Berlin Air Pollution

Visualisation Project

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Source: Cleveryourcity

The problems:

Air pollution is difficult to escape, especially in cities

Despite improvement in air quality in the EU, levels of polluters still exceed the WHO health recommendations

According to the European Environmental Agency (EEA) at least 240,000 Europeans died from air pollution in 2020

Berlin exceeded the EU annual air quality limit between 1990-2020

Road traffic accounted for 75% of emissions causing these exceedances

Polluters:

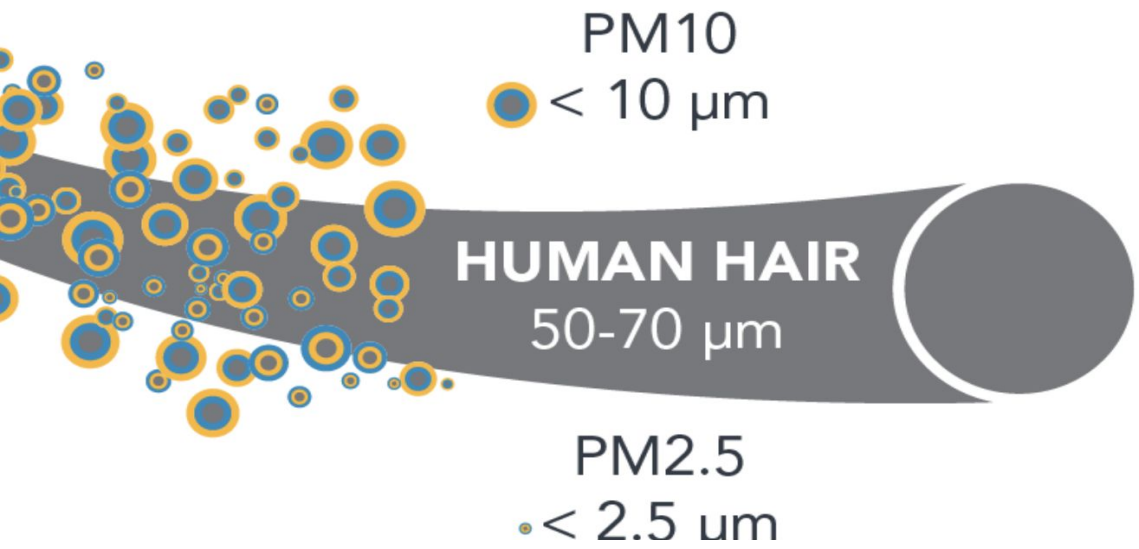
PM 2.5 & PM 10 - Microscopic particles from vehicles and construction

Ozone- Is formed by the reaction with the sunlight of pollutants such as nitrogen oxides (NO_x) from vehicle and industry emissions.The highest levels of ozone pollution occur during periods of sunny weather

