

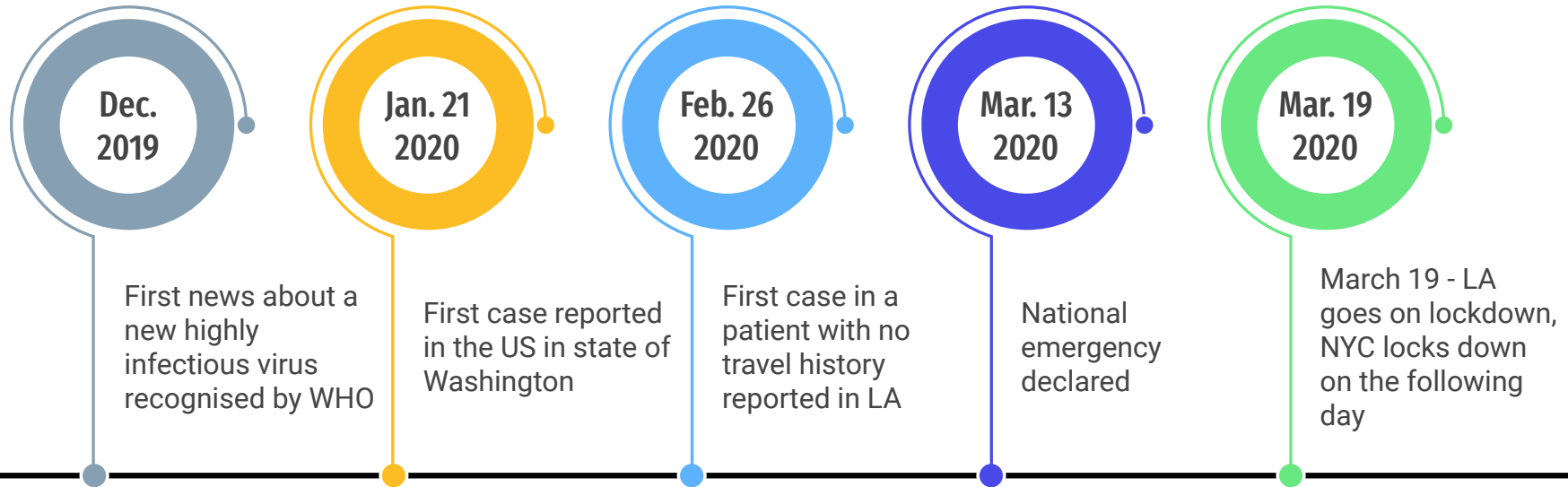


Visualizing the impact of COVID-related transportation shutdowns on Air Quality

Juliana Antoninus, Leo Choi, and Yuli Daroshka



Covid-19 timeline, early 2020





Covid-19 lockdown

Los Angeles:

March 19, 2020 - May 14, 2020

New York City:

March 20, 2020 - June 8, 2020



Covid-19 lockdown rules

- Adhere to all CDC guidelines
- Public and private gatherings up to 9 people
- Social distancing of 6 feet
- All non-essential businesses must be closed
- All indoor malls must be closed
- Essential businesses inside indoor malls must be closed unless they have access from outdoors
- All playgrounds indoor and outdoor must be closed

Travel was restricted to only essential business employees.

Both Los Angeles and New York City had nighttime curfew implemented.



Los Angeles air quality in the news

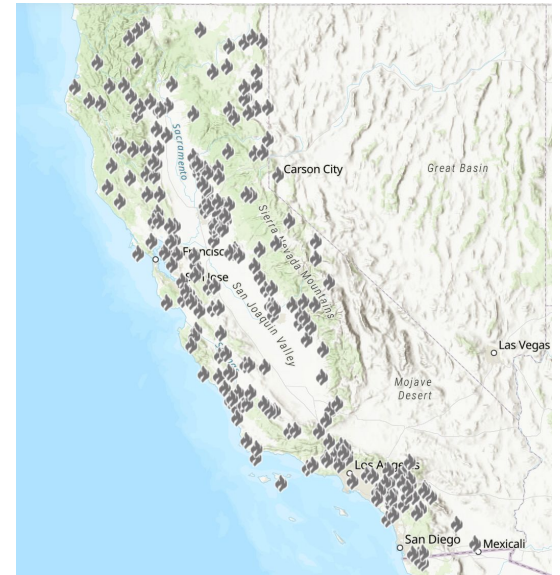
“From March 7 to 28 PM2.5 concentration levels were down by 31% from the same time last year, and down 51% from the average of the previous four years.”

