

AIR POLLUTION AND COVID- 19

Exploring the **link** between air quality and health outcomes

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OVERVIEW OF KEY TOPICS



Exploring the **connections** between air quality and COVID-19

- COVID impacts on Air Pollution
- Air Quality Trends Over Time
- COVID-19 Case Statistics Analysis
- Visualizing Data Correlations

DATA WRANGLING

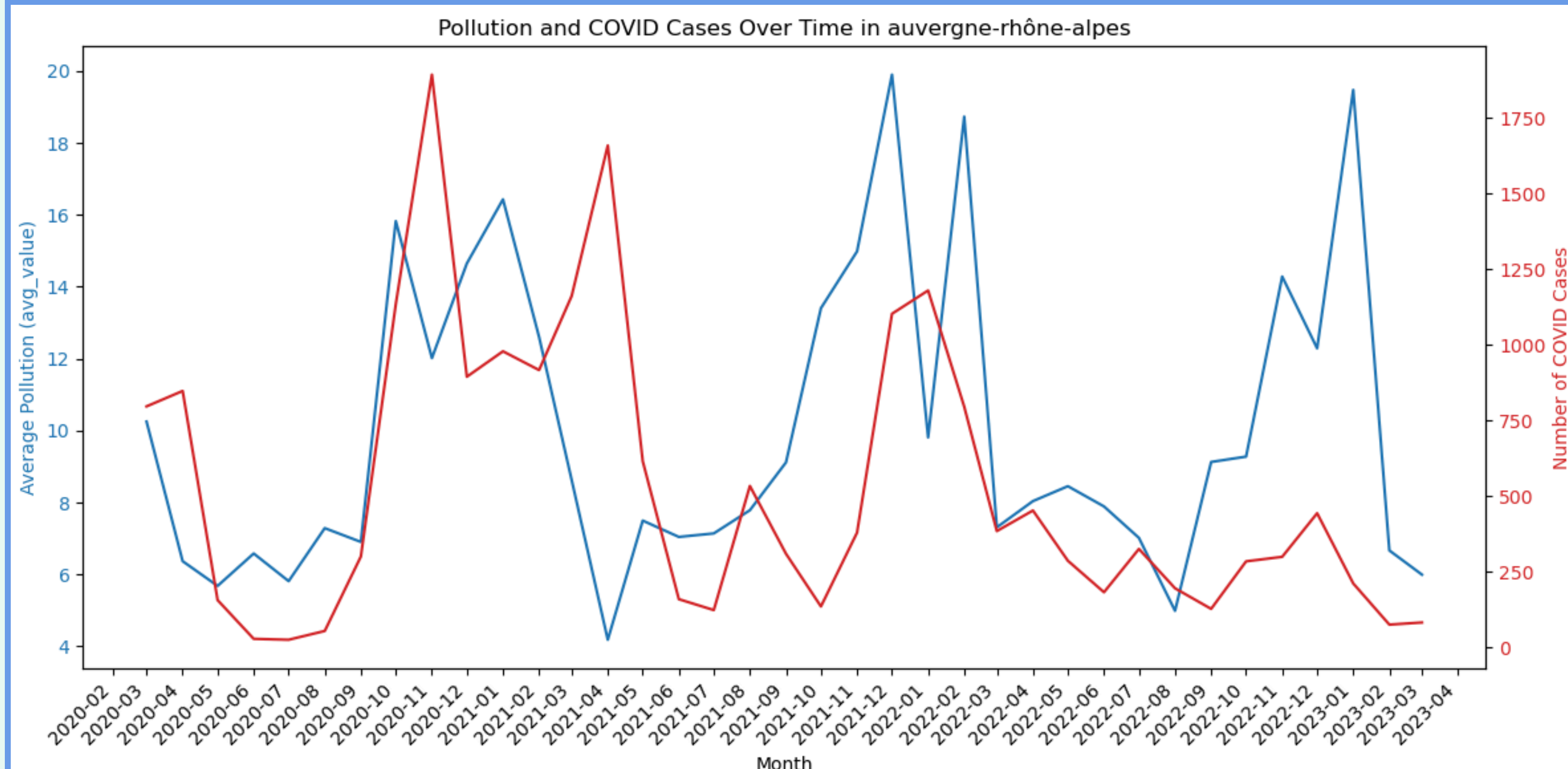
We Used 3 APIs:

- Openaq API for air pollution historical data
- disease.sh API
- Dataset from <https://www.data.gouv.fr/fr/>

