



An association between environmental variables with and Cardiovascular Diseases and Respiratory in São Paulo

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Air pollution is an issue that has been growing interest of the world population. Several studies conducted in different planet regions and urban areas, including in São Paulo indicate the existence of significant concentrations of some particles that because of its quantity become harmful to human health. This study aims to associate environmental variables (weather and air pollutants) and the variability of cardiovascular (CVD) and respiratory diseases (DRP) in the city of São Paulo from 2003 to 2013, identifying the leading cause of hospitalizations at health facilities in the city of São Paulo. São Paulo is a megacity with many air pollution problems as well as with subtropical climate subjected to extreme weathers such heat waves as well as cold spells. Its statistical analysis is based on Cluster Analysis (CA) and Principal Component Analysis (PCA). The first results show that considering the mean air temperature, the first principal component (with 56% of total explanation) presents the high and positive weights (over 0.70) of air pollutants with weak negative association to rainfall (-0.24) and humidity(-0.47), i.e. greater precipitation and humidity, less concentration air pollutants, vice versa. For the second component (explaining 27% of variance), there is a groups pollutants (PM10, NO₂ and O₃) with positive associated with positively to temperature (0.64) and negative with humidity (-0.65). That means good weather is associated with ozone which is expected. And at the third component (16% of explanation), there is a positive low associations for SO₂ (0.20), positively associated with the two diseases, CVD (0.98) and DRP (0.98). The first assumption indicates that an increase of SO₂ concentration may affect positively the hospital admissions for both diseases despite the low concentrations. Further results will include the impact of possible climate change.