A Computational Epidemiological Review of Socioeconomic Disparities as Risk Factors for Lung Disease Across Texas Counties

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Certain environmental, social, and genetic factors related to socioeconomic status can significantly impact a person's health. The purpose of this experiment is to analyze how air quality, economic status, and ethnicity can contribute to lung disease and to assess if these factors are accurate predictors of lung disease in Texas counties. Data was gathered from the U.S. Census, Texas Commission on Environmental Quality, and National Cancer Institute. The percentage of the population with chronic lung disease in each Texas county analyzed for correlation with the percentage of people in poverty, people of Hispanic ethnicity, and air pollution in each county by using Excel and Tableau. After regression analysis, the regression of people of Hispanic ethnicity and people in poverty had the most significant relationship with 97% of the data fitting the model, followed by the regression of people with lung disease and people in poverty at 94% of the data fitting the model, and lastly, the regression of people with lung disease and people of Hispanic ethnicity at 91% of the data fitting the model. Because all the p-values were well under 0.05, the null hypothesis is refuted and the alternative hypothesis that confirms a relationship between socioeconomic factors and cases of chronic lung disease is accepted, but further research needs to be done. This study establishes the issue of disparities in health, so they can be resolved. All people should have access to healthcare regardless of socioeconomic status.

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