

Implications climate and extreme events in predictive model for the municipality of RJ - Brazil-leptospirosis in the municipality of Rio de Janeiro - Brazil

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Estimating the changes in climate variability and the dangers of an increase in these variations, results in vital not only for the impact they may have on disease, but also to alert the health system. The use of climate indices, together with the forecast models can alert authorities to possible changes in the level of risk, immediately or in the near future.

Objective: Develop a predictive statistical model to determine the trend of cases of leptospirosis in the city of Rio de Janeiro for the years 2010 to 2012.

Method: Data were collected through the Municipal Health and Civil Defense of Rio de Janeiro, and IBGE Instituto Pereira Passos. The rainfall for the year 1996 are INFRAERO, and from 1997 to 2009 are INMET. We used the statistical software SPSS 11.5 and 6.0 STAMP. Obtained a model with a good fit, predictions were made for the next 3 years: 2010, 2011, 2012 The final model obtained included: Trend, autoregressive component, explanatory variables and interventions.

Result: The model statistics are adequate, the Durbin-Watson statistic, which indicates the autocorrelation of residues in the model is 2.06, the coefficient of determination was $R^2 = 0.998$. The maximum temperature variables and rainy days were highly significant in explaining the model with $p < 0.0001$ and $p = 0.018$, respectively. A projection to 2012 indicates a decreasing trend, ranging from 9.58 cases at the end of the study period with a confidence interval (CI) of (4.91, 14.26) to 8.24 (dez/2012) with IC (3.31, 13.18).

Conclusion: Through the model applied, leptospirosis cases have a downward trend at the end of the study period (Dec/2009), with a factor of 0.22% per month decrease, considering that remain climatic conditions, socioeconomic and policies in the city.

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