

UNIVERSITI TEKNOLOGI MARA

**RELATIONSHIP BETWEEN POPULATION AND
PM2.5 IN SOUTHERN REGION OF PENINSULAR
MALAYSIA**

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**BACHELOR OF SURVEYING SCIENCE AND
GEOMATICS (HONOURS) - AP220**

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MALAYSIA**

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Thesis submitted in fulfilment
of the requirements for the degree of
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College of Built Environment, CBE.

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is 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 Under - Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Air pollution, particularly the presence of fine particulate matter with a diameter of 2.5 micrometers or smaller (PM_{2.5}), poses a significant threat to public health globally. Inhalation of PM_{2.5} particles can lead to severe respiratory and cardiovascular issues, making it imperative to assess the extent of the population exposed to this pollutant. The aim of this study is to assess the population's exposure to PM_{2.5} in the Southern Region of Peninsular Malaysia during the years 2018 and 2021 using GIS approach. The concentration of PM_{2.5} was mapped using the Inverse Distance Weighted (IDW) interpolation method in the QGIS platform to identify the area of high concentration of air pollutant in the Southern Region of Peninsular Malaysia. The results show that Nilai had the highest PM_{2.5} concentration (above 23.74 $\mu\text{g}/\text{m}^3$), while Kota Tinggi and Pengerang had the lowest (14.97 $\mu\text{g}/\text{m}^3$) in 2018. Moreover, in 2021, Nilai and Bukit Rambai still showed high concentrations, with Kota Tinggi, Pengerang, and Kluang recording the lowest levels (below 11.93 $\mu\text{g}/\text{m}^3$). Nilai consistently had high PM_{2.5} concentrations. In addition, the findings indicate a positive correlation between population and PM_{2.5}, suggesting that as population increases, PM_{2.5} concentration tends to increase. However, the correlation is relatively weak, with R-squared values below 0.2 for both years. The findings of this study will help to understand the sources and distribution of PM_{2.5} pollution as well as provide information on the concentration of air pollution in the Southern Region of Peninsular Malaysia. Furthermore, this study's outcomes will hold significant importance for policymaking and sustainable development such as policy recommendation.

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