

Lab 9+10 Time Series Analysis

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Data Profiling

Provide a maximum of 5 image files (<=1M in size each) for profiling each datafile, and supporting the answers to the following questions .

Question 1 - Distribution

The best description for the distribution of values observed for...

	Uniform	Normal	Exponential	None of previous
covid19 is...	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
deaths is...	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Question 2 - Stationarity

The series are stationary?

	Stationary	Non-stationary
covid19 is...	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
deaths is...	<input checked="" type="checkbox"/>	<input type="checkbox"/>



Question 3 - Granularity

The best granularity for...

	daily	weekly	monthly	quarterly	yearly	none of previous
covid19 is...	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
deaths is...	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Question 4

Choose the True statements.

- ☒ Both series have the same dimensionality.
- ☐ Both series are in the same granularity.
- ☒ covid19 is an accumulated series, meaning its values are always increasing and each observation is the sum of all previous ones.
- ☐ The subtraction of one series to the other allows for discovering the number of additional deaths in 2020.

COVID-19 Profiling

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DEATHS_PT Profiling

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Data Transformation

Provide a maximum of 5 image files (<=1M in size each) for profiling each datafile, and supporting the answers to the following questions.

Question

Which are the most adequate operations to apply to each file for discovering the number of additional deaths in 2020.

	smoothing	aggregation (reducing granularity)	differencing	change of space	none
covid-19	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
deaths	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

COVID-19 Transformation

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DEATHS Transformation

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Forecasting

Predict the number of deaths in Portugal

DEATHS 2019

Train a predictor with ARIMA using all data from past years, to predict weekly deaths for 2019. Submit the chart showing the prediction.

 [Add file](#)

DEATHS 2020

Train a predictor with ARIMA using all data from past years, to predict weekly deaths for 2020 (just until the first week of December).. Submit the chart showing the prediction.

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DEATHS Dec 2020

Using the predictor trained in the previous task, predict the number of deaths for the remaining weeks of 2020, only using the data available in the deaths_pt file. Submit the chart showing the prediction.

Your answer



Evaluation

Report the RMSE for the predictors trained...

	< 1000	1000 <= x < 5000	5000 <= x < 10000	>= 10000
2019 predictor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2020 predictor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Motif Discovery

Using the original data from covid-19 file, find the 10 best motifs.

Motifs COVID-19

Submit one single chart showing the original data and each one of the motifs found.

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