Timeseries I

Learning Goals I

At the end of this lecture you should be able to:

- Slice your data based on date
- Re-sample and Un-sample
- Fill Nulls using bfill and ffill
- Differentiate using shift + diff

Learning Goals II

At the end of this lecture you should be able to:

- Understand stationarity
- Know whether any given timeseries is stationary
- Use the Dickey-Fuller test
- Make your data stationary
- Decompose a timeseries

Concepts Review

Concepts review

How do you transform a string into a date with Pandas?

How do transform a US date format into Timestamp format?

How do you make date your index?

DEMO

Your turn now

Are you ready?!

Time series data manipulation

DEMO

Your turn now

Are you ready?!

Time series plotting

Time series plotting

Line plot

Dot plot

Grouping

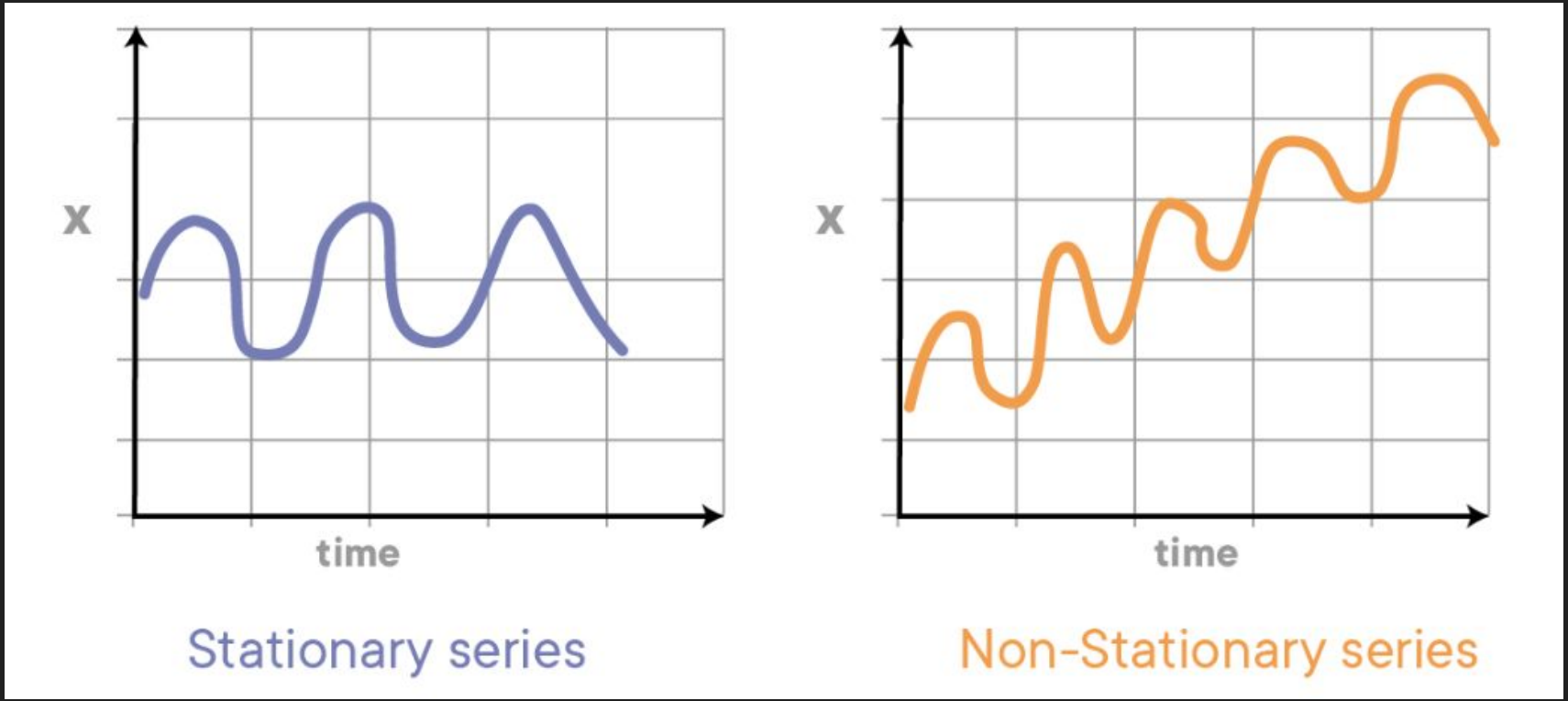
Density plots (histograms and kde)

