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Emerging Pollutants: Protecting Water Quality for the Health of People and the Environment

Data science applied to emerging pollutants in the sanitation sector: an investigation in open databases

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Goal

To perform an analysis through investigation of open data on emerging pharmaceutical pollutants occurrence in wastewater

Motivation

- Worldwide increase in drug consumption is occurring, mainly due to population growth, life expectancy, and people's consumption pattern (REIS et al., 2019)

- Monitoring emerging pollutants in wastewater and treatment plants, is usually a highly complex task; several collections must be made, the collection and analysis equipment generates continuous costs, and presents detection limitations.

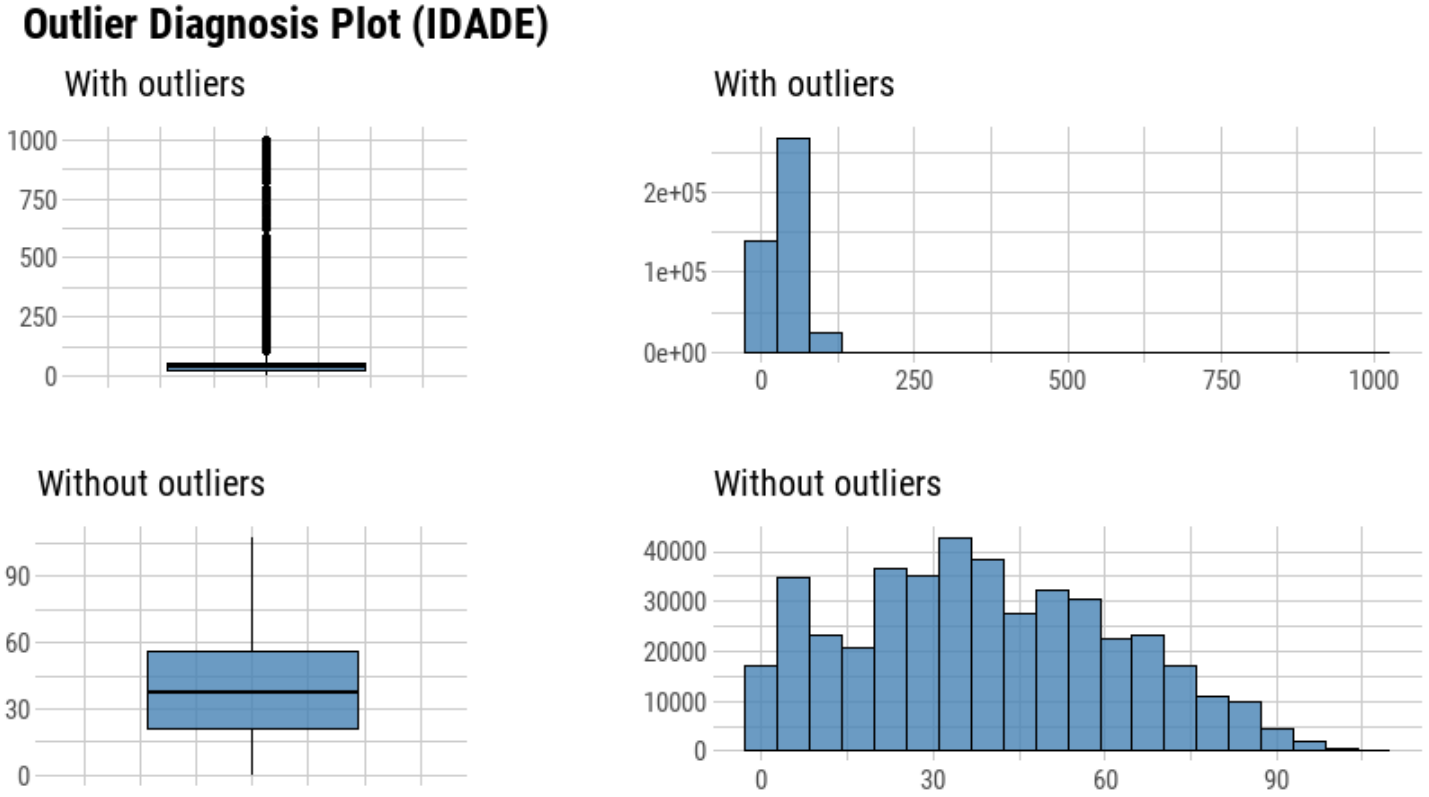
Methodology

- Step One
  - Make a data base in ecxel with open data extracted from other studies, about the behaver of the emerging pollutants in urban wastewater before and after different real water treatment plants, with the goal to summarize and help the search for this infos in future works

- Step two
  - Make an Exploratory Analysis using the data analysis tool "R", on the database with the main pharmaceutical sales information in Brazil, called "Sales-ANVISA"

