

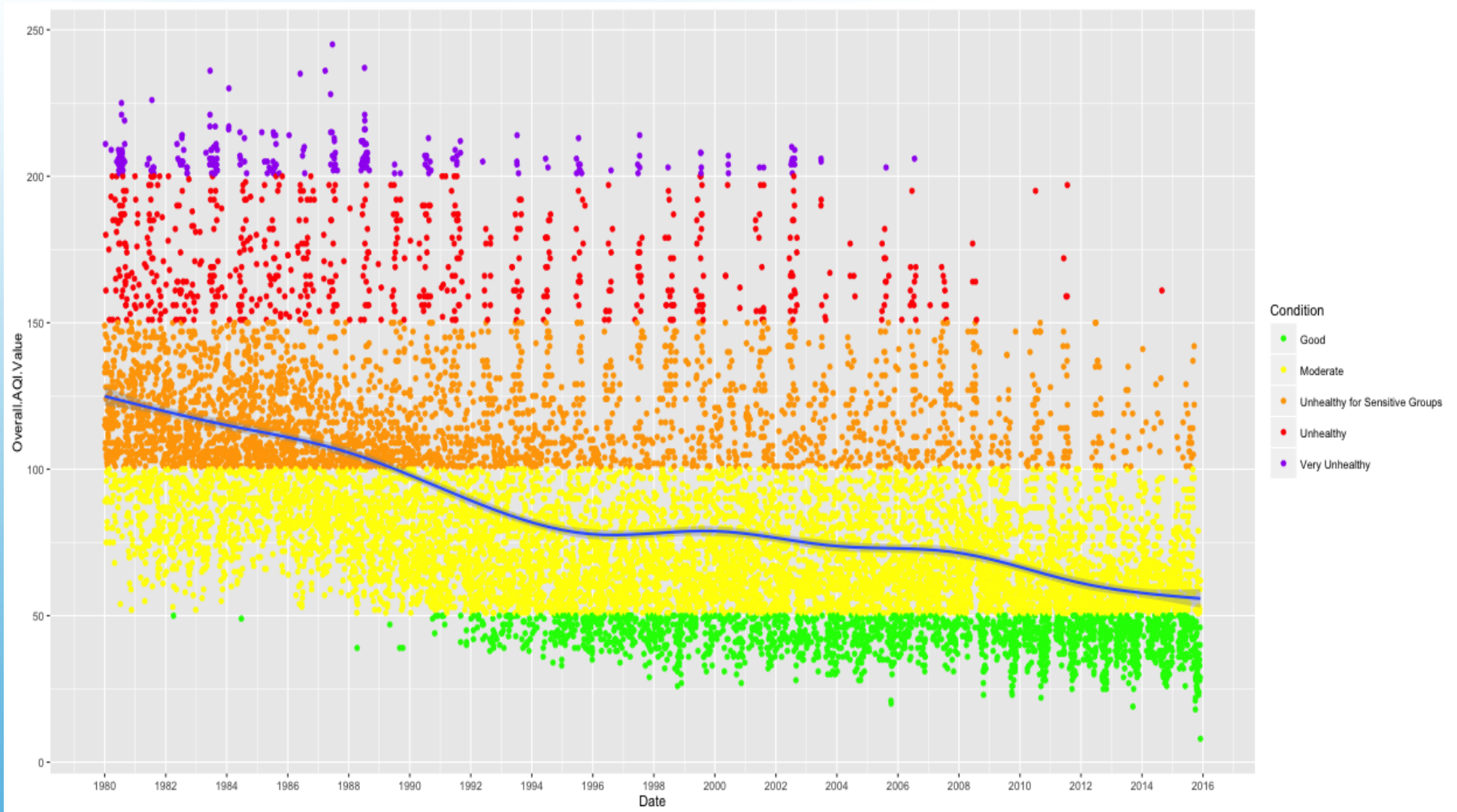
Air Quality

Air pollution is a leading cause of death across the globe, and contributes to stroke, heart disease, lung cancer, and other respiratory illness.

Why

- Data collected from year 1980 to present by EPA (Environment Protection Agency)
- Data collected through the sensors
- Downloaded the daily data between year 1980 – 2015 for New York tri-state area.
- From 1980 to now, air quality getting better or worse?