AIR POLLUTION VS COVID-19

AUVERGNE-RHONE-ALPS

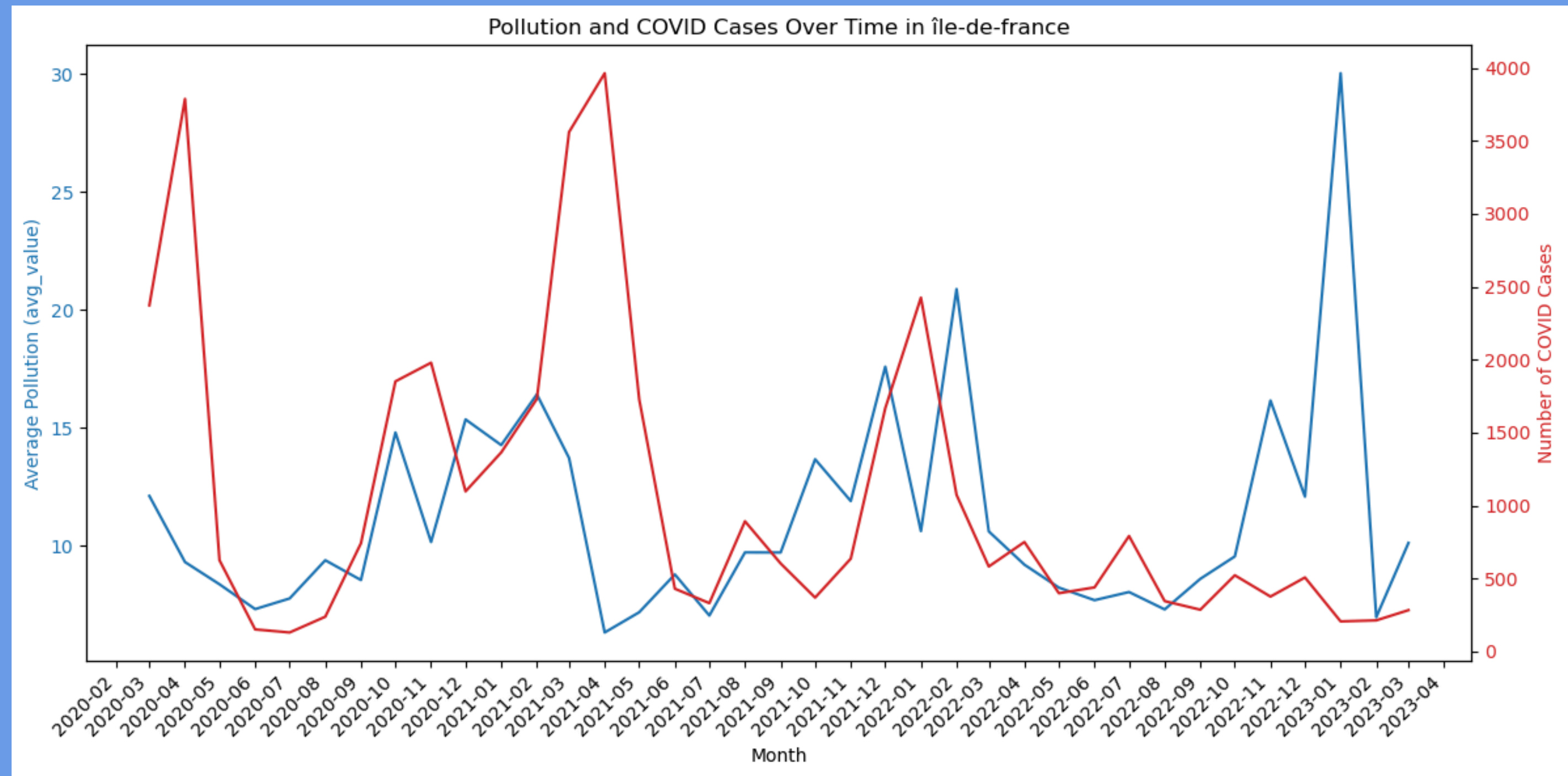
- Using the disease.sh API we could see that France had the highest absolute change in cases month by month in Europe
- We focused our analysis on the two regions with the highest month by month case change



- 1st Lockdown : Mar – May 2020
- 2nd Lockdown : Oct – Dec 2020
- Curfew Introduced : Dec 2020 – April 2021
- 3rd Lockdown : Apr – May 2021
- Phased Reopening : May – June 2021

