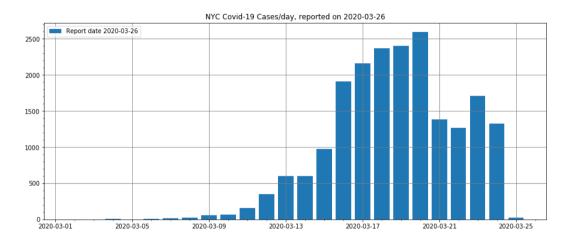
# COVID-19: THE DATA ABUSE PANDEMIC

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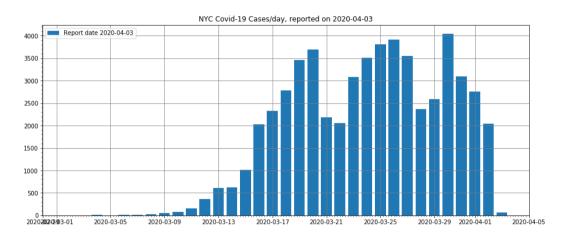
Bloomberg Quant Seminar May, 2020 DRAFT SLIDES

## WHAT THEY FIRST SHOWED IN NYC



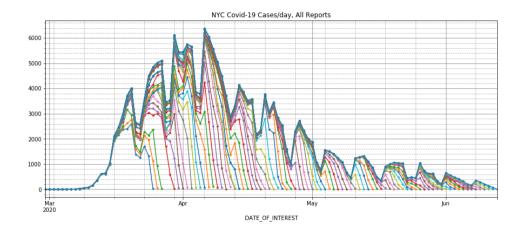
Looks like cases/day are dropping off after 3/20

# **EIGHT DAYS LATER**



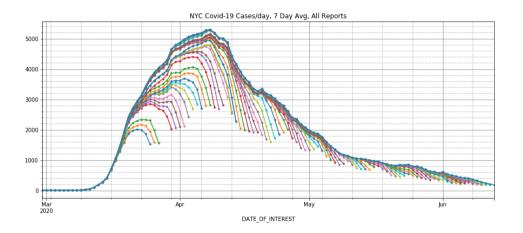
Now it looks like cases/day are rising through 3/30!

# WHAT THEY DIDN'T SAY



Since April 12th, every report has peaked on April 6th

# AFTER APPROPRIATE SMOOTHING



Since April 13th, every smoothed report has peaked on April 8th

#### **ABUSES**

#### What's going on?

- Different sites report cases at different times
- Large dip in confirmed cases every weekend

#### Impact:

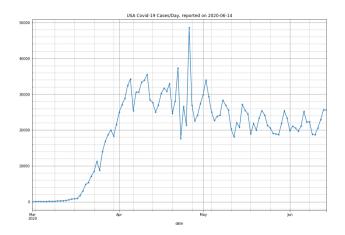
- Reporting delays can account for 30% changes as much as 3 weeks later
- Latest counts for each date are reported history is harder to extract
- Low weekend counts obscure trends need to use 7 day rolling average
- Reporting aggregates instead of per site data makes analysis difficult

#### But this is the good case!

#### See:

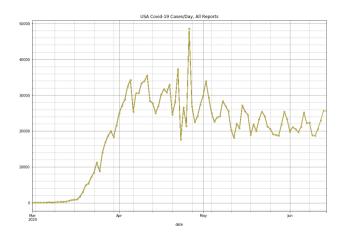
- COVID-19 NYC Stats A Ray Of Hope [Ste20d]
- COVID-19 NYC Stats Not What They Seem [Ste20e]

# WHAT THEY SAID FOR THE USA



What happened to the weekend dip?

# WHAT THEY DIDN'T SAY



## Where are the data updates?

# **ABUSES**

#### What's going on?

Recording by report date instead of by incident date!

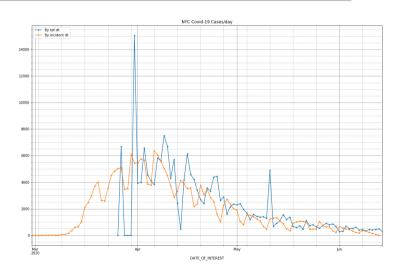
#### Impact:

- No record of when incidents actually occurred
- Misstates ramp up to peak, delays peak and overstates post-peak incidents
- Obscures periodicity and adds noise
- Makes modeling harder and more error prone
- News reports of yesterday's numbers are deceptive

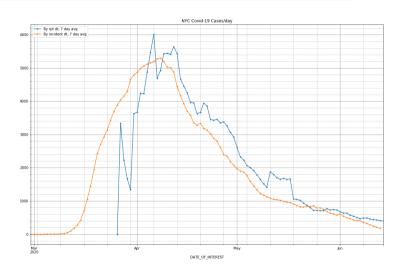
#### Recording by report date is rampant – all major sources do it:

- Our World in Data repository (data from the European CDC)
- Johns Hopkins University COVID-19 repository
- ▶ New York Times COVID-19 repository

# **IMPACT**



# **IMPACT**



#### **SUMMARY**

#### What now?

- Know your data!
- Be aware that recent reports are inaccurate either missing data or misrepresenting counts
- Account for this in your modeling
- Ask data sources to collect by incident date, publish full history and publish per site data instead of aggregating
- ► Investigate actual meaning of data classification of COVID-19 hospitalizations, deaths due to COVID-19, ...

See COVID-19 Data Collection – Garbage In, Garbage Out [Ste20c])

# References

- [OWI20] OWID. Data on COVID-19 (coronavirus) confirmed cases, deaths, and tests, All countries, Updated daily by Our World in Data. 2020. URL: https://github.com/owid/covid-19-data.
- [Ste20a] Harvey Stein. Analysis of NYC COVID-19 infection rate. Fork of https://github.com/nychealth/coronavirus-data. 2020. URL: https://github.com/hjstein/coronavirus-data.
- [Ste20b] Harvey Stein. Analysis of Our World of Data's COVID-19 dataset. Fork of https://github.com/owid/covid-19-data. 2020. URL: https://github.com/hjstein/covid-19-data.

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- [Ste20d] Harvey Stein. COVID-19 NYC Stats A Ray Of Hope. Blog, Harvey J. Stein, Essays and commentary from a member of the quantitative community. Apr. 2020. URL: https://hjstein.blogspot.com/2020/04/covid-19-nyc-stats-ray-of-hope.html.
- [Ste20e] Harvey Stein. COVID-19 NYC Stats Not What They Seem. Blog, Harvey J. Stein, Essays and commentary from a member of the quantitative community. Apr. 2020. URL: https://hjstein.blogspot.com/2020/04/covid-19-nyc-stats-not-what-they-seem.html.

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https://github.com/CSSEGISandData/COVID-19.

[New20a] New York City. NYC Health Coronavirus Data. 2020. URL:

https://github.com/nychealth/coronavirus-data.

[New20b] New York Times. An ongoing repository of data on coronavirus cases and deaths in the U.S. 2020. URL:

https://github.com/nytimes/covid-19-data.