EXTREME RAINFALL, POVERTY AND POOR SANITATION ASSOCIATED TO LEPTOSPIROSIS, A CLIMATE SENSITIVE DISEASE IN BRAZIL

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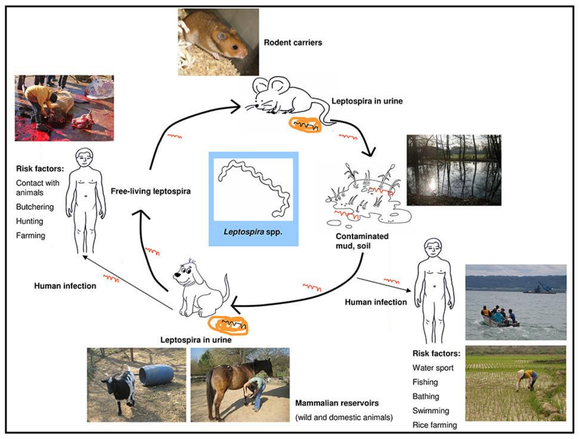
Introduction

There are numerous transmissible diseases that are climate-sensitive and associated to lack of treated water and sewage. It may be aggravated by the occurrence of extreme hydrological events, such as droughts or excessive rainfall, leading to water shortages or floods. These waters when contaminated lead to the emergence of cases of leptospirosis.



Leptospirosis transmission cycle. http://travelguidetothetropics.yolasite.com/#

Objectives

To describe the spatial distribution and incidence of leptospirosis in the Brazilian capitals from 2005 to 2014; identify the epidemiological profile; association between the incidence of leptospirosis and precipitation patterns, and between the incidence of leptospirosis and socioeconomic variables in the period of this study.

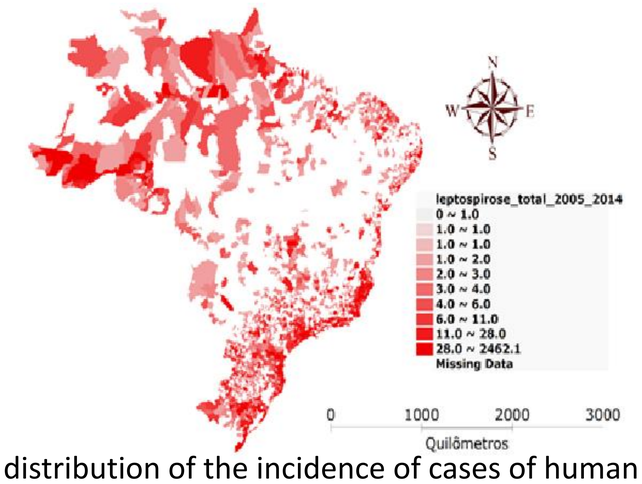
Method

This is a descriptive, exploratory study that used multivariate statistics to treat data on the reporting cases of leptospirosis in the brazilian capitals obtained at Notifiable Diseases Information System (SINAN). Precipitation data were obtained from INMET (National Meteorology Institute), and the environmental and socioeconomic data from Atlas Brazil, and demographic data from IBGE (Brazilian Institute of Geography and Statistics).

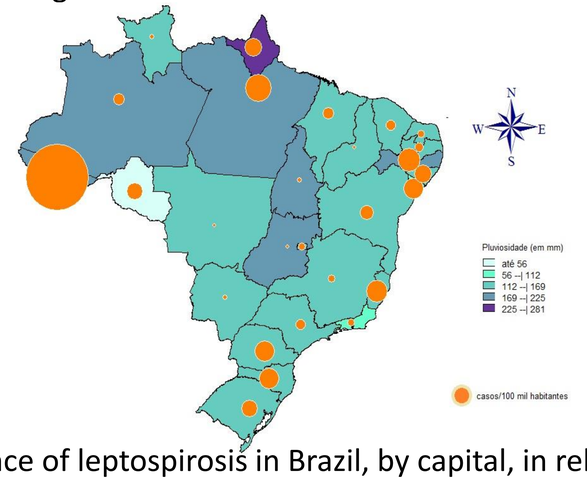
Results

Leptospirosis had high incidence in the North and South regions. Among the Brazilian capitals, Rio Branco and Amapá had the highest incidence. The most affected age group are males in productive phase of life. The most frequent environment of transmission are urban area. This disease is related to the low level of schooling, poverty and sanitation in Capitals.

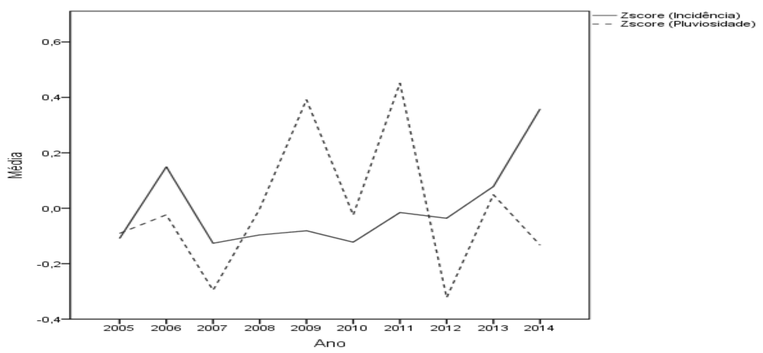
There is a positive and statistically significant correlation (at 1%) between rainfall and leptospirosis incidence. An increase of 10 mm^3 in the average rainfall of the Brazilian capitals increases the incidence of leptospirosis by 2%.



Spatial distribution of the incidence of cases of human leptospirosis in Brazilian regions from 2005 to 2014.



Incidence of leptospirosis in Brazil, by capital, in relation to precipitation.



Average rainfall and incidence of human leptospirosis in Brazil, from 2005 to 2014.

Conclusion

Cases of leptospirosis occur when precipitation averaged over both dry and wet regimes, however are also associated with poverty and poor sanitation. Predicting rainfall thresholds can be useful to prevent flooding and leptospirosis cases.