Alerta Zika!

Venha explorar as soluções baseadas em dados para fazer frente ao Zika vírus os dias 02 y 03 de Dezembro en Lab.RIO.

THE PROJECT

Objective: create a Rio de Janeiro map with a historical evolution of the Zika disease throughout time and temperature, including IDH (human development indicators) as social parameter.

Target variable: the coordinates (latitude and longitude), the dates that the cases occurred, temperature over the seasons and social development indicators of Rio regarding income, education level and longevity.

Algorithm type: griding

THE PROJECT

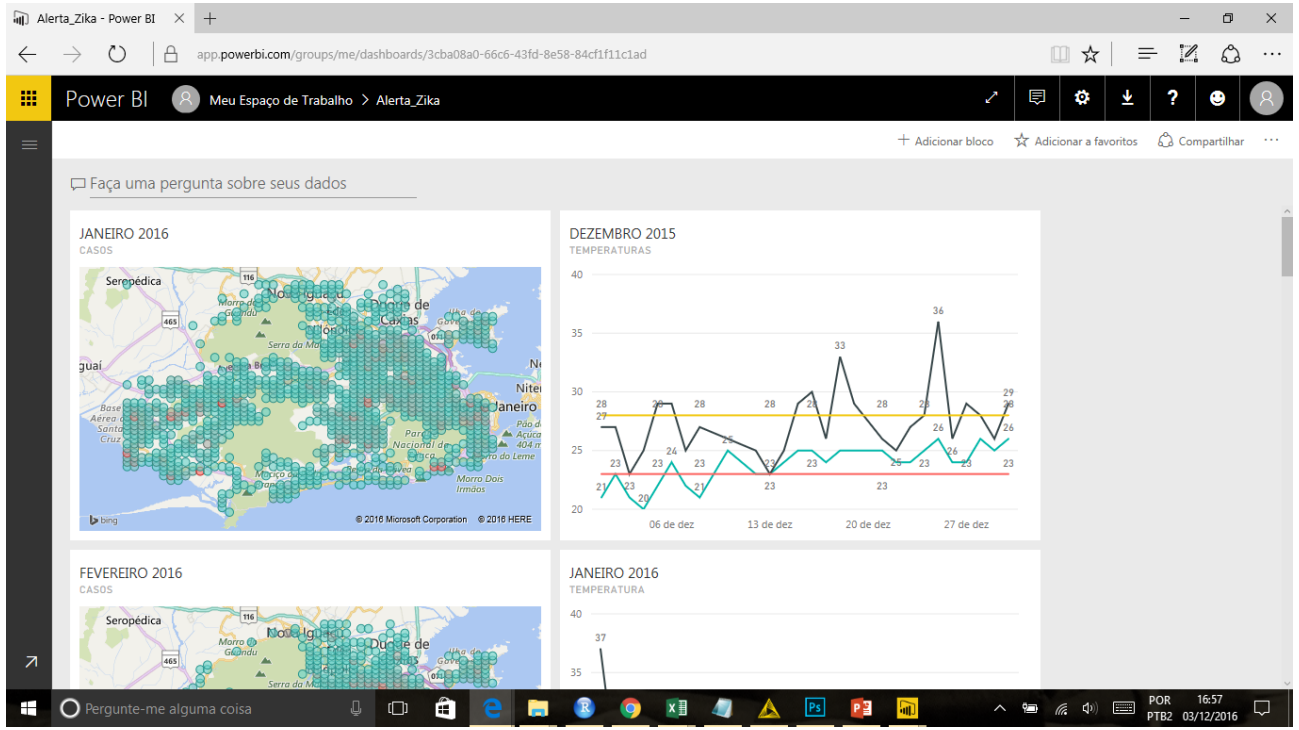
Hypothesis: demonstrating the disease propagation pattern and their correlations throughout time, city areas and weather can show where and when the disease spreads and help the city officials decide the best ways to allocate resources, the social development indicator can provide insights about its impact on the spreading pattern.

Relevant datasets: Mosquito Borne Diseases; Dados de climaticos (temperatura, umidade, pressao); Atlas Brasil.

Product: a website showing the pattern in a visual and interactive way.

Resources: R Programming; Python; Knime; PowerBI; Pentaho.

EXPLORATORY ANALYSIS



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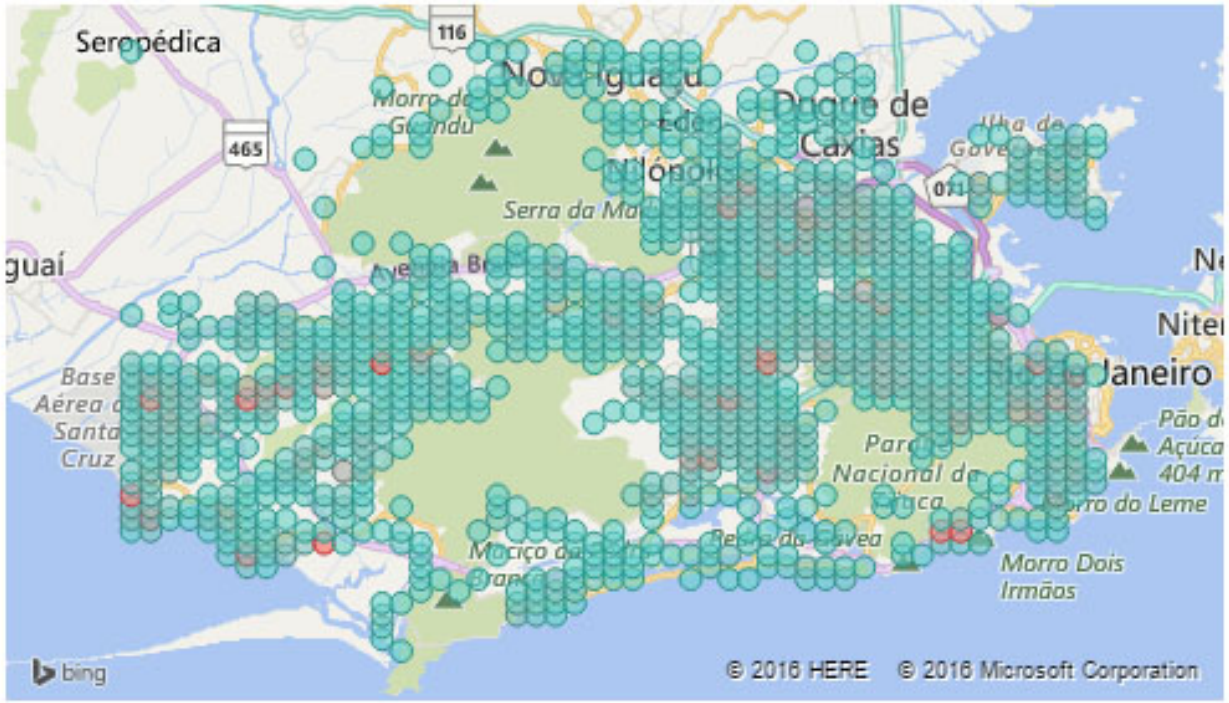
Time-series analysis showing a correlation between temperature and number of cases