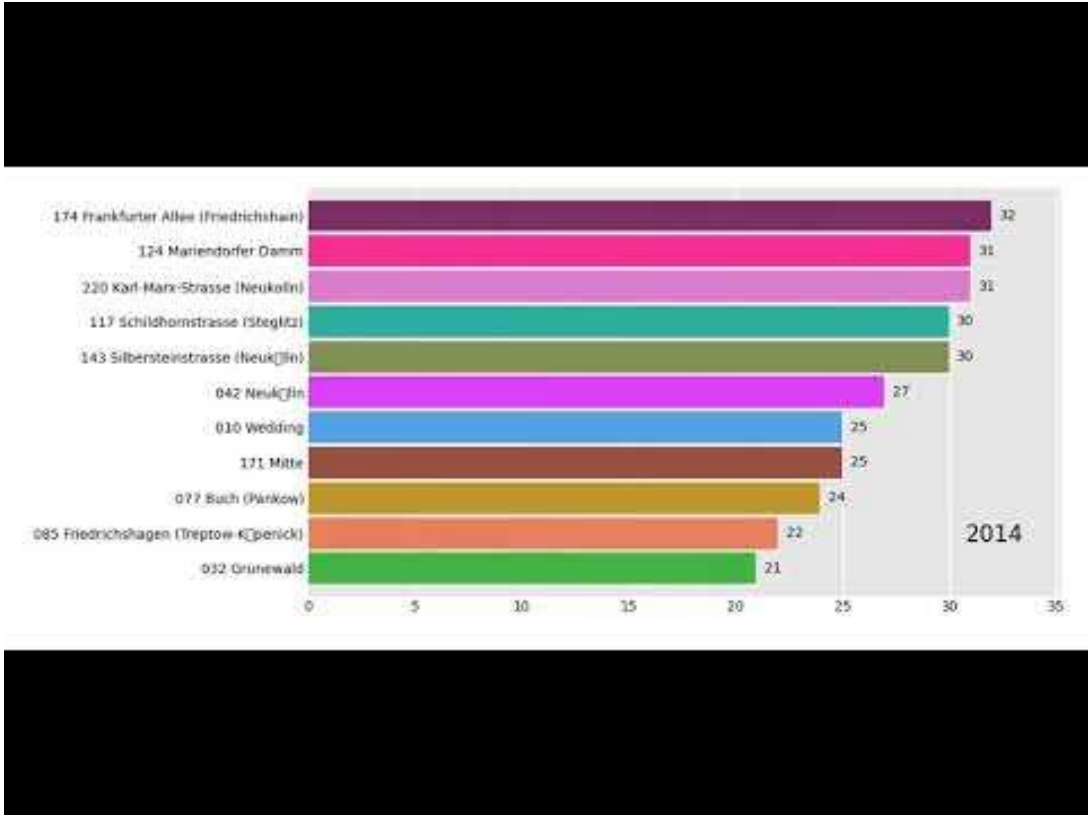
NO_2 - Primarily gets in the air from the burning of fuel

SO_2 - A colourless gas with a sharp odour. It is produced from the burning of fossil fuels (coal and oil)

Particle size comparison:



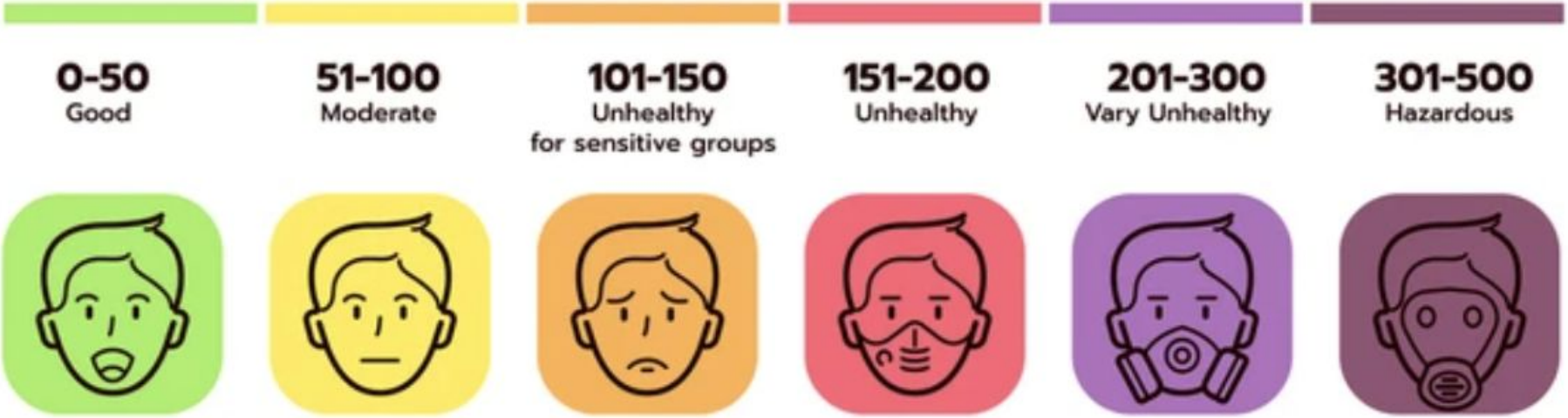
PM10: average rate in Berlin between (2011 - 2021)