How are we doing?



Air Quality Overview



Air Quality is Better?

Clean Air Act (1963)

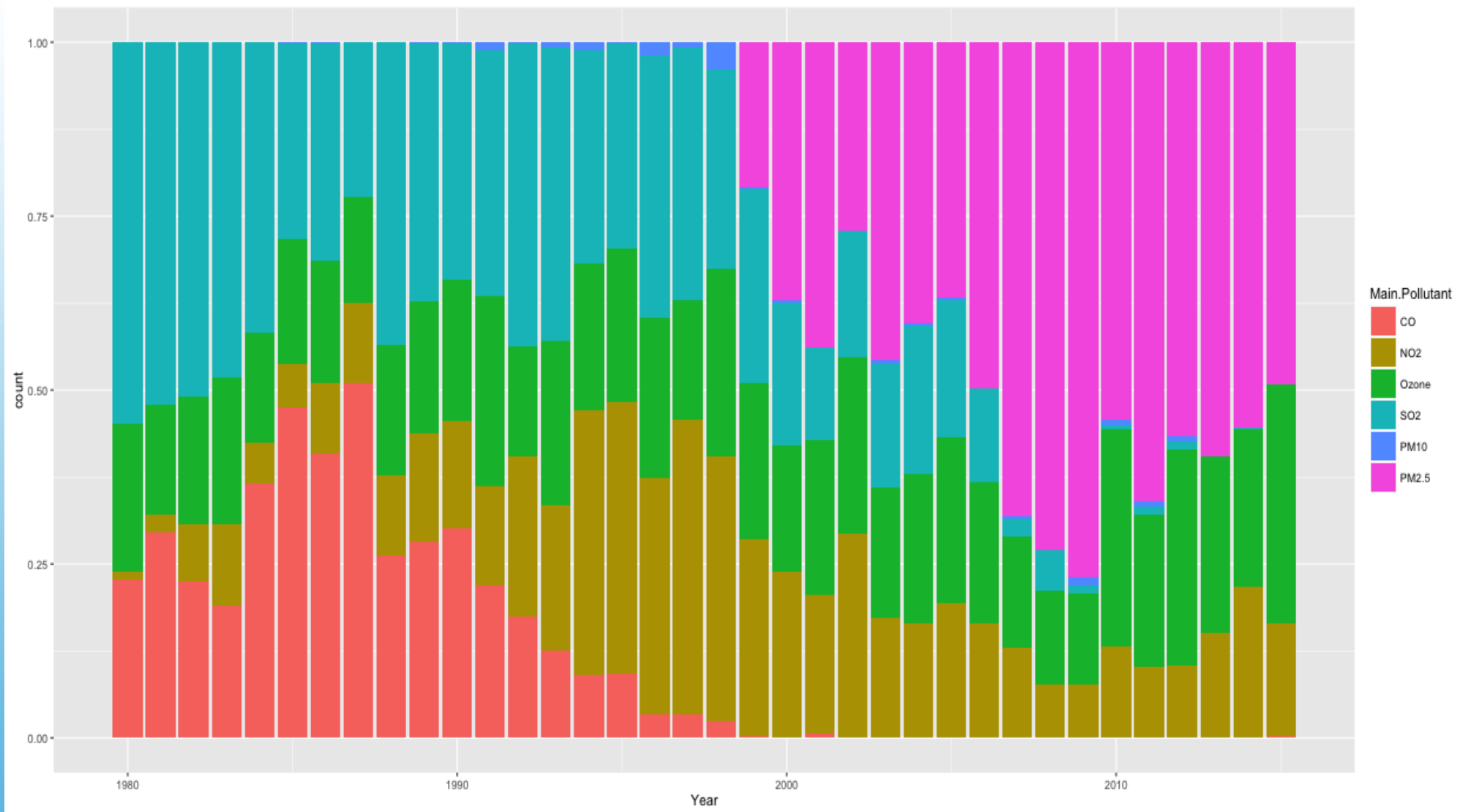
- EPA calculates the AQI for five major air pollutants regulated by the Clean Air Act:
 - ! Ozone
 - ! PM (Particle pollution or particulate matter)
 - ! CO (carbon monoxide)
 - ! SO₂ (sulfur dioxide)
 - ! NO₂ (nitrogen dioxide)
- Overall AQI = $\max(\text{Ozone}, \text{PM}_{10}, \text{PM}_{25}, \text{CO}, \text{SO}_2, \text{NO}_2)$

