_cases, fill = location)) +
  geom_bar(stat = "identity", ylim = c(0, 10000)) +
  scale_y_continuous(labels = comma) +
  labs(title = "Work",
       x = "Countries", y = "COVID-19 Cases") +
  geom_text(aes(label = total_cases), vjust=0, color="black", size=3.5) +
  theme_bw()
```




```
ggplot(data = cases_school,
  aes(x = location, y = total_cases, fill = location)) +
  geom_bar(stat = "identity", ylim = c(0, 10000)) +
  ylim(0, 10000) +
  scale_y_continuous(labels = comma) +
  labs(title = "School",
       x = "Countries", y = "COVID-19 Cases") +
  geom_text(aes(label = total_cases), vjust=0, color="black", size=3.5) +
  theme_bw()
```



Marcus's Stuff

```
data1 <- data %>%
  filter(CountryName == "Taiwan" | CountryName ==  "South Korea") %>%
  select(CountryName, Date, `S5_Public information campaigns`, `S6_Restrictions on internal movement`,`
```

```
pubinfo <- data1 %>%
  filter(`S5_Public information campaigns` == 1) %>%
  select(CountryName, Date, `S5_Public information campaigns`) %>%
  group_by(CountryName) %>%
  slice(1)
pubinfo
```

```
# A tibble: 2 x 3
# Groups:   CountryName [2]
  CountryName     Date `S5_Public information campaigns`
  <chr>          <dbl>                             <dbl>
1 South Korea 20200120                                 1
2 Taiwan      20200120                                 1
```

```
recrestrict <- data1 %>%
  filter(`S6_Restrictions on internal movement` == 1) %>%
  select(CountryName, Date, `S6_Restrictions on internal movement`) %>%
  group_by(CountryName) %>%

  slice(1)
```

```
recrestrict
```

```
# A tibble: 1 x 3
# Groups:   CountryName [1]
  CountryName     Date `S6_Restrictions on internal movement`
  <chr>          <dbl>                                 <dbl>
1 South Korea 20200223                                     1
```

```
restrict <- data1 %>%
  filter(`S6_Restrictions on internal movement` == 2) %>%
  group_by(CountryName) %>%
  select(CountryName, Date, `S6_Restrictions on internal movement`) %>%
  slice(1)
restrict
```

```
# A tibble: 1 x 3
# Groups:   CountryName [1]
  CountryName     Date `S6_Restrictions on internal movement`
  <chr>          <dbl>                                 <dbl>
1 South Korea 20200321                                     2
```

```
travelscreening <- data1 %>%
  filter(`S7_International travel controls` == 1) %>%
  group_by(CountryName) %>%
  select(CountryName, Date, `S7_International travel controls`) %>%
  slice(1)
travelscreening
```

```
# A tibble: 1 x 3
# Groups:   CountryName [1]
  CountryName     Date `S7_International travel controls`
  <chr>          <dbl>                              <dbl>
1 Taiwan      20200207                                  1
```

```
highriskquarantine <- data1 %>%
  filter(`S7_International travel controls` == 2) %>%
  group_by(CountryName) %>%
  select(CountryName, Date, `S7_International travel controls`) %>%
  slice(1)
highriskquarantine
```

```
# A tibble: 1 x 3
# Groups:   CountryName [1]
  CountryName     Date `S7_International travel controls`
  <chr>          <dbl>                              <dbl>
1 Taiwan      20200224                                  2
```

```
highriskban <- data1 %>%
  filter(`S7_International travel controls` == 3) %>%
  group_by(CountryName) %>%
  select(CountryName, Date, `S7_International travel controls`) %>%
  slice(1)
highriskban
```

```
# A tibble: 2 x 3
# Groups:   CountryName [2]
  CountryName     Date `S7_International travel controls`
```