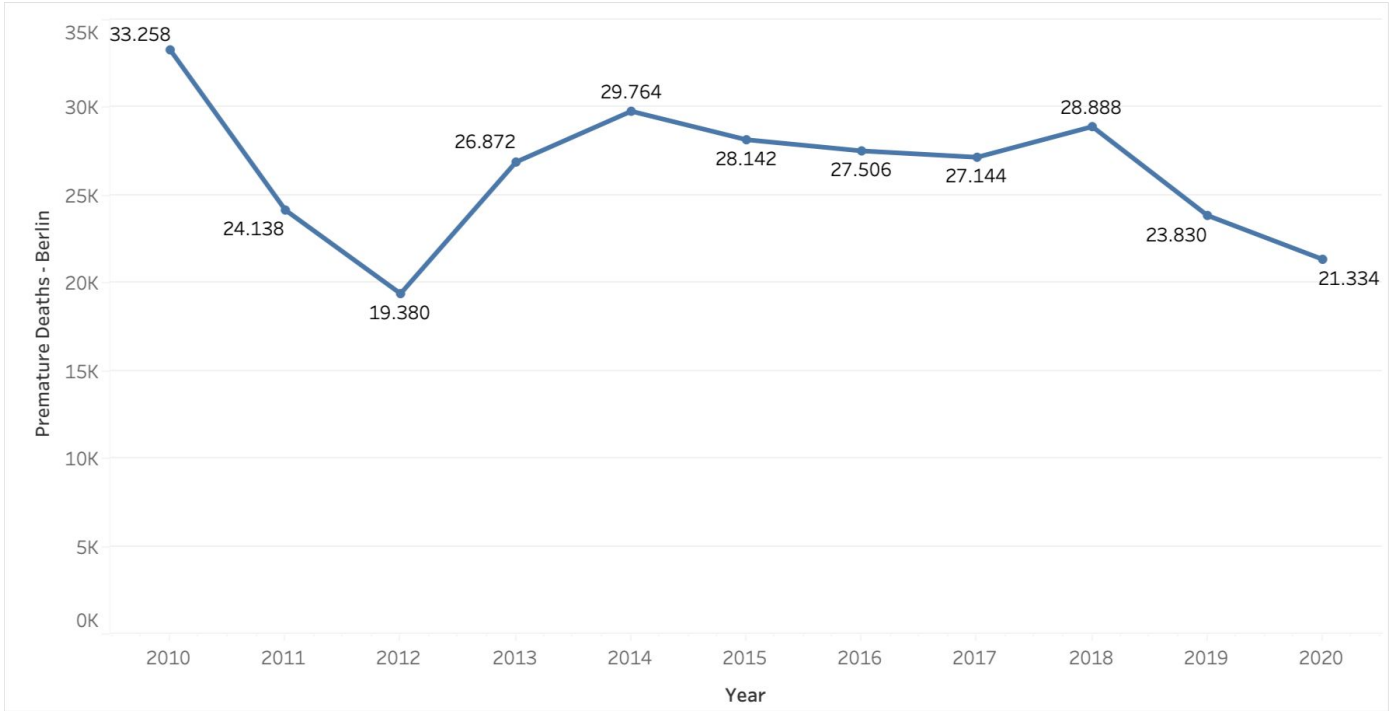
The Measurement:

$$AQI = \left[\frac{(PM_{obs} - PM_{\min}) \times (AQI_{\max} - AQI_{\min})}{(PM_{\max} - PM_{\min})} \right] + AQI_{\min}$$

PM_{obs} = observed 24-hour average concentration in µg/m^3
PM_{max} = maximum concentration of AQI color category that contains PM_{obs}
PM_{min} = minimum concentration of AQI color category that contains PM_{obs}
AQI_{max} = maximum AQI value for color category that corresponds to PM_{obs}
AQI_{min} = minimum AQI value for color category that corresponds to PM_{obs}



Berlin Premature Deaths 2010-2020



Source: European Environmental Agency

Solutions:

Speed limit

Low emission zone

Bicycle lanes

Goal: Make car traffic in Berlin climate-neutral by 2045

Speed limit

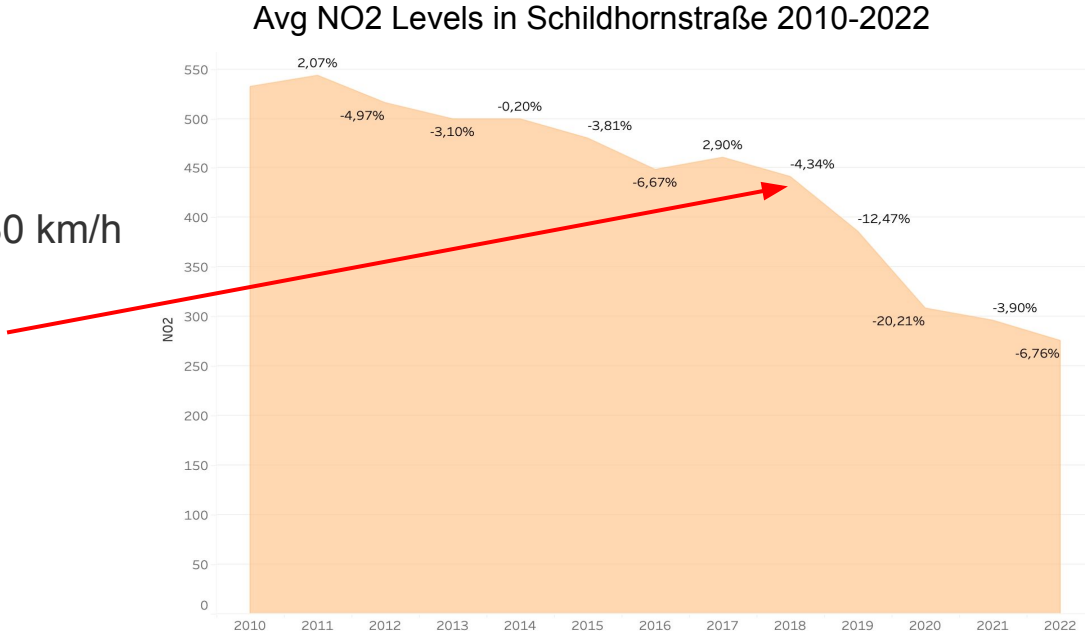
01

The speed limit was lowered from 50 km to 30 km/h

This measure aimed to:

- smooth the flow of vehicles
- cut emissions of nitrogen oxides (NOx)
- reduce noise

Results:



A reduction of 2-4µg/m³ in annual average concentrations of NO2

The measure benefited approximately 7,500 residents living along the roads

Building on this success, a permanent 30km per hour speed limit was put in place

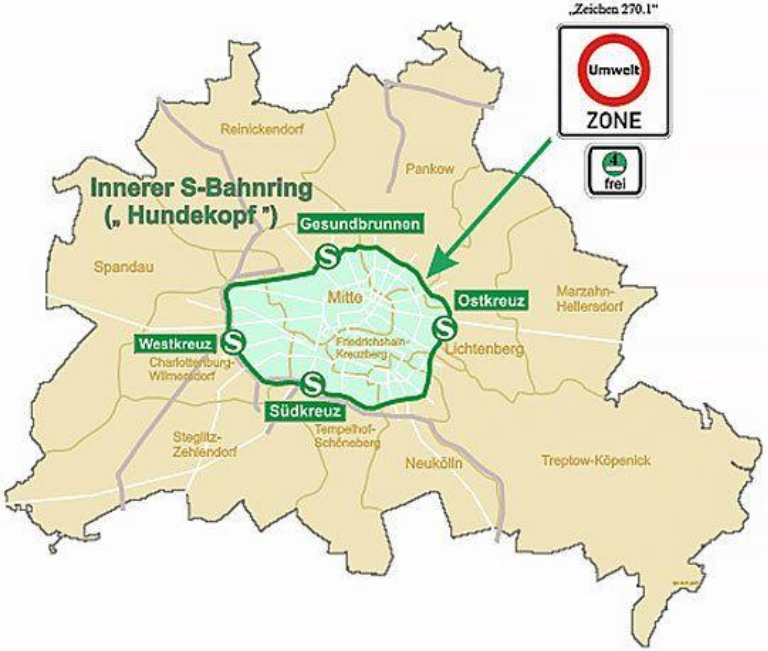
Source: Berlin Senate

Low emission zone

02

Introduced in 2010, it permits only low emission vehicles to enter the city centre

Since 2020 only cars with a green badge or permission are allowed to park in side the ring area. Increased fines introduced



Source: Berlin Senate

Bicycle lanes

03

- Pop up lanes introduced during covid
- New lanes built
- Bicycle streets

Interactive map

Thank you for listening!

Any questions?