Air Quality Index

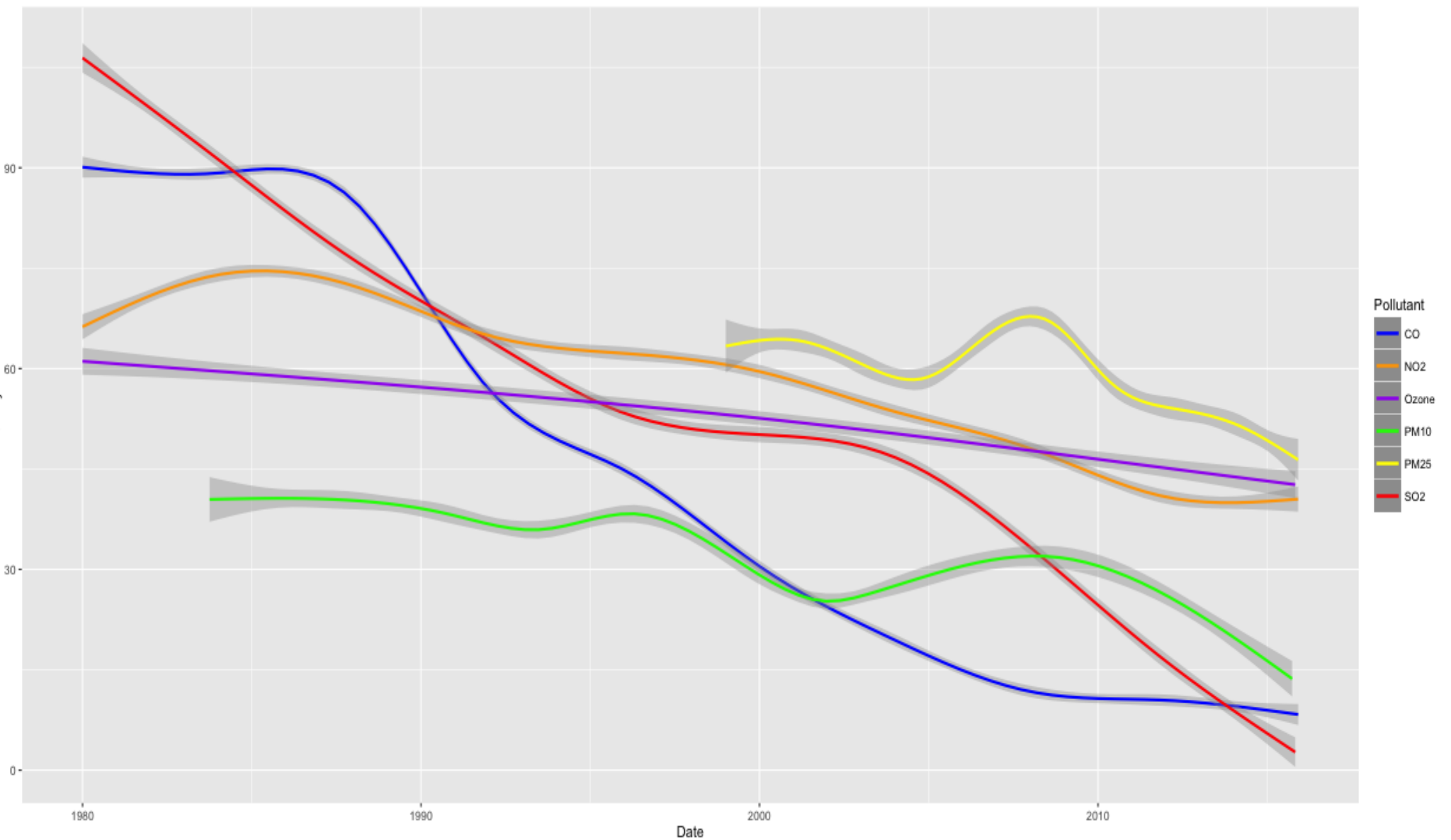
Date	Main Pollutant	Overall AQI Value	C O	SO2	NO2	Ozone	PM10	PM25
01/01/2010	PM2.5	86	16	41	46	26	0	86
01/02/2010	PM2.5	45	13	14	18	27	19	45
01/03/2010	PM2.5	50	13	14	21	28	0	50
01/04/2010	PM2.5	60	13	19	28	28	0	60
01/05/2010	PM2.5	54	13	23	33	29	0	54
01/06/2010	PM2.5	51	11	20	26	29	0	51
01/07/2010	PM2.5	59	13	19	42	29	0	59
01/08/2010	PM2.5	70	19	23	35	30	18	70