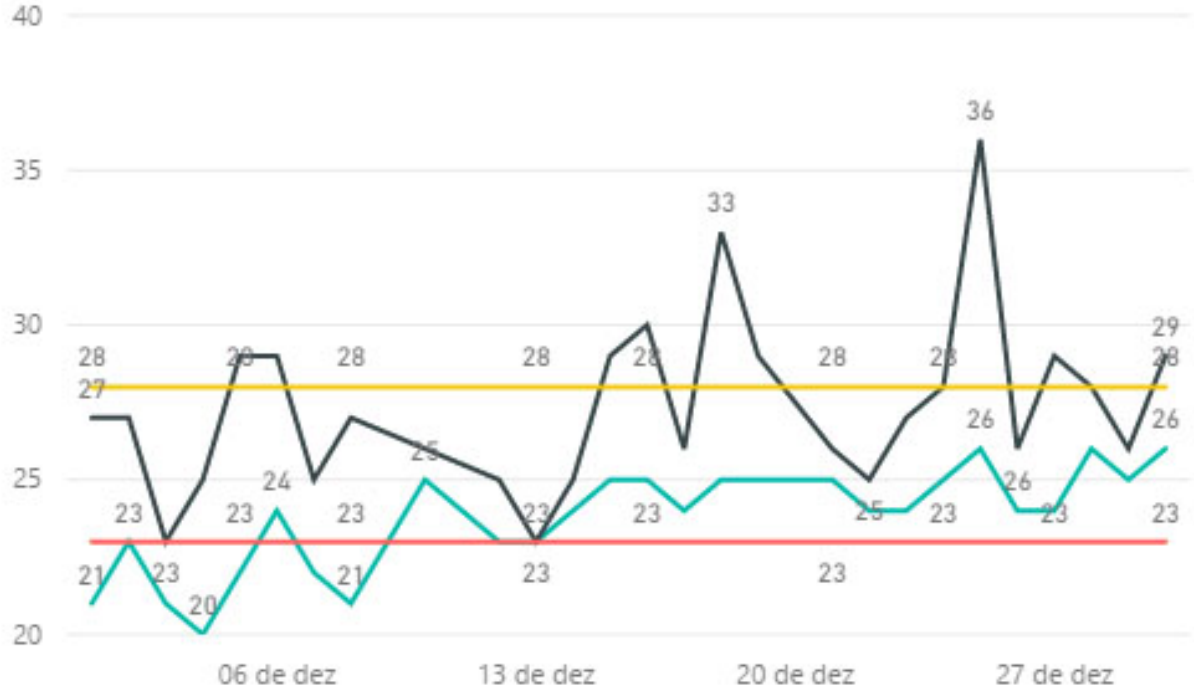
JANEIRO 2016

CASOS



DEZEMBRO 2015

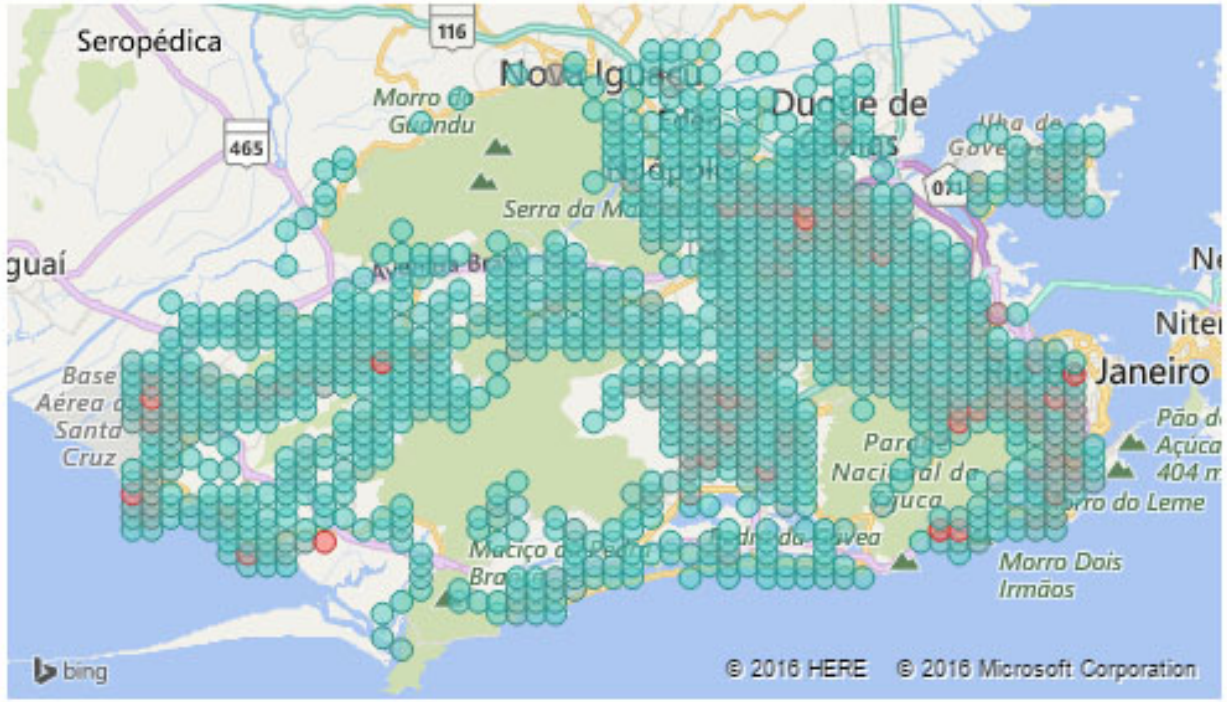
TEMPERATURAS



The *aedes aegypti* flourish in a temperature variation going from 23-Celsius degree to 28-Celsius degree (about 73 to 82-Fahrenheit)

