Unearth Saipan: Enhancing Soil Assessment With Regression Analysis and Machine Learning for Vehicle Decay Investigation

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The CNMI is plagued with abandoned cars, which could have negative effects on the environment. After finding very little professional research conducted on this topic, we decided to create our own research. We collected samples of topsoil in dry weather from 32 abandoned cars across the island. Then, we found out how long the cars have been abandoned and analyzed the health of the soil using RapiTest soil testing kits for the following categories: pH, nitrogen, phosphorus, and potash levels. Using regression models and residual plots, we were able to find the relationship between the two variables: pH, potash, and nitrogen levels increase as time passes, while phosphorus decreases. Additionally, we created an app that predicts the health of the soil using machine learning. Additionally, we collected data on the health of random samples of topsoil from across the island as well as their location relative to the ocean. After analyzing the two variables using regression models and residual plots, we found no relationship between them. This ensures that the car was the sole factor in affecting the health of the soil in our experiment, and no outside factors, such as the location of the soil sample on the island, were affecting our data. This study showed that abandoned cars are generally harmful for the soil. As the pH level gets dangerously high, the soil turns alkaline, a surplus amount of nitrogen is detrimental, and a lack of phosphorus is harmful to plant growth as well.

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