



# CLIMATE DETECTIVES 2021 – 2022



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## RESEARCH QUESTION

**How does the atmosphere pollution harm the health and welfare of Porto and Gaia's population?**

## SUMMARY OF PROJECT

It is necessary to study atmospheric pollution in Porto/Gaia for the welfare of the population and animals. Porto is a very busy city, both in terms of people as cars and other vehicles that cause traffic which is one of the biggest contributors to the atmospheric pollution. Factories are also another big contributor since they release a lot of smoke.

## MAIN RESULTS

Data collection from professional sources

We have collected data from the Qualar website about the number of data classified as Very Good, Good, Medium, Poor and Bad in terms of the air quality index for the Porto Litoral region.

From figure 1, we can see that in February 2019 the air quality had worse days than in the following years. The best year in terms of air quality was 2021, where there were only days classified as Good and Very Good. This year, in 2021, we were at home, in quarantine. In 2022, the present year, we had good and average days but got more days classified as Medium and Poor again.

From figure 2, we can conclude that, from March 2020, there is a decrease in the number of days classified as poor and bad. On March 2 (month 4) 2020, the COVID-19 pandemic officially started in Portugal and, since March 12, schools have suspended classroom teaching activities. From March 18, a state of emergency is decreed for 15 days, which includes mandatory confinement. To compare the levels of the first 3 months of the year 2020 with the first 3 months of the year 2022, the data on figure 3 was also retrieved. Comparing each month of the year 2020 with the year 2022, it can be concluded that the air has worsened a lot now and it is very different from the covid confinement in 2020. In the year 2020, the air was mainly classified as Good and Very Good, and now, the air quality index also includes days classified as Medium, Poor and Bad (March 2022), probably because we are not confined anymore.

Conclusions

Several studies have shown correlations between air pollutants exposure and morbidity and mortality due to respiratory diseases and cardiovascular diseases. Air quality also impacts the environment, especially global warming and is responsible for acid rain, which in turn is responsible for the contamination of water and soils, and therefore, ecosystems.

When we were at home, confined, the air quality improved, most likely because we didn't use transports as we used to. Air quality is an important factor in human health and the ecosystems' equilibrium. Data from this year already showed that air quality is getting worse than in the last 2 years.