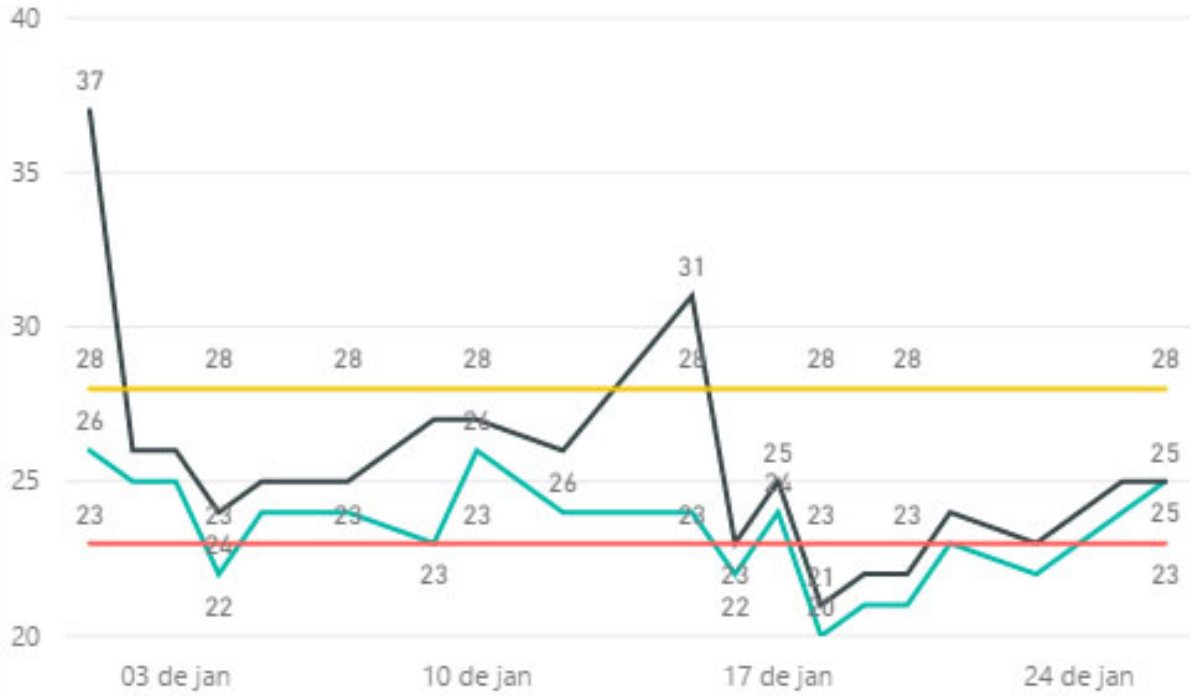
FEVEREIRO 2016

CASOS



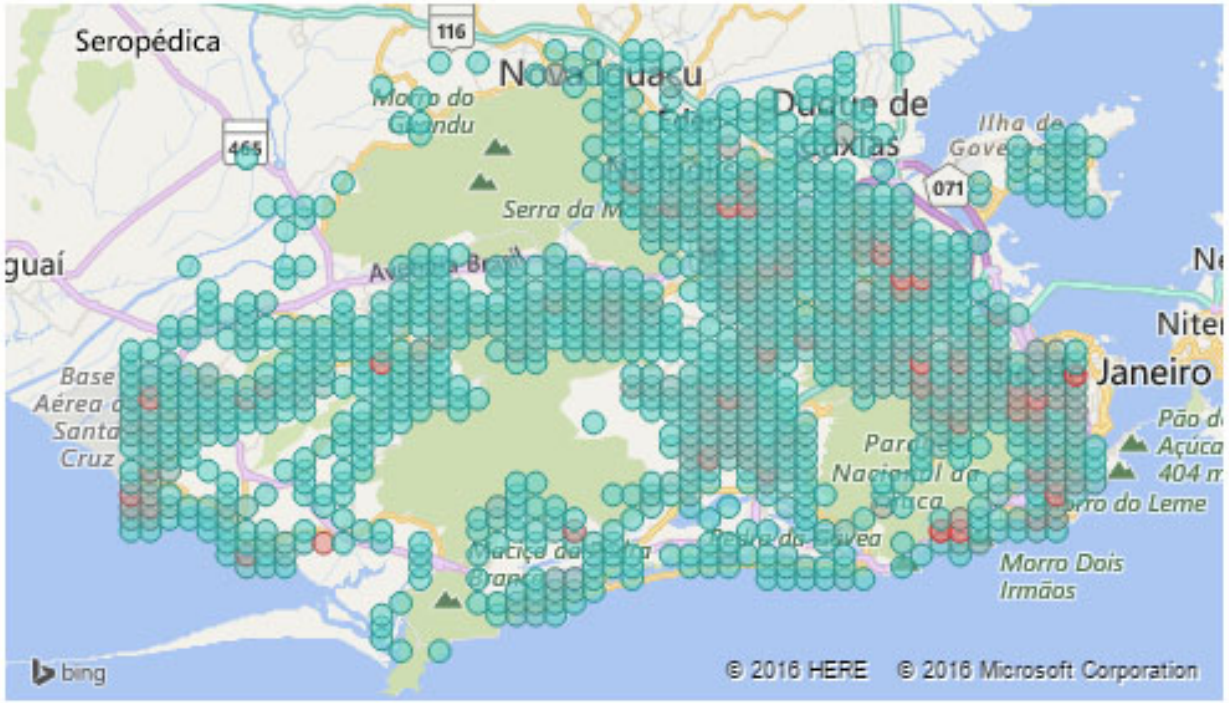
JANEIRO 2016

TEMPERATURA



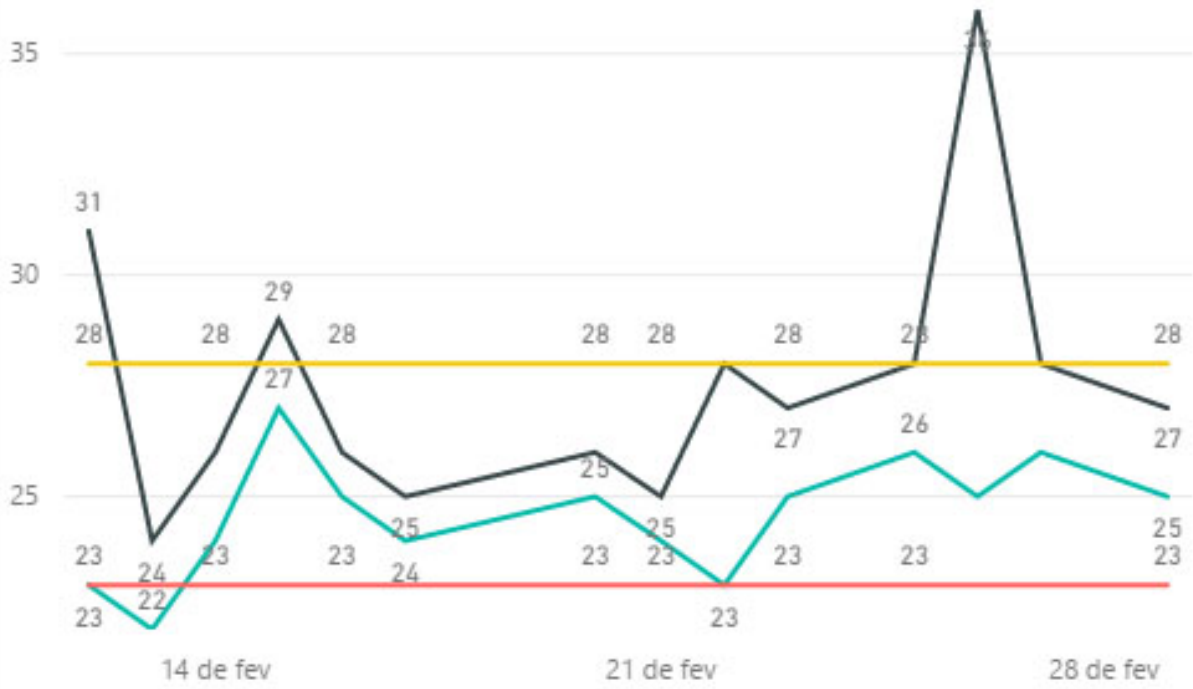
MARÇO 2016

CASOS