- KTLA, April 22, 2020

California fires 2020

- Record-setting wildfire season
- Total fires: 9,639
- Total acres burned: 4,397,809
- First fire: May 3, Kings county
- Last fire: December 23, San Diego

Scorpion Fire of Santa Barbara - May 2020: 1,395 acres





New York City air quality in the news

“Columbia University researchers monitoring pollutant levels in Harlem found 10% drops in carbon dioxide and methane in March, along with a shocking 50% plunge in carbon monoxide. And levels of PM 2.5, the particulate matter that reduces visibility and causes an assortment of health issues, are down about 20%”

- Daily News, April 06, 2020

Forecasting a normal 2020



Forecasting a normal 2020

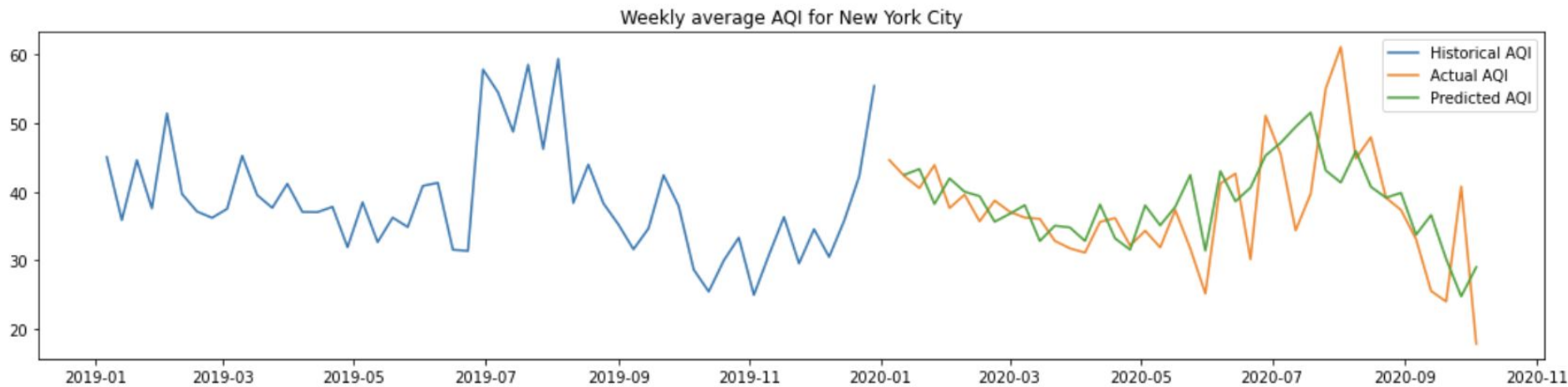
We used the 5 previous years of data from the EPA to predict what AQI would have looked like for 2020, had it followed normal patterns, focusing on New York City and Los Angeles County.

AQI, or Air Quality Index, is a composite measure of 6 different pollutants:

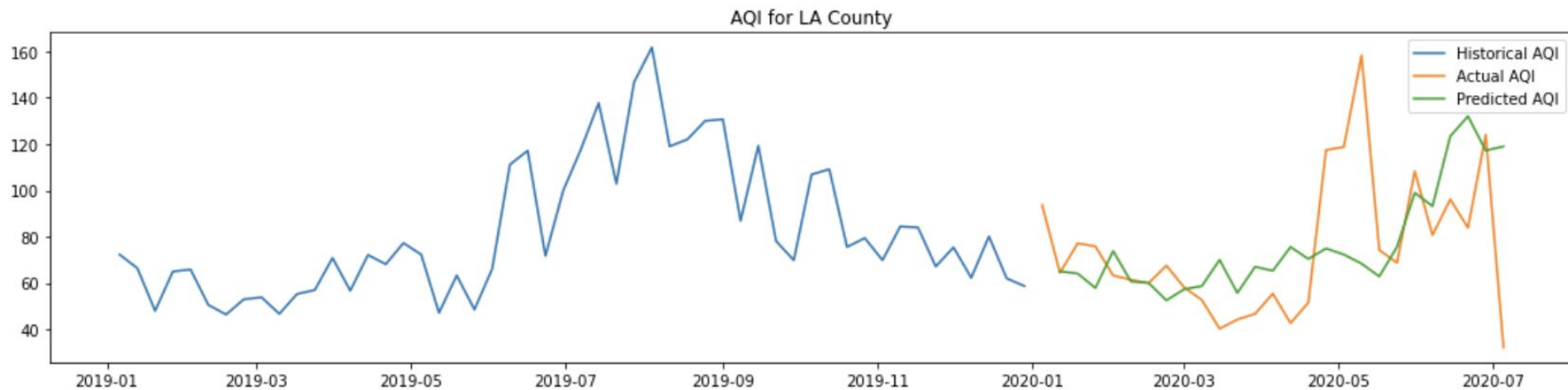
- ground-level ozone
- particulate matter (both 10um and 2.5um particulate matter)
- carbon monoxide
- sulfur dioxide
- nitrogen dioxide

A lower AQI is better, representing less risk to respiratory health.