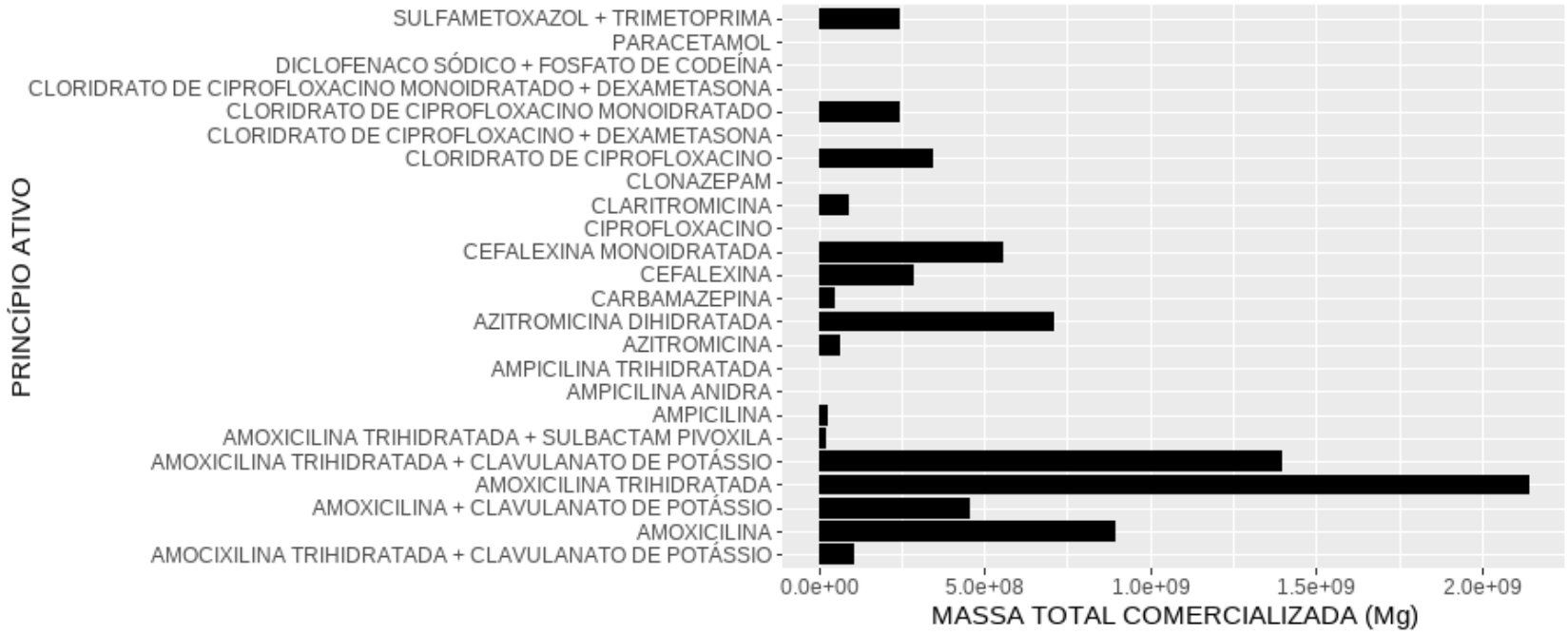
Results

Graph 1 - Boxplot and histogram of age distribution with and without outliers



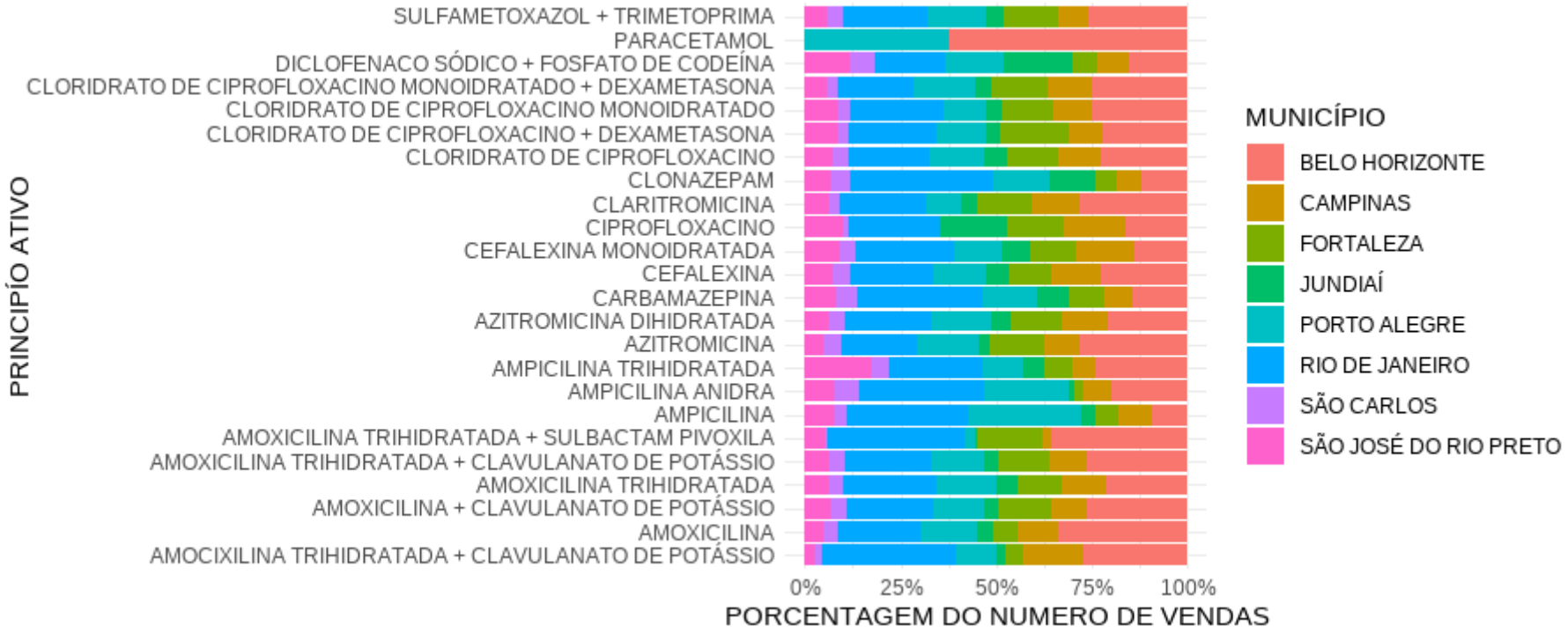
Results

Graph 2 - Total marketed mass of each active ingredient (database without outliers)



Results

Graphic 3 - Percentage of total sold mass of each active ingredient divided by City (database without outliers)



References

REIS O. EDUARDA et al. Occurrence, removal and seasonal variation of pharmaceuticals in Brasilian drinking water treatment plants, Environmental Pollution, Amsterdã, Volume 250, 2019, Pages 773-781, ISSN 0269- 7491.

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