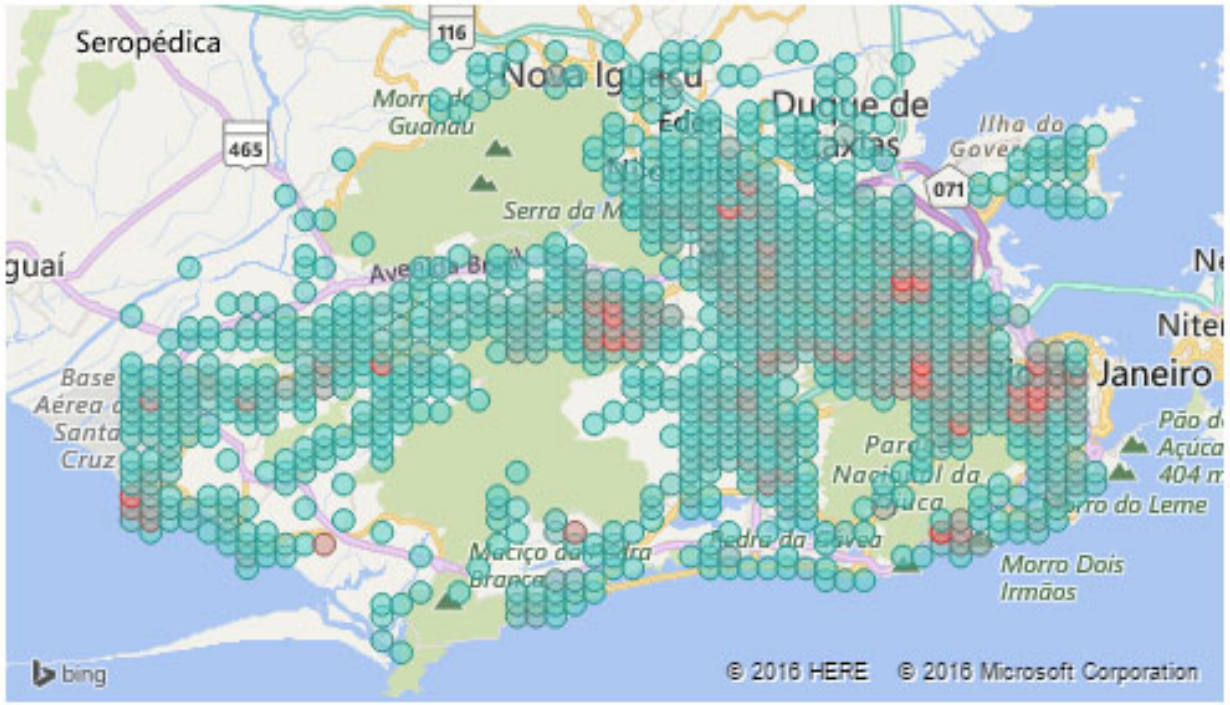
FEVEREIRO 2016

TEMPERATURA



ABRIL 2016

CASOS



MARÇO 2016

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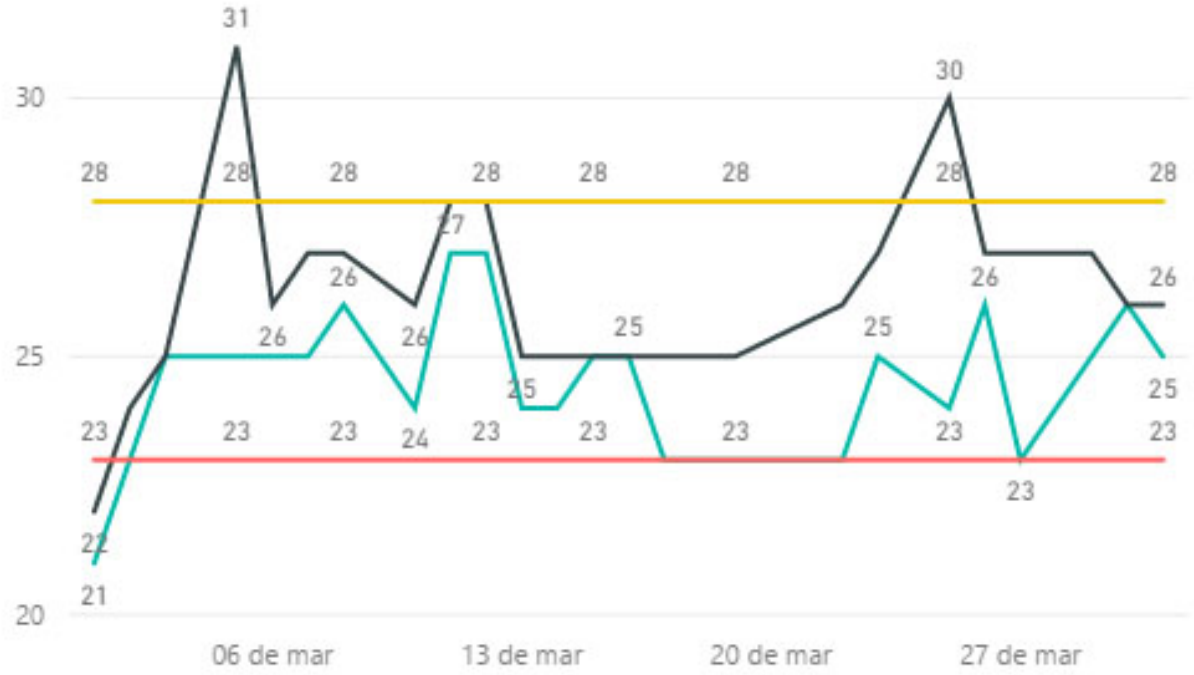

