

UNIVERSITI TEKNOLOGI MARA

**ANALYSIS ON PM2.5 POLLUTANT
DISTRIBUTION IN 2016 AND 2019 BY USING
GIS SPATIAL ANALYST: A CASE STUDY IN
SELANGOR**

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AUTHOR'S DECLARATION

I declare that the work on this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

In this thesis, the relationship between PM_{2.5} pollutant distribution with urbanization, population and meteorological factor has been investigated utilising Geographic Information System (GIS) as an analysis tool. The research focused on how the variation of PM_{2.5} from 2016 to 2019 and the factor that gives the contribution to the PM_{2.5} distribution in Malaysia. The main objective of this study was to analyse the spatial variability of the pollutants, taking Peninsular Malaysia that consist with 47 monitoring station as a study area and the focus study area on factor that contribute to the pollutants in Selangor as a case study, by identification of the area of high concentration of PM_{2.5} pollutants and their relationship with urbanization, population and meteorological factor. A correlation test was performing to establish the relationship between PM_{2.5} pollutants, urban area, population density, and temperature in Selangor station. Landuse was generated using remote sensing tool which is Erdas Imagine to perform landuse classification in identifying the urbanization area in study area. GIS was utilized to investigate the spatial distribution of the PM_{2.5} pollutants. The main finding of this research is the comparison between spatial and non-spatial analysis approaches, which indicated that correlation analysis and Inversed Distance Weighted analysis using the average of level of PM_{2.5} pollutants by group of few monitoring stations is a relatively a suitable method for assessing the health effect of PM_{2.5} Pollutants distribution. There was a significant positive correlation between variable under consideration, and the research show a decreasing trends of concentration of PM_{2.5} pollutants in Malaysia and increasing trends at Selangor. The statistical analysis show that there exist a positive relationship between the level of PM_{2.5} pollutants with urbanization and temperature but the population are more to strong positive relationship as certain section due to the population are more vulnerable to the exposure.

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