AIR POLLUTION VS COVID- 19

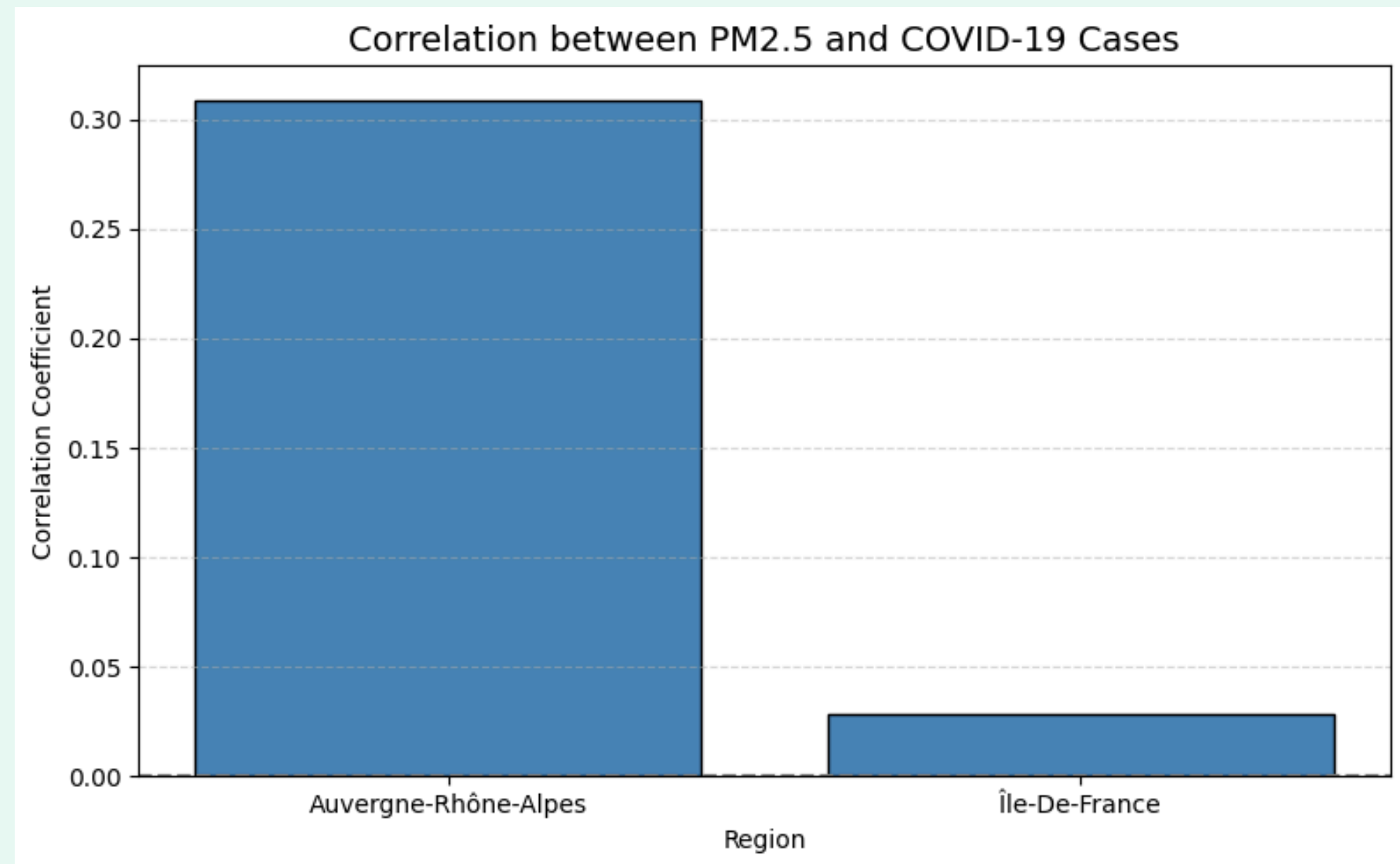
ILE-DE- FRANCE



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CORRELATION BETWEEN AIR POLLUTION AND COVID-19 CASES

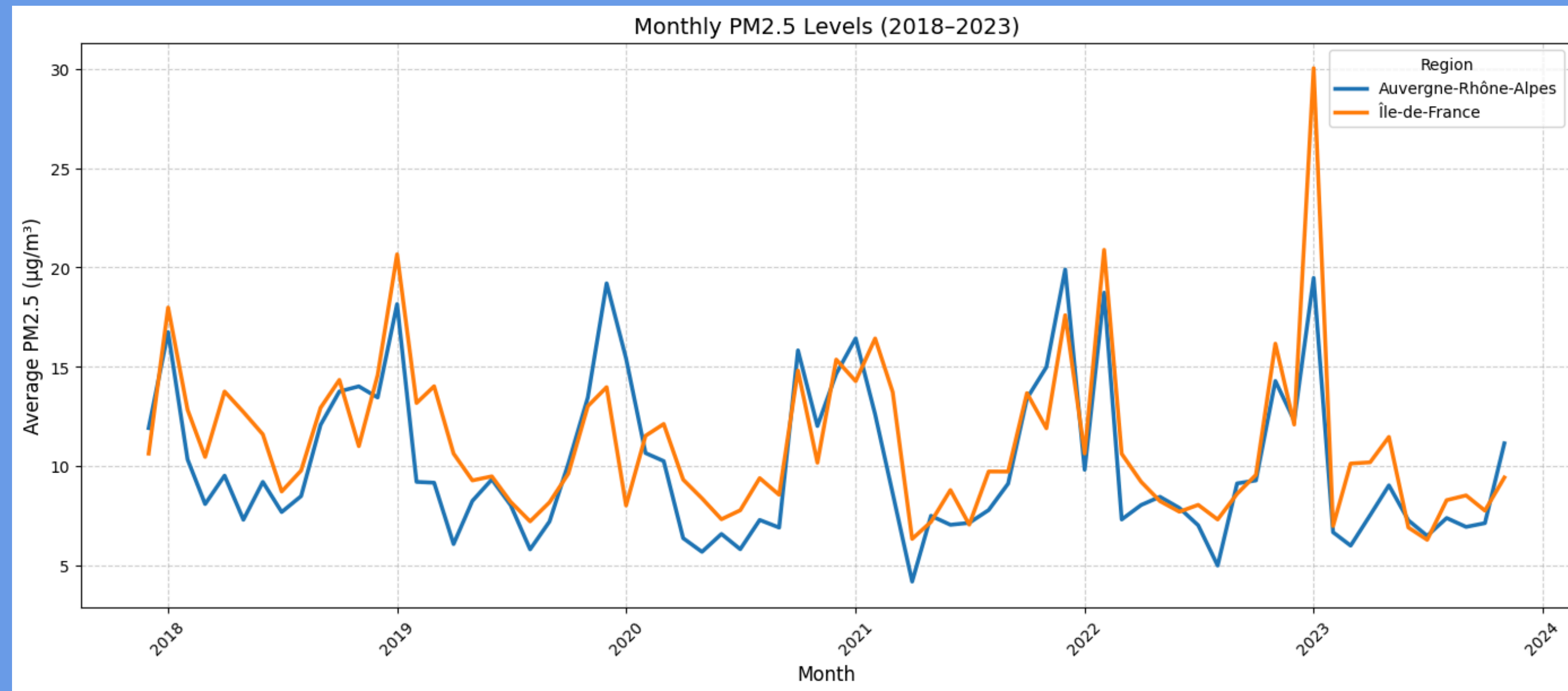
- Auvergne-Rhône-Alpes: Moderate positive correlation (~ 0.3) between PM2.5 and COVID-19 cases — air pollution may be linked to increased hospitalizations.
- Île-de-France: Near-zero correlation — air pollution likely had little to no impact on COVID-19 trends in this region.



PM2.5: tiny air particles (under 2.5 micrometers) harmful to health.

KEY OBSERVATIONS: PM2.5 TRENDS (2018–2023)

- Île-de-France shows consistently higher PM2.5 levels than Auvergne-Rhône-Alpes.
- Mid-2020 dip aligns with COVID-19 period, but drop is modest and similar to other yearly and later lows.



- No clear evidence of major air quality improvement during the COVID-19 period itself.
- Significant increase in PM2.5 between late 2022 and early 2023 across all regions. Possible causes: weather conditions, increased heating, post-COVID activity rebound.

MAJOR OBSTACLES

AIR POLLUTION API

- To get air pollution data for a specific region, it was necessary to define coordinate boxes.
- Figuring out how to use the API key was time-consuming
- Most air pollution APIs provide data only from 2022 onward

HEALTH API

- Level of granularity in the API was not suitable, so additional dataset was required
- Unable to find API with respiratory disease data outside of COVID

CONCLUSION AND INSIGHTS



- France showed the highest monthly COVID-19 case jumps in Europe.
- Air pollution–COVID link varies by region.
- PM2.5 spiked in late 2022–early 2023.
- There is no consistent overall trend suggesting that higher pollution levels always correspond to more COVID-19 cases.

**THANK YOU AND
WISH YOU ALL**

CLEAN AIR