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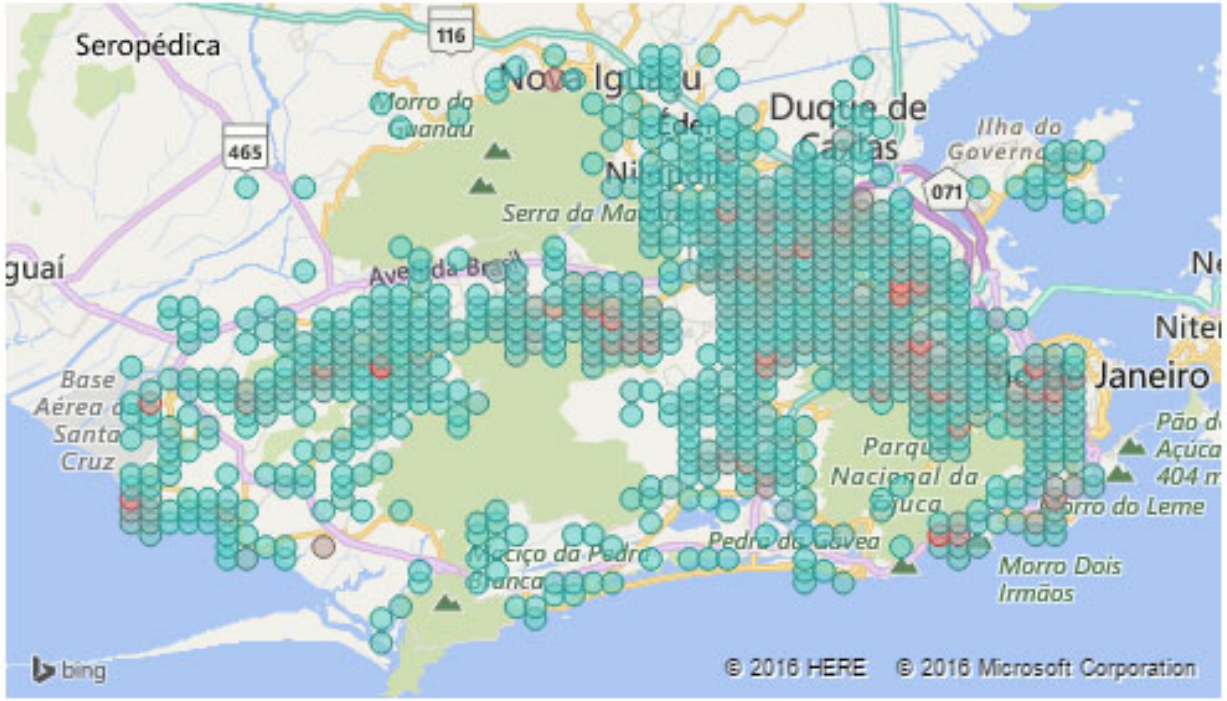
MAIO 2016

CASOS



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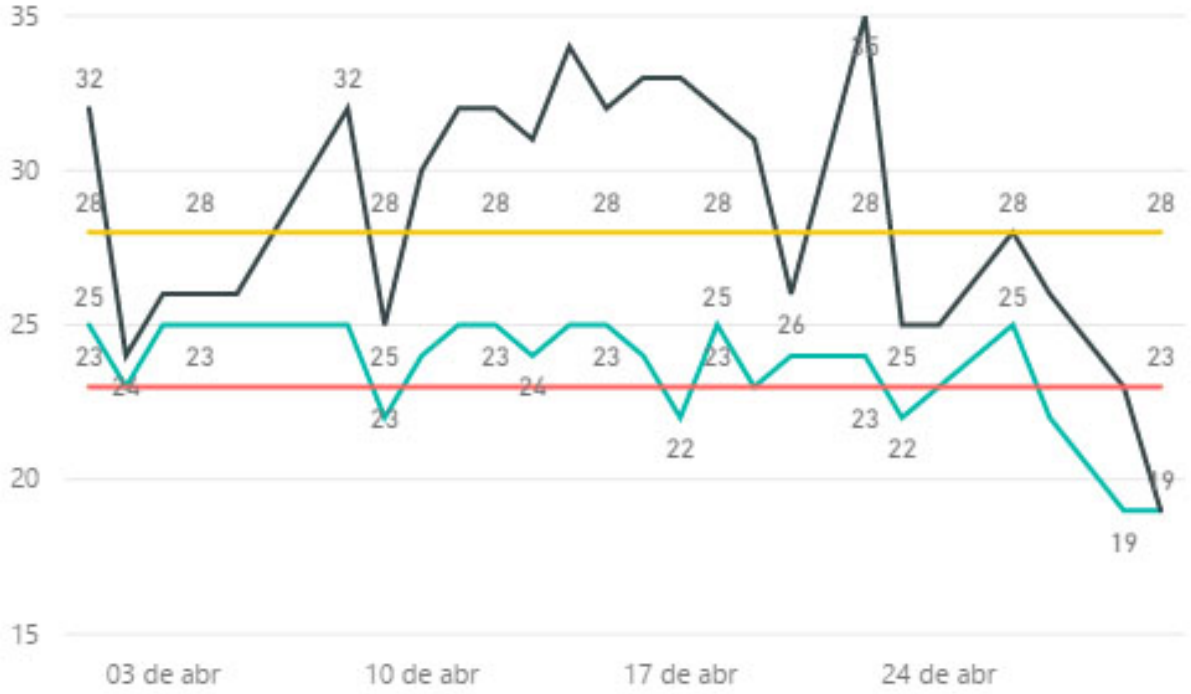

JUNHO 2016

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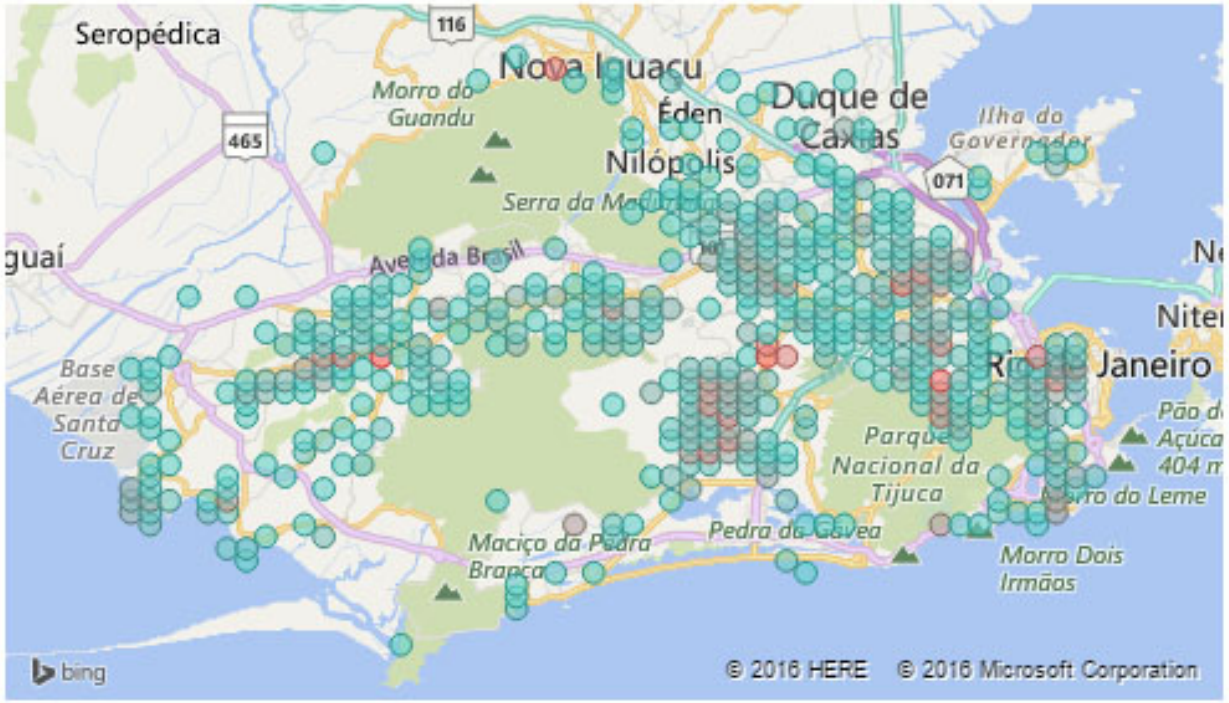