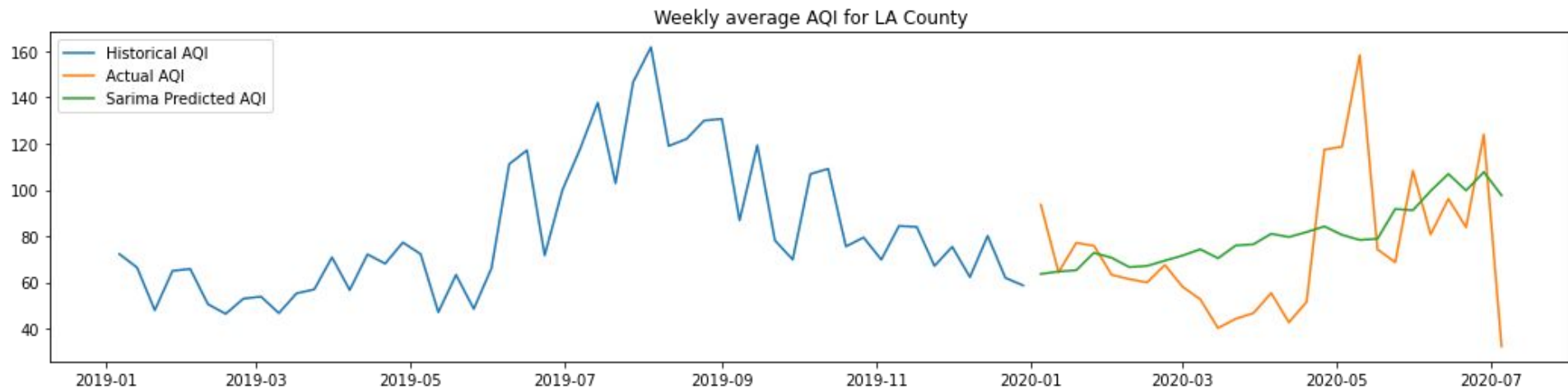
Weekly average AQI for New York City



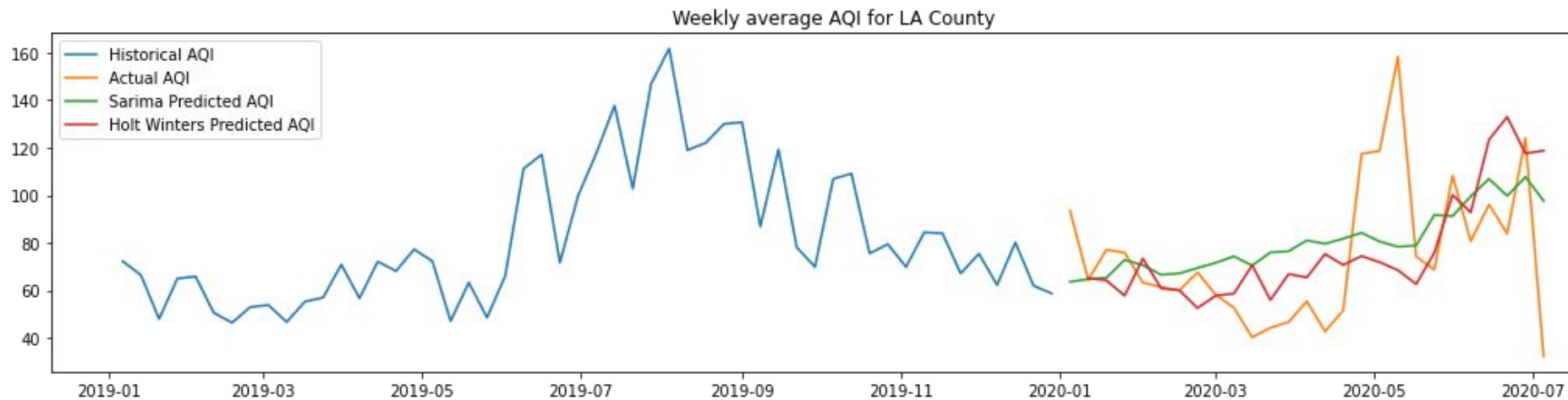
Weekly average AQI for LA County (Holt-Winters)



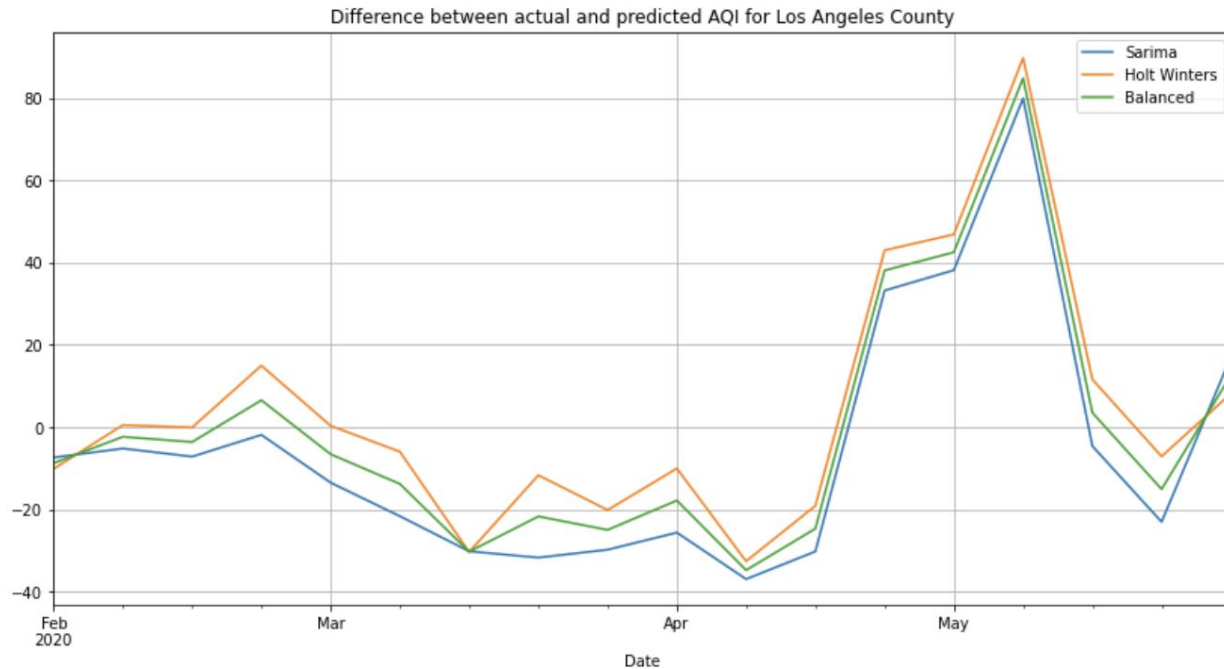
Weekly average AQI for LA County (SARIMA)



Comparison of models for LA County



Difference between actual and predicted values, LA



Exploring the data in Tableau



Data Sources

AQI Data: [Air Quality Index Daily Values Report, EPA](#)

COVID-19 Data:

- [Los Angeles, LA Times](#)
- [New York City, NYC Open Data](#)

Travel Data: [U.S. Department of Transportation, Bureau of Transportation Statistics](#)

Questions?