

## Public Environmental Concern towards Air Pollution

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### Abstract

Public environmental concerns and air pollution have been the subject of previous research, but the interaction effects and spatial factors have not been taken into account in a systematic framework. A spatial panel simultaneous equation approach is used to reduce endogenous interference and the potential impact of spatial factors, and this paper investigates the interaction effect between public environmental concern and air pollution. We find that a 1% increase in public environmental concern will result in a 0.049% decrease in PM2.5 concentration based on balanced panel data from 269 prefecture-level cities in China from 2011 to 2017. On the other hand, a 1% increase in PM2.5 concentration will result in a 1.398% increase in public environmental concern. In the meantime, both public environmental concern and air pollution have a significant spatial spillover effect on the surrounding areas.

**Keywords:** Pollution; Environment

### Introduction

In addition, our findings suggest that air pollution promotes public environmental concern by threatening residents' health and that public environmental concern reduces air pollution by encouraging government regulation of the environment. The heterogeneity analysis also reveals that the interaction effect of the public environment on air pollution is significantly different in regions with varying heating characteristics and economic development levels. Policies that can be implemented to encourage positive public feedback on air pollution and environmental concerns are offered.

Significant issues with environmental pollution have arisen as a result of China's rapid economic expansion in recent years. Particularly since 2011, haze-like air pollution has received more attention. Controlling the concentration of PM2.5 is the most important way to deal with haze pollution and improve air quality. In addition to causing a variety of respiratory illnesses, excessive PM2.5 levels will also result in significant financial losses. As a result, controlling PM2.5-dominated air pollution has emerged as a significant academic topic.

Air pollution control from a government perspective, including environmental regulation, industrial policy, innovation support, etc., has been the subject of numerous studies. However, a growing number of public voices with strong environmental concerns have emerged in developing nations like China as a result of the rapid growth in economic development and education levels. Public environmental concerns are becoming an increasingly significant factor in the reduction of air pollution as a bottom-up environmental force. Rallies, marches, and petitions were the primary means by which public environmental concerns were first raised. Online media now dominate information gathering and dissemination thanks to advancements in information technology Wang and Jia The public has made extensive use of online media, a relatively new form of media, to voice their environmental concerns, particularly those regarding air pollution. The public hopes to compel businesses and governments to reduce air pollution by expressing their concerns through online media. While the relationship between public environmental concerns based on Internet platforms and air pollution is ignored in the current literature, numerous studies focus on the reduction of air pollution through government-led environmental regulation [1-5].

### Discussion

Using single equation regressions, the literature has demonstrated

that public environmental concerns reduce air pollution. However, prior research has shown some potential endogeneity issues, particularly the reverse causality, and there is evidence that public environmental concern is exacerbated by elevated air pollution. This suggests that public environmental concern and air pollution interact, so using a single equation to estimate will produce biased and inconsistent results. The simultaneous equation method, on the other hand, yields estimates of the interaction effect between public environmental concern and air pollution that are more reliable. In addition, air pollution has a significant spatial spillover effect, meaning that local pollution spreads to the surrounding areas. Because of this, the estimation bias must be reduced by including spatial factors in the model. Based on balanced panel data from 269 prefecture-level cities in China from 2011 to 2017, this study employs a spatial panel simultaneous equation approach to evaluate the interaction effect between public environmental concern and air pollution.

In the following ways, this paper adds to the body of knowledge. The spatial correlation and the interaction effect between public environmental concerns and air pollution are first integrated in this paper. Wang et al. and Wang have looked into the spatial and two-way causal relationships between public environmental concerns and air pollution. However, the spatial factors and the two effects have not been taken into account or effectively integrated. To lessen the estimation bias, this paper incorporates spatial factors into the simultaneous equation. Second, the impact mechanism of the interaction between public environmental concern and air pollution was investigated in this paper. Wang looked into the impact mechanism of public environmental concern on air pollution, but they didn't look at the impact mechanism of air pollution on public environmental concern. By examining both impact mechanisms, this paper adds to previous research. Thirdly, the diversity of the regions is taken into account. This paper argues that regions without heating and those with higher

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economic development have a greater reduction in air pollution as a result of public environmental concern.

This study's reminders are arranged as follows: The research hypothesis and literature review are provided in Section 2, followed by the methods and data in Section 3, the results in Section 4, and the recommendations and conclusions in Section 5. The extent of human exposure is the primary determinant of air pollution. In most cases, air pollution at low concentrations does not pose a threat to public health. However, when the concentration of pollutants reaches a predetermined threshold, it may put public health at risk and cause a variety of diseases. The concentrations of PM<sub>2.5</sub>, PM<sub>10</sub>, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, and other substances comprise the measurement of air pollution [6-10].

## Conclusion

The panel data of prefecture-level cities in 269 cities from 2011 to 2017 comprise the research sample in this paper, with a total of 1883 observations. The global PM<sub>2.5</sub> concentration average grid data released by the Columbia University Social Economic Data and Application Center are used to compile the air pollution data. The Baidu search index for the keyword "PM<sub>2.5</sub>" provides the information regarding public environmental concern. Based on the premise that air pollution and public environmental concern interact, the joint equations are simultaneously estimated in this study. Yasmeen et al.'s study says that, the Hausman test is used to perform the simultaneous test of the air pollution equation and the public environmental concern equation in Section 3.1. The air pollution equation is first estimated, and then the public environmental concern is added to the regression residuals.

The estimation based on a single equation is subject to endogeneity interference, according to this paper, and there is a two-way causal relationship between air pollution and public environmental concern.

This paper employs a spatial panel simultaneous equation approach to estimate the interaction effect of public environmental concern and air pollution using panel data from 269 prefecture-level cities in China from 2011 to 2017. This paper obtains the through the empirical analysis.

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