MAIO 2016

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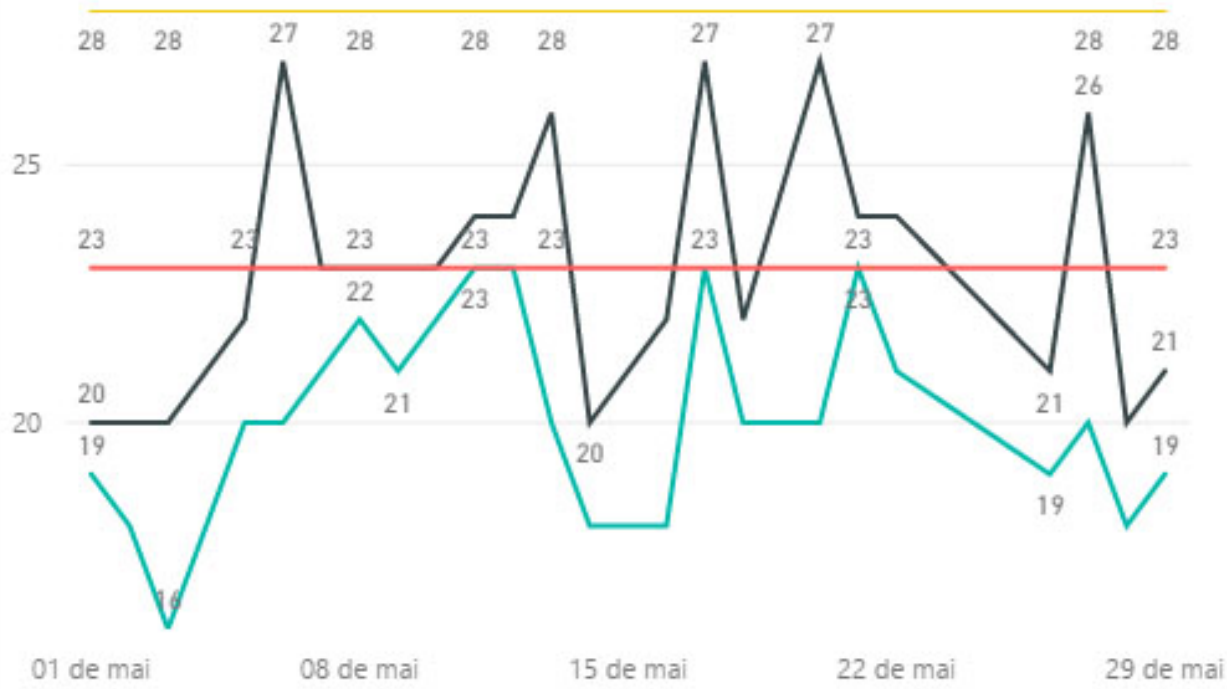

JULHO 2016

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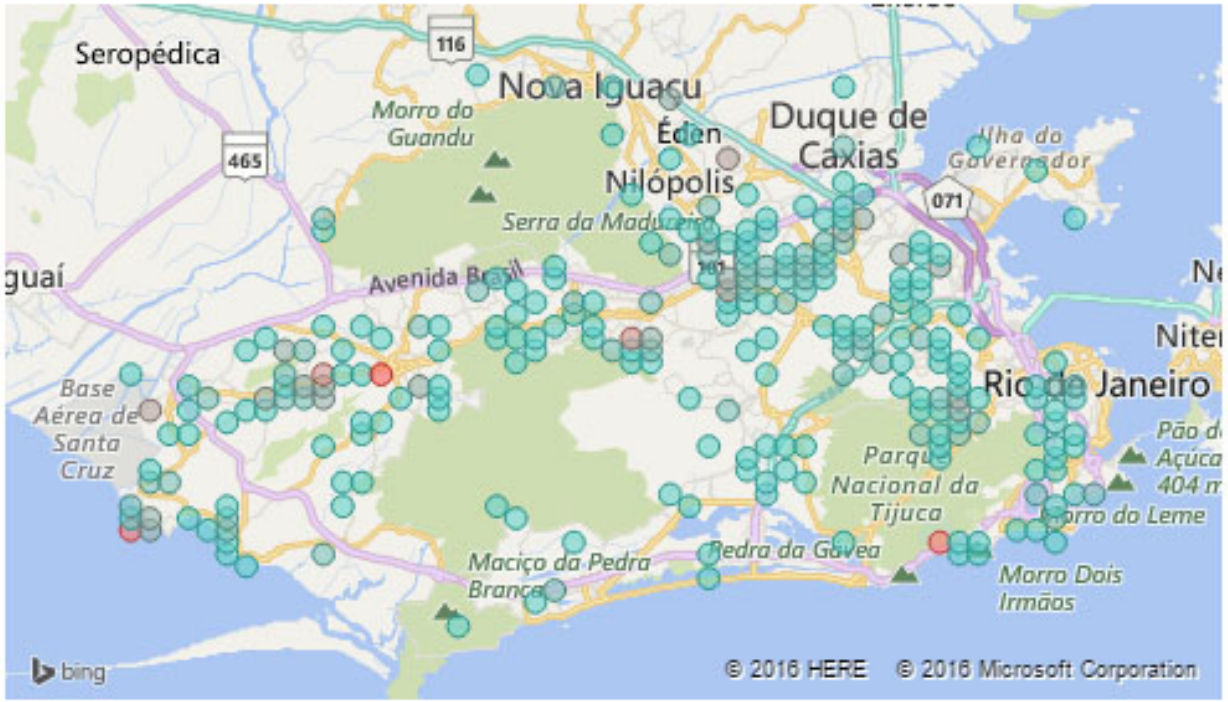

