

# Package ‘mdyn’

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**Type** Package

**Title** Scripts to analyse mobile data and model population dynamics

**Version** 0.1.0

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**Description** This package contains scripts to visualize and statistically analyse the outputs of python mdyn code available at <<https://github.com/pedrospeixoto/mdyn>>. The scripts focus on visualizing data about the COVID-19 spread in Brazil and has functions to plot crucial information about the disease daily.

**URL** <http://github.com/dmarcondes/mdyn>

**BugReports** <https://github.com/dmarcondes/mdyn/issues>

**Imports** ggplot2 (>= 3.3.0),  
tidyr (>= 1.0.0)

**Depends** R (>= 3.6)

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.0.2

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isolation_map	<i>Isolation Map in Brazil</i>
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### Description

Build a map for each state in Brazil with the isolation index during the COVID-19 pandemic containing a plot for each city with the index and its variation when compared to February 2020, the mena isolation during the pandemic and the isolation one week earlier.

### Usage

```
isolation_map(end_quar = "2020-04-26")
```

### Arguments

end_quar	The last day with data about the isolation index. Should be in the format yyyy-mm-dd.
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### Value

Save all maps and plots in the working directory.

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plotRisk_cases	<i>Plot Infected x Risk of Infection</i>
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### Description

Build various plots combining the number of infected by COVID-19 in a city of a state in Brazil and the risk of infection estimated by Peixoto et. al. (2020).

### Usage

```
plotRisk_cases(
  states = "all",
  day = "today",
  day.init = NULL,
  day.final = NULL,
  cities = "populated",
  pos_name = "pop"
)
```

### Arguments

<code>states</code>	A vector with the states to build plots for. It should contain the two letters representing the name of the states. To plot all available states enter "all", which is default.
<code>day</code>	The date which to plot data from. The default is today. Must be represented as YYYY-MM-DD.
<code>day.init</code>	To build a sequence of plots to an interval of days. Should represent the initial day of the range. This surpasses the <i>day</i> argument.
<code>day.final</code>	The final day of the range.
<code>cities</code>	Which cities to plot information for. It should either be "populated" for cities with the greatest populations or a named list with the city names. The names must be the two letters representing the states. The city names must be written as they are in the <i>risk</i> dataset.
<code>pos_name</code>	A string to put at the end of the saved plots. If you want to run with distinct cities for a same day, use this string to not overwrite the plots.

### Details

This function download data from <https://brasil.io/dataset/covid19/caso?> about the number of confirmed infected individuals, and confirmed deaths, by COVID-19 in each city of Brazil and build plots comparing these quantities with the risk of infection of each city estimated by Peixoto et. al. (2020). It may consider data for a given day or a range of days during the pandemic.

### Value

A list with all the generated plots, which were also saved on pdf files in high resolution

### References

Peixoto, et. al. Modeling future spread of infections via mobile geolocation data and population dynamics. An application to COVID-19 in Brazil. 2020. Available at <https://www.ime.usp.br/~pedrosp/covid-19/>.

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<code>risk</code>	<i>Estimated risk</i>
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### Description

List containing the risk of infection by COVID-19 estimated to each city of each available state of Brazil by Peixoto et. al. (2020).

### Usage

```
risk
```

**Format**

An object of class `list` of length 2.

**Details**

Data of each state is named in the list by the two letters in lowercase which represent their name.

**Value**

State	The name of the state.
City	The performance in Calculus II.
sXXX	The rank infection estimated for each intensity of movement $s$ . See Peixoto et. al. (2020) for more details.
risk_lesser	Risk calculated considering only the values of $s$ lesser than one.
risk_greater	Risk calculated considering only the values of $s$ greater or equal to one.
risk	Risk calculated considering all values of $s$ .

**References**

Peixoto, et. al. Modeling future spread of infections via mobile geolocation data and population dynamics. An application to COVID-19 in Brazil. 2020. Available at <<https://www.ime.usp.br/~pedrosp/covid-19/>>.

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