```
  <chr>          <dbl>                                <dbl>
1 South Korea 20200203                                   3
2 Taiwan      20200223                                   3
```

Public Info Campaign Start Dates. South Korea: 01/20, Taiwan: 01/20 Recommended Movement Restriction. South Korea: 02/23, Taiwan: NA Restrict Movement. South Korea: 03/21, Taiwan: NA International Travel Screening. South Korea: NA, Taiwan: 02/07 Quarantine on high-risk regions. South Korea: NA, Taiwan: 02/24 Ban on high-risk regions. South Korea: 02/03, Taiwan: 02/23

Kehan's stuff

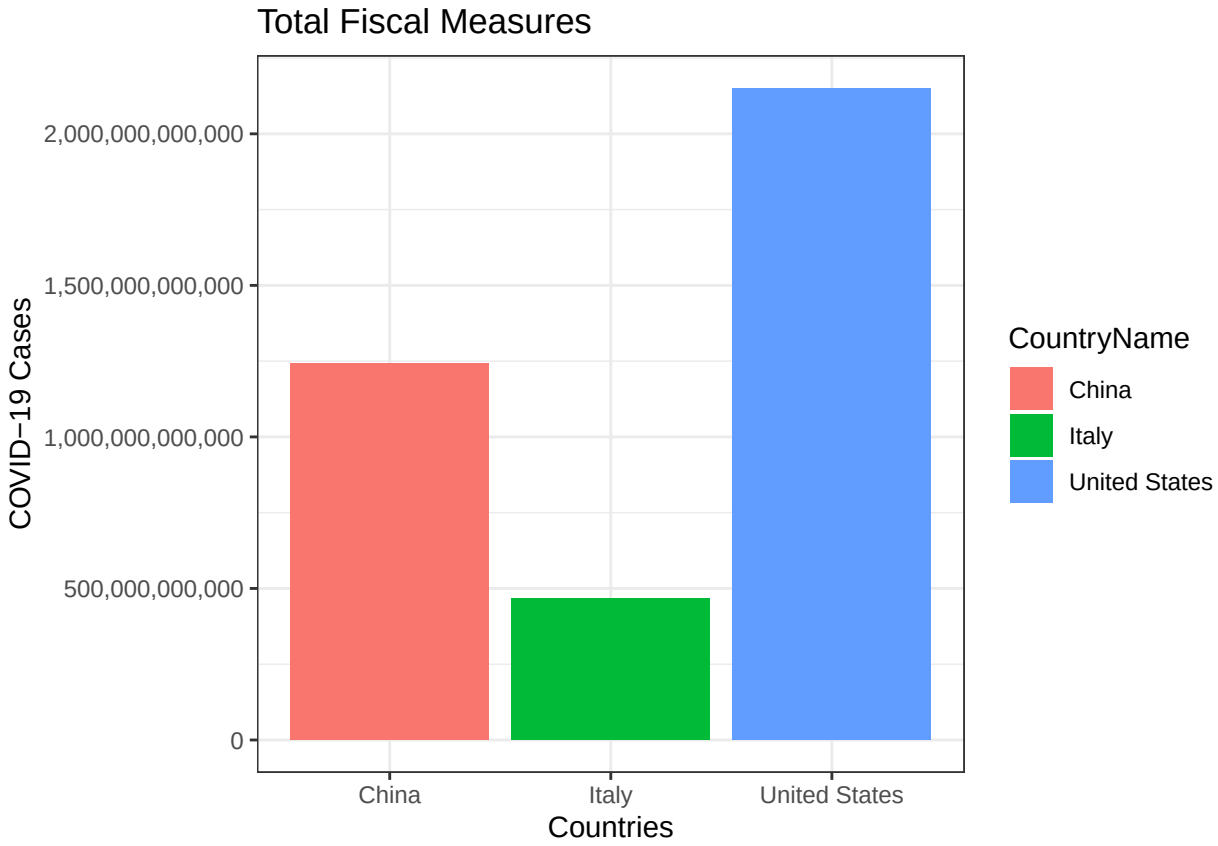
```
MONEYS<-data_use %>%
  group_by(CountryName) %>%
  filter(`S8_Fiscal measures`>0) %>%
  summarise(sum(`S8_Fiscal measures`))

names(MONEYS)[names(MONEYS) ==  "sum(`S8_Fiscal measures`)"] <- "Total_Fiscal_Measures"

MONEYS
```

```
# A tibble: 3 x 2
  CountryName   Total_Fiscal_Measures
  <chr>                         <dbl>
1 China                 1242220000000
2 Italy                  468040843806
3 United States         2151200000000
```

```
ggplot(data = MONEYS,
  aes(x = CountryName, y = Total_Fiscal_Measures, fill = CountryName)) +
  geom_bar(stat = "identity") +
  scale_y_continuous(breaks=seq(0, 700000, 100000)) +
  scale_y_continuous(labels = comma) +
  labs(title = "Total Fiscal Measures",
       x = "Countries", y = "COVID-19 Cases") +
  theme_bw()
```




```
data_use %>%
  filter(`S8_Fiscal measures`>0) %>%
  arrange(Date) %>%
  select(CountryName,`S8_Fiscal measures`,Date)
```

```
# A tibble: 13 x 3
   CountryName   `S8_Fiscal measures`     Date
   <chr>                       <dbl>    <dbl>
 1 China                42780000000 20200131
 2 China               476000000000 20200201
 3 China               242440000000 20200204
 4 Italy                  100000000 20200228
 5 Italy                 4000000000 20200301
 6 United States         1600000000 20200306
 7 Italy                 8500000000 20200308
 8 Italy                 2784500000 20200311
 9 China               129000000000 20200315
10 United States       192000000000 20200318
11 China               352000000000 20200327
12 United States      1957600000000 20200327
13 Italy               452656343806 20200406
```

I WANT TO MAKE TIME MODEL GIF THING