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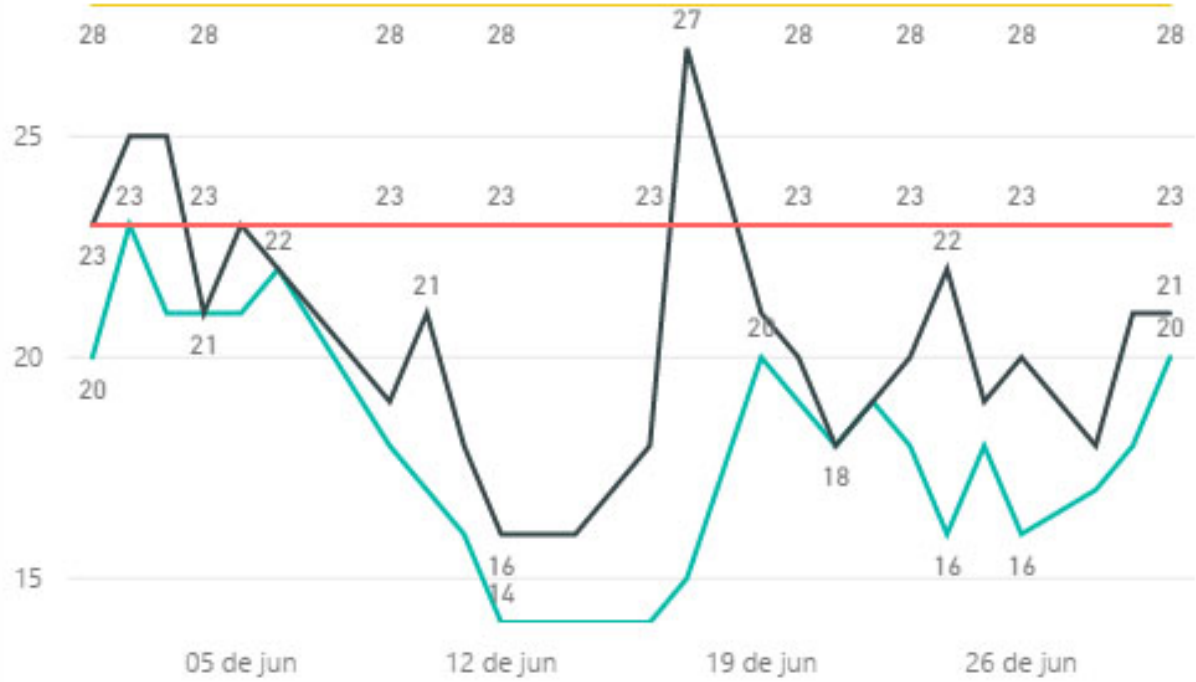
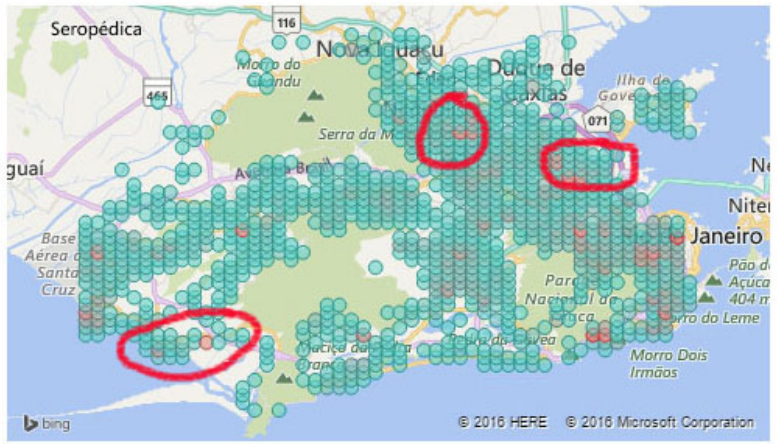
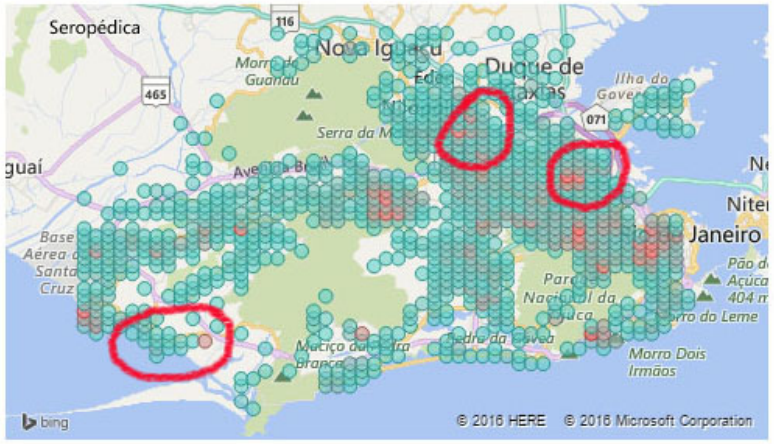


Some critical areas during the outbreak shared a similarity of low IDH coefficient
The highlighted areas on the plots bellow correspond to Maré,
the far-north zone and the far-west zone of the city

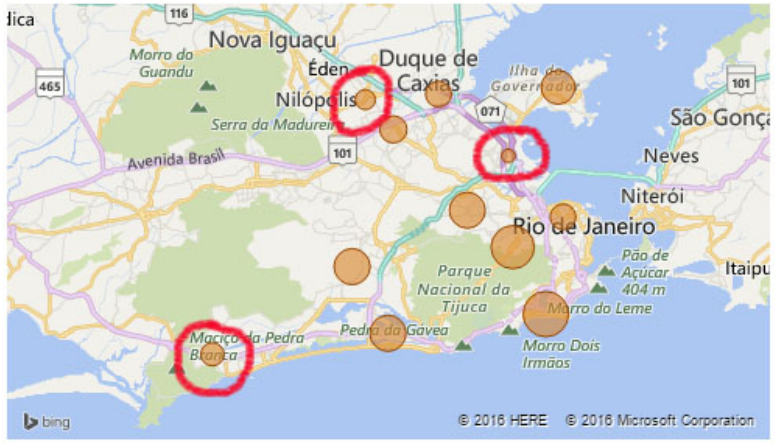
MARÇO 2016
CASOS



ABRIL 2016
CASOS



IDH
RENDA / EDUCAÇÃO / LONGEVIDADE

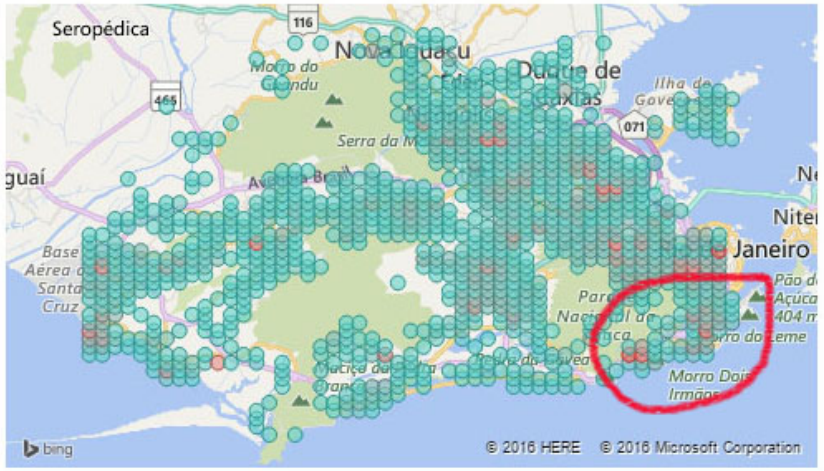


Comparing the south zone behavior, the wealthiest part of the city, although income seems not to be a social influence affecting the outbreak, there is a peculiarity to consider:

In this particular area, there is a huge economic disparity

MARÇO 2016

CASOS



ABRIL 2016

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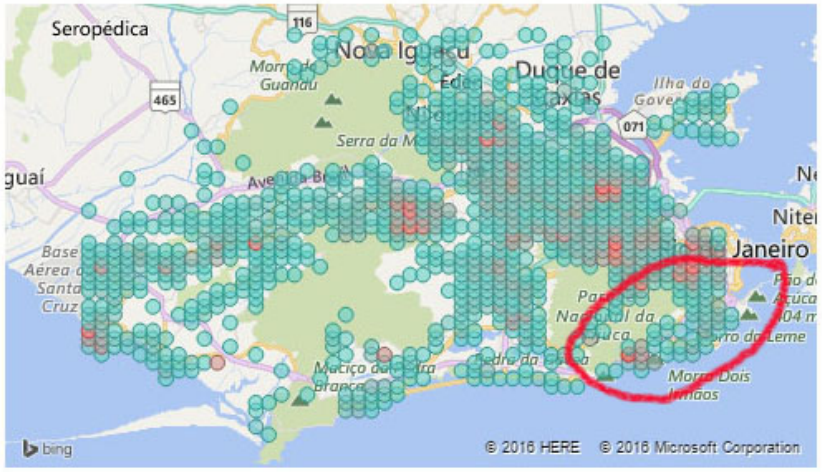
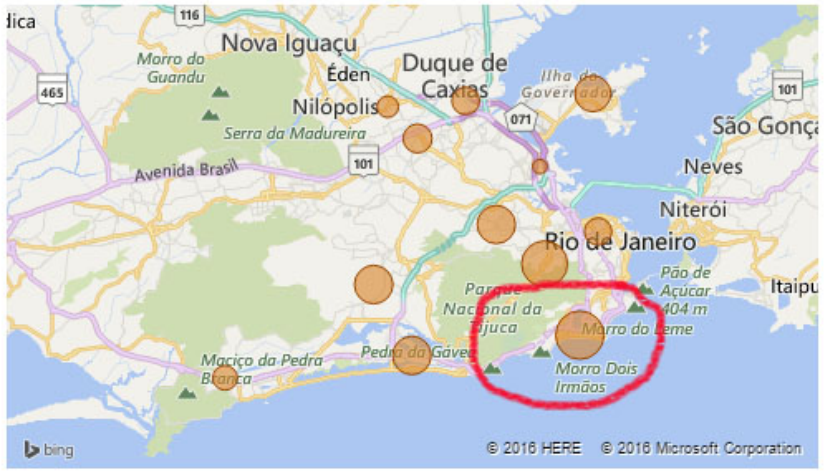


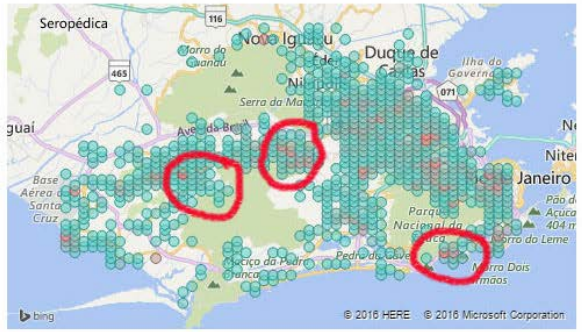
IDH

RENDA / EDUCAÇÃO / LONGEVIDADE



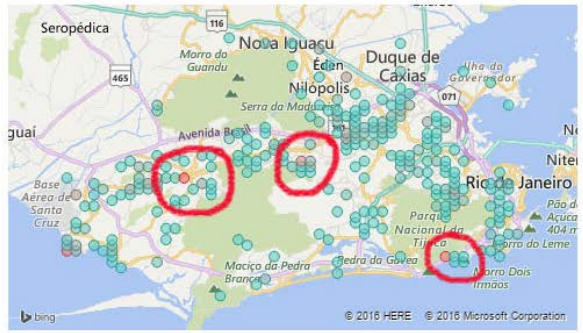
Even as the temperature dropped away of the 23 to 28-Celsius threshold, some areas kept appearing as the top score case holders

MAIO 2016
CASOS

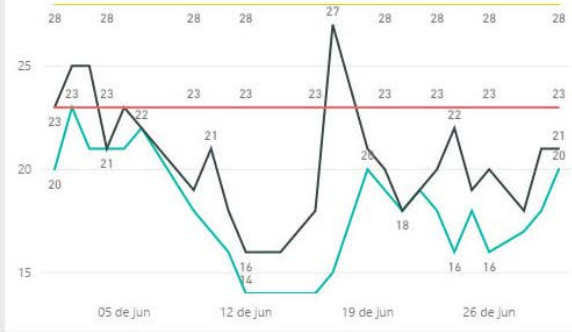


ABRIL 2016
TEMPERATURA

JULHO 2016
CASOS



JUNHO 2016
TEMPERATURA



JUNHO 2016
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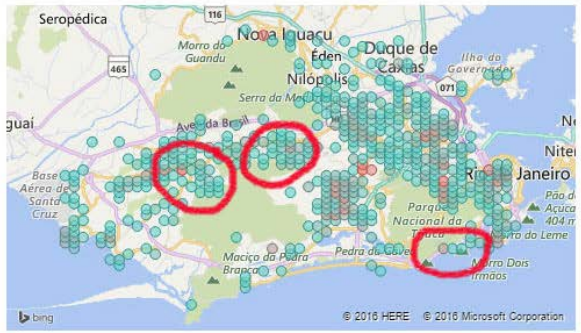

MAIO 2016
TEMPERATURA

MEANINGFUL INSIGHTS

1) The temperature from the previous month seems to affect the number of cases in the current month.
2) The social indicators (IDH) seems to count as an influence force in the areas with most number of cases during the outbreak
3) Some recurrent disease focus areas seems to grow around or close to woods and forests areas

GitHub Repo: https://github.com/marcelo-tibau/alerta-zika