# Article information:

The value of using seasonality and meteorological variables to model intra-urban PM2.5 variation-Web of Science 核心合集  
<https://www.webofscience.com/wos/woscc/full-record/WOS:000432104700001>

# Article summary:

1. A yearlong air monitoring campaign was conducted in El Paso, Texas to assess the impact of local temperature, relative humidity, and wind speed on the temporal and spatial variability of PM2.5.

2. Effects of meteorological events on seasonal PM2.5 variability were identified, with low-wind and low-temperature conditions associated with high PM2.5 events in winter and high-wind and low-relative humidity conditions associated with high PM2.5 events in spring.

3. Mixed effects analysis with season and site as fixed factors and meteorological variables as covariates could increase the explanatory value of LUR models for PM2.5.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article titled "The value of using seasonality and meteorological variables to model intra-urban PM2.5 variation" presents the results of a year-long air monitoring campaign conducted in El Paso, Texas, to assess the impact of local temperature, relative humidity, and wind speed on the temporal and spatial variability of PM2.5. The study concludes that mixed effects analysis with season and site as fixed factors and meteorological variables as covariates could increase the explanatory value of LUR models for PM2.5.

Overall, the article provides valuable insights into the impact of meteorological variables on PM2.5 levels in an urban environment. However, there are some potential biases and limitations that need to be considered while interpreting the results.

Firstly, the study was conducted in a specific location (El Paso, Texas), which may limit its generalizability to other regions with different climatic conditions or pollution sources. Therefore, caution should be exercised while extrapolating these findings to other areas.

Secondly, the study only focused on three meteorological variables (temperature, relative humidity, and wind speed) and did not consider other important factors such as precipitation or atmospheric stability. These factors can also influence PM2.5 levels and their exclusion may limit the accuracy of the model.

Thirdly, although the study identified significant correlations between meteorological variables and PM2.5 levels across seasons, it did not establish a causal relationship between them. Therefore, it is unclear whether changes in meteorological conditions directly cause changes in PM2.5 levels or if they are merely correlated.

Fourthly, while the article acknowledges that mixed effects analysis could improve LUR models' explanatory value for PM2.5 levels by incorporating seasonal variations and meteorological variables as covariates, it does not provide any evidence supporting this claim or compare its performance with other modeling approaches.

Finally, there is no discussion about possible health risks associated with exposure to high levels of PM2.5 or how these risks vary across seasons or locations.

In conclusion, while this article provides valuable insights into how seasonality and meteorological variables can influence intra-urban PM2.5 variation in El Paso, Texas; it has some potential biases and limitations that need to be considered while interpreting its results. Further research is needed to establish causal relationships between meteorological conditions and PM2.5 levels across different regions and explore their implications for public health outcomes.

# Topics for further research:

* Health risks associated with exposure to high levels of PM
* 5
* Impact of precipitation on PM
* 5 levels in urban environments
* Atmospheric stability and its influence on PM
* 5 levels
* Comparison of mixed effects analysis with other modeling approaches for PM
* 5
* Seasonal variations in PM
* 5 levels in different regions
* Public health outcomes of long-term exposure to PM
* 5

# Report location:

<https://www.fullpicture.app/item/336120492062ab804e47ff4faa9da610>