Good essay about correlation and regression

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Test Summary

In this paper the relationship between strong chance of serious defect and pregnancy as a result of rape is analyzed.

The assumptions of this testing and linear regression construction are the following:

- The mean value of all residuals is 0. ()

- The Gauss-Markov conditions:

- Homoscedasticity (constant variance) or the absence of random errors heteroscedasticity models ()

- The absence of auto-correlation of random errors()

When these assumptions are provided, there is fairly qualitative evaluation of the model parameters, namely, they are unbiased, wealthy and best estimates.

The chosen variables to discover are Strong Chance of Serious Defect and Pregnancy as a Result of Rape.

The descriptive statistics shows, that there were 459 observations of both variables, they are numerical (Metric). The mean values, standard deviations and numbers of observations are in the table below:

The correlation analysis is below:

There is quite strong positive correlation between the variables (Pearson's r is 0. 682). This is the evidence of quite strong positive linear association between the variables. The coefficient is significant at 99. 9% level of confidence as p-value is lower than 0. 001.

The summary of constructed linear regression is below:

The linear regression has the following form:

y= 0. 392+0. 694x

Where y is " Pregnant as the Result of Rape" variable, and x is " Strong Chance of Serious Defect" variable.

According to ANOVA output (see above), the model is significant, all

coefficients are significant as p-values are lower than 0. 001

The residual analysis shows, that the mean of residuals is 0 and our

assumptions of regression model are true:

The scatterplot is below:

Conclusion

There is a strong linear positive association between Pregnant as the Result

of Rape and Strong Chance of Serious Defect. The obtained linear regression

equation is good enough for using and making forecasts.

Sources

Gustav Levine, Sanford L. Braver, David P. Mackinnon, Melanie C. Page,

Gustav. Levine's Guide to SPSS for Analysis of Variance. — 2nd ed. —

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