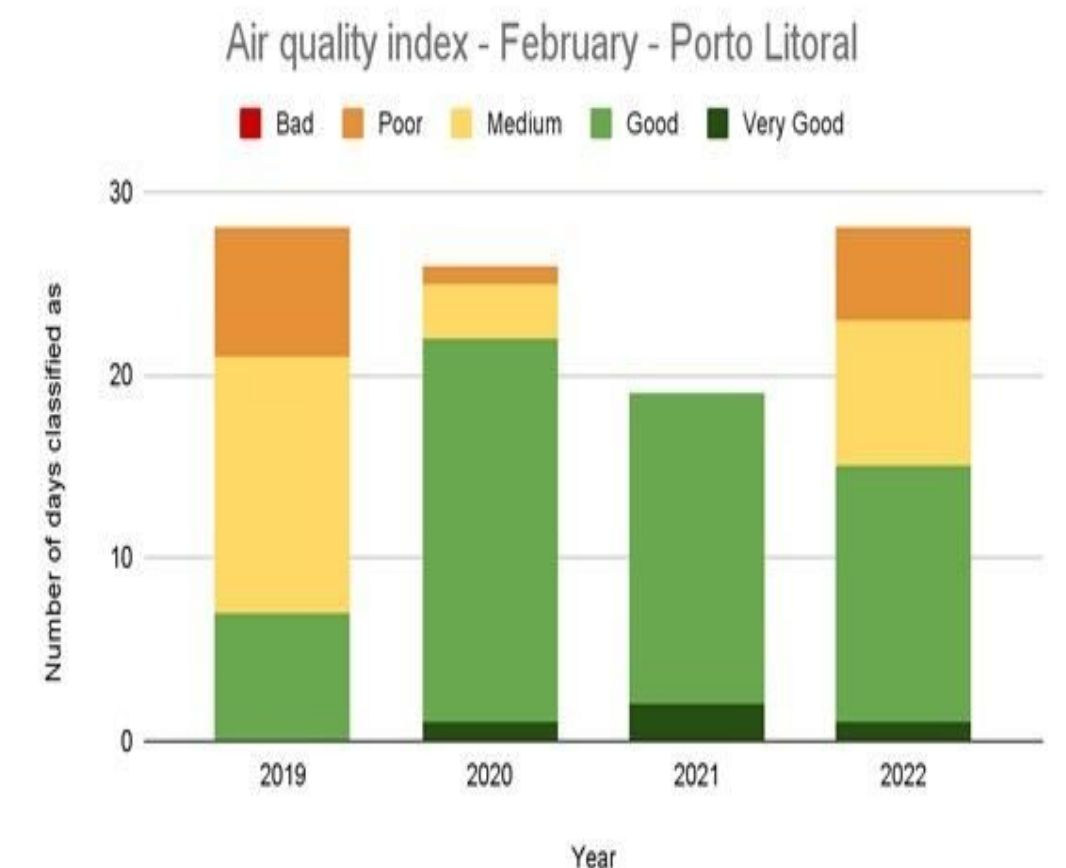


Figure 2: Figure 1 - Graph of Air Quality Index in February of several days at Porto Litoral region.

## ACTIONS TO HELP LESSEN TO THE PROBLEM

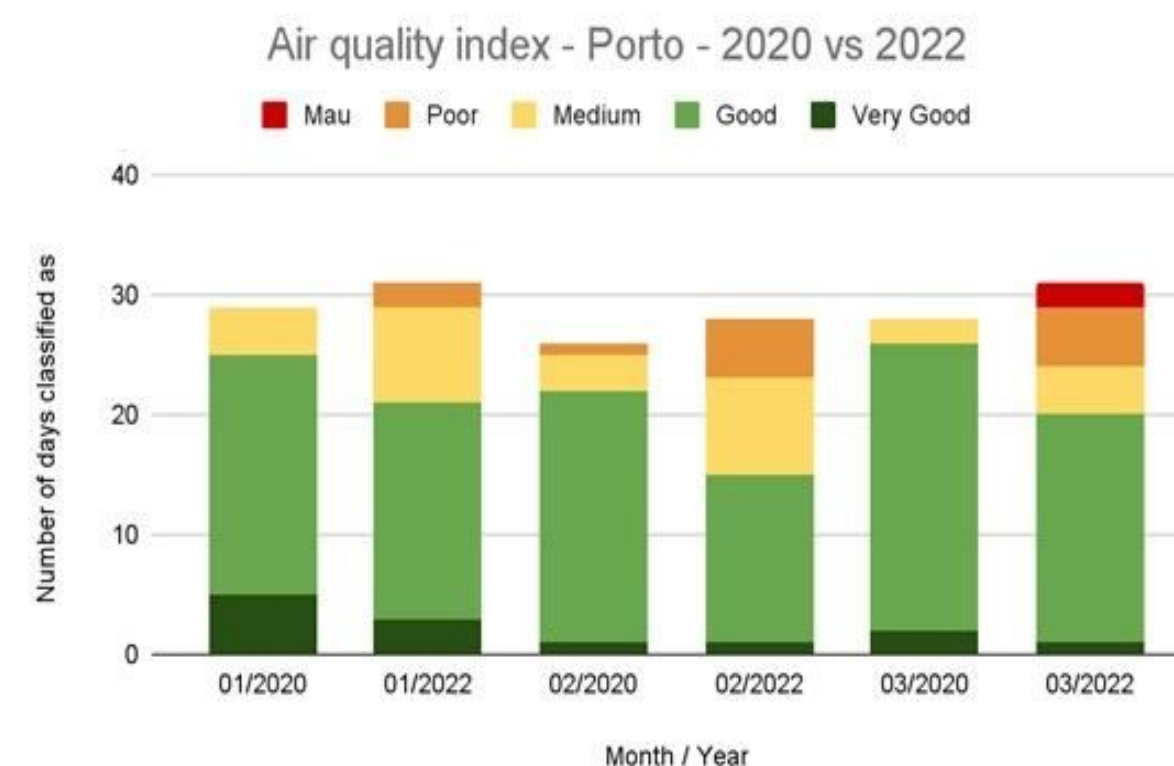


Figure 3: Figure 3 - Air Quality Index during the first three months of the year 2020 and 2022 at Porto Litoral region.

4 - What actions can every person make to contribute to a better air quality index?

We should try to use solar energy more and use less cars/ vehicles that release smoke. We should try to use more electric cars or hydrogen based transportation because they do not release air pollutants.

Figure 1: