Executive summary

Low birth weight is one of the most common indicators of infant health. While it is not this report’s objective to establish causation or identify main factors, we are trying to find main associations which might cause low birth weight. A total of 1236 babies from a US hospital were evaluated in applied statistical methods including an unpaired t-test, analysis of variance (ANOVA) and a simple linear regression model.

We are aiming to measure mean baby birth weight of smoking and non-smoking mothers is compared using a t-test in order to investigate a difference effected by smoking habit during pregnancy.

The ANOVA compares the mean baby birth weight of three different ethnicities of mothers to explore differences between the considered ethnic groups 0-5=white 6=mex 7=black 8=asian 9=mixed 99=unknown. The linear regression model intends to firstly describe the relationship of infant weights and multiple variables and further on to create a prediction model that allows to foresee children’s birth weights some significant variables.

This study found that there is a difference in mean baby birth weights between the babies who have smoking mothers and non-smoking mothers. Statistically significant differences in the mean birth weight were found between the ‘White’ and ‘Other’ as well as the ‘White’ and ‘Black’ ethnic groups. This, in fact, suggests that the ethnicity can be a determinant for infant weight. The simple linear regression reveals a weak linear relationship between the mother’s weight and the baby weight. The fit of the regression is insufficient to act as predictive model.

Bootstrapping?

Despite this, future research using additional exploratory factors influencing weights of infants could be used in multivariate regression models.

All these findings are highly limited in its application because of the limited sampled population, as it is very small and collected in 1964. Further research in this topic could deepen our understanding of this connection but would fail to help in preventing low birth weights. Nonetheless, the findings in this report allow to point research into an adequate direction. The contribution of this analysis is to identify mother’s smoking habits and ethnicity as possible determinants of children birth weight along with other attributes that might affect birth weight.

Introduction

methods

Findings