

Air Pollutants Assessment across the UAE Using Repeated Measures

Authors : Karam Al-Assaf, Israa Al Khaffaf, Ryan Al Tayeb, Ayman Alzaatreh

Abstract : A significant, manageable hazard to public health, happiness, and the achievement of sustainable development is air pollution. Outdoor air pollution has increased globally over the previous years, exposing billions of people worldwide to hazardous air. With UAE being no different, there are a variety of pollution-related problems that need to be addressed. Therefore, to gain insights from the government and decision makers, this study aims to analyze the annual trends of the five major air pollutants (NO₂, SO₂, O₃, CO, and PM₁₀) across five emirates in the UAE (Abu Dhabi, Dubai, Sharjah, Ajman, and Ras AL Khaimah) from 2013 to 2020. The results of the analysis revealed that air pollutants NO₂, SO₂, and PM₁₀ were significantly different across the years and states. Moreover, it was found that the levels of NO₂ are significantly different in Dubai across the years. Moreover, the levels of SO₂ are significantly different in Sharjah across the years. Furthermore, it was found that PM₁₀ was significantly different in Ajman across the years. Moreover, the analysis of the significant difference in the pollutants in the three areas (Downtown, Residential, Industrial) revealed that there is no significant difference in the pollutant levels across the years in the three different areas. This tool has shown its effectiveness in monitoring pollutant trends, providing valuable data for government investigations and control measures across the UAE. Additionally, it serves as a valuable resource for decision-makers to develop and implement policies aimed at improving pollutant levels.

Keywords : air pollution, air pollutant, repeated measures, MANOVA, UAE

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