Sample Data

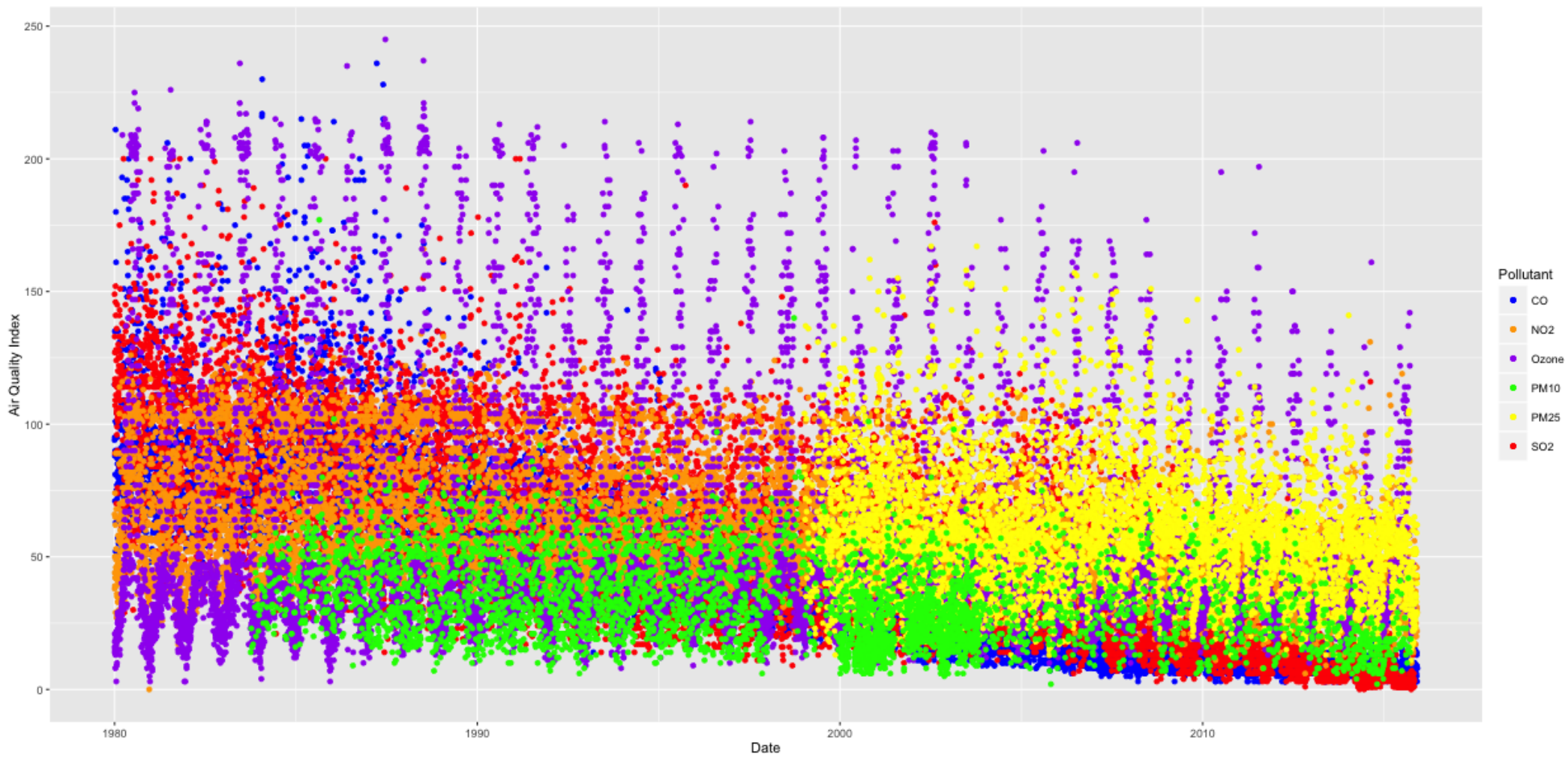
airnow.gov/index.cfm?action=aqibasics.aqi



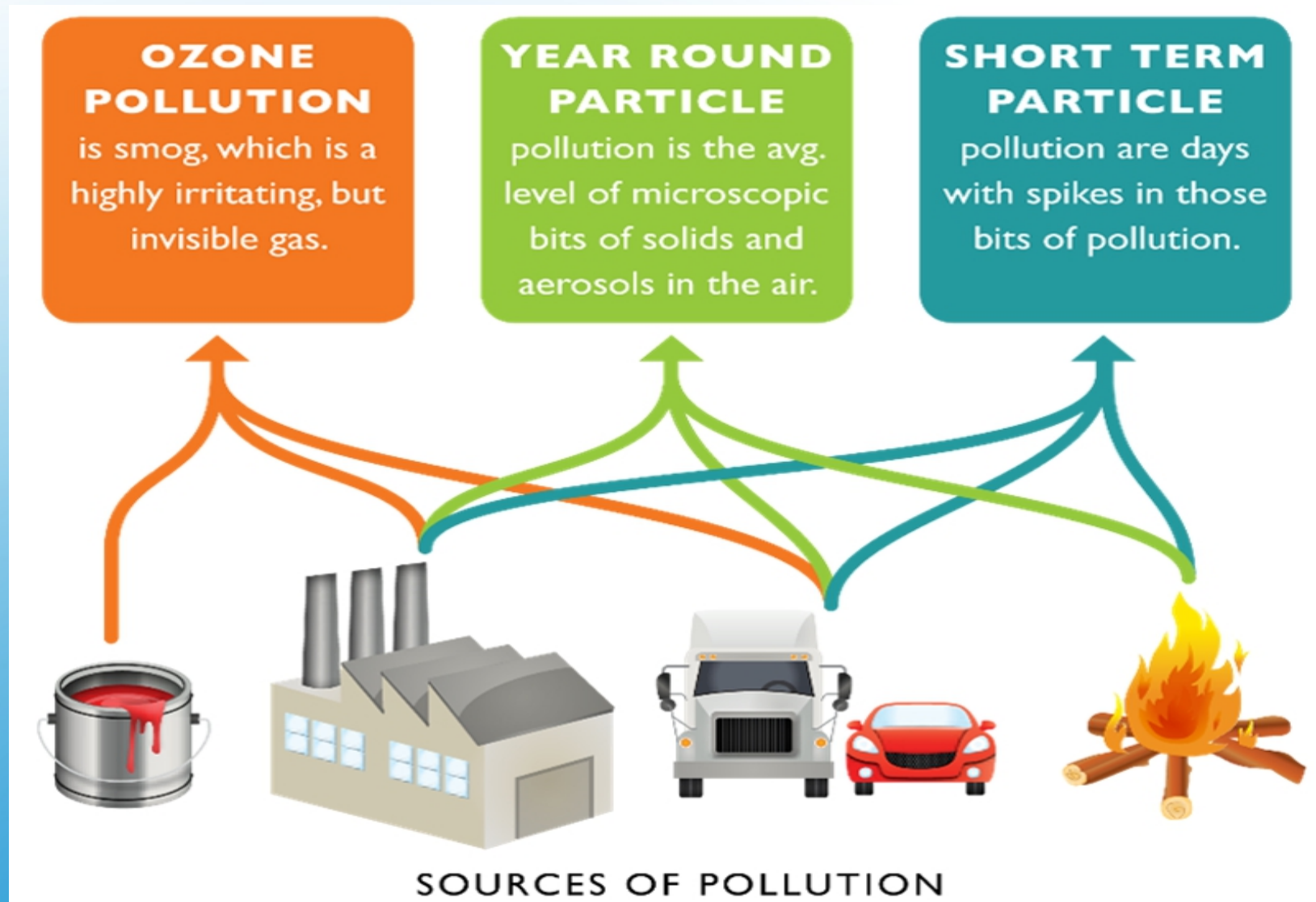
Bad Guys: Ozone and Airborne Particles



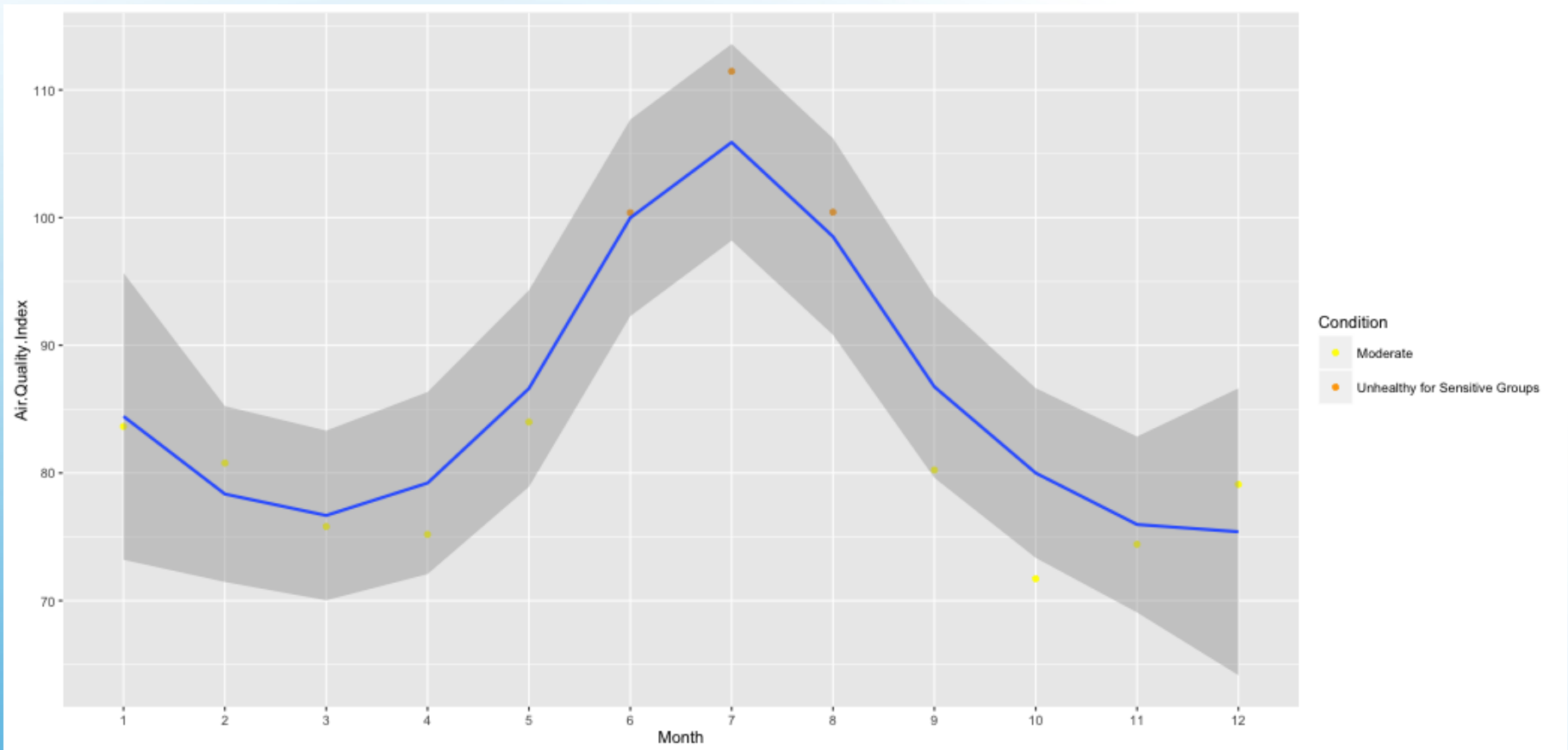
Individual Pollutant



Individual Pollutant



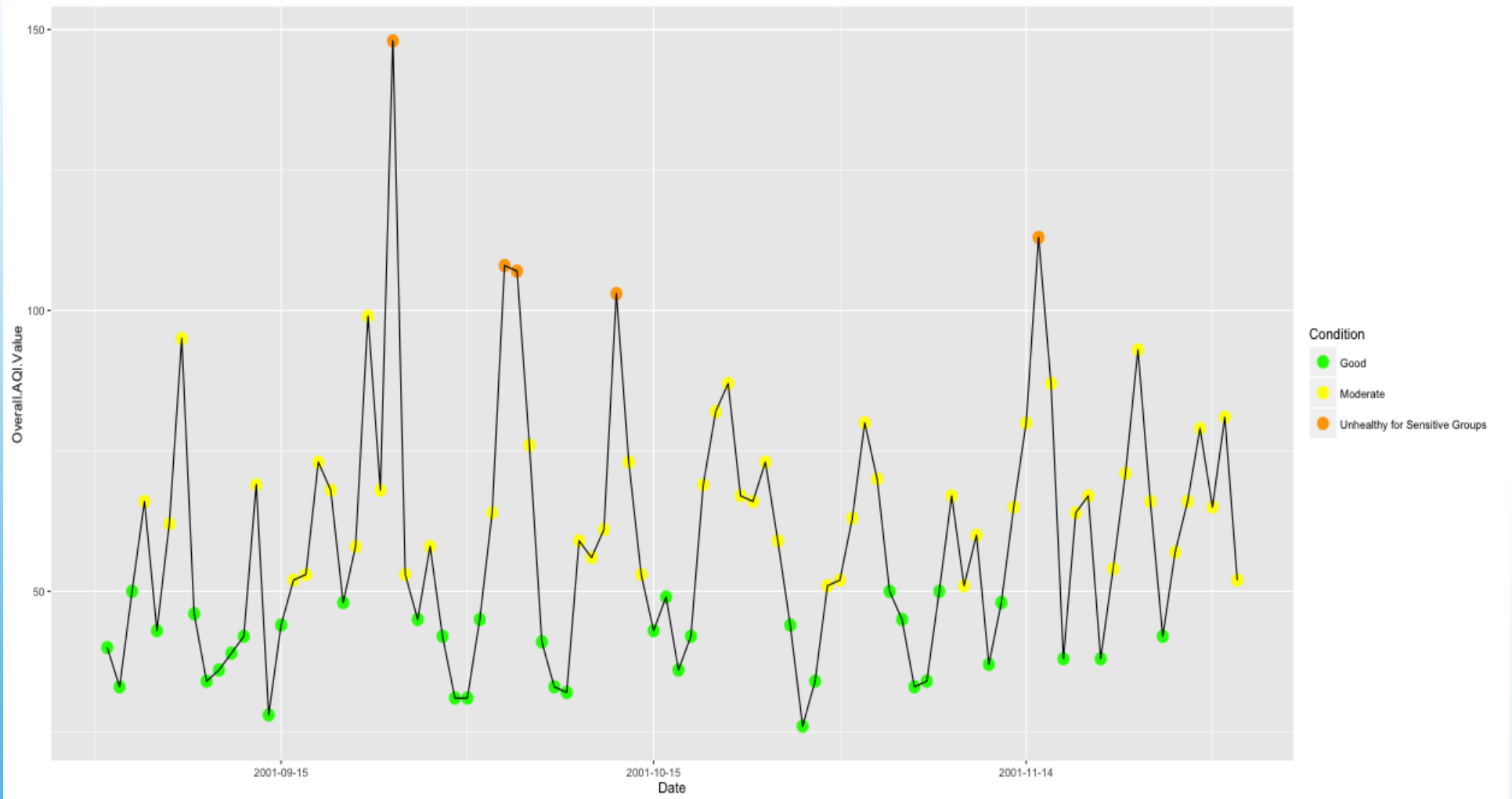
Sources of Pollution



Bad Months

- Air Quality of Manhattan on and after September 11, 2001?

September 11, 2001



Surprise?!

- EPA underestimated the toxicity of the air
- WTC dust included asbestos and disturbingly high PH levels

September 11, 2001

- Assumption: statistically, in the past 3 years, AQI is acceptable and stable.
- Make a difference: drive less, use less electricity, don't burn wood or trash, support measures in your community that can cut air pollution, etc.

Our Future

- Air quality continues to worsen in cities across the world



Save the World