Box and whisker plots

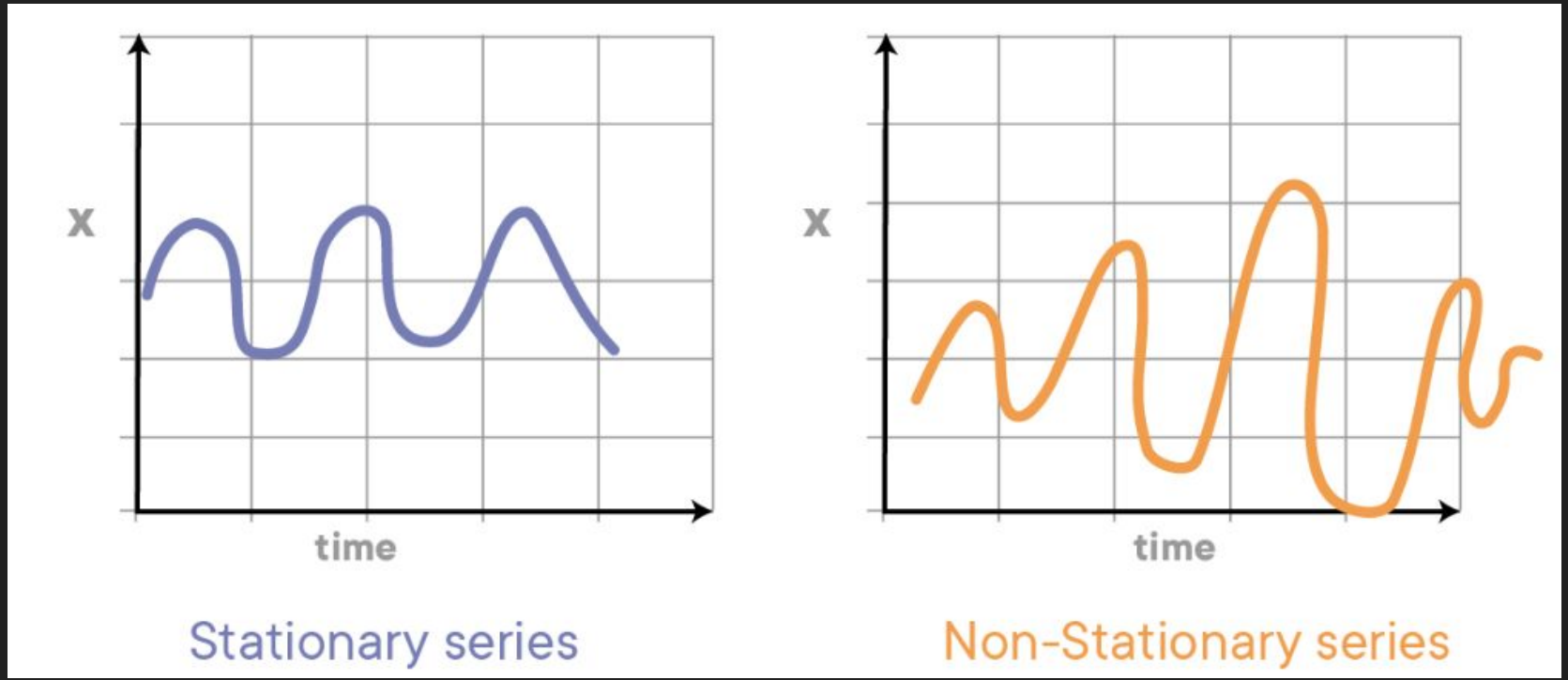
heatmap

Checking for stationarity

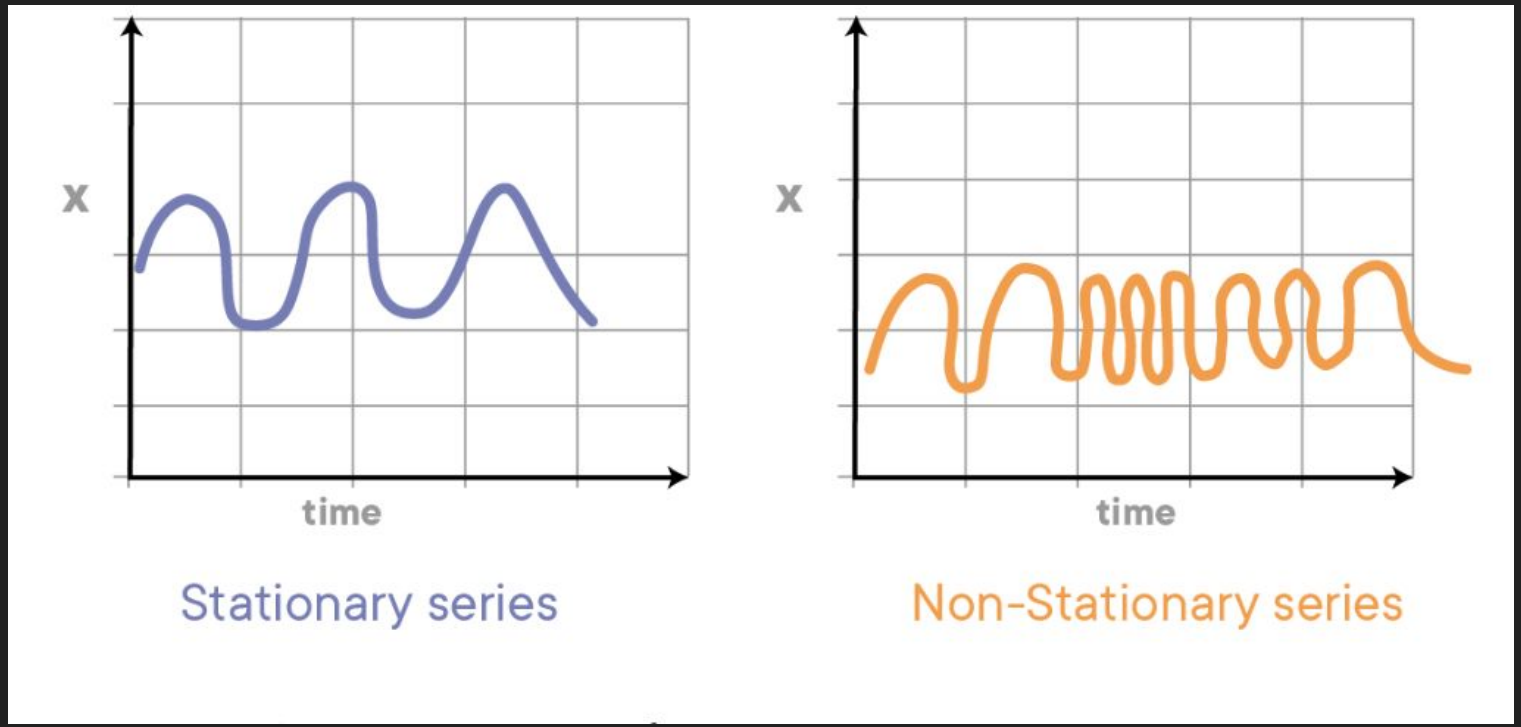
Stationarity - Rolling mean



Stationarity - Rolling std



Stationarity



Dickey-Fuller

H0: Non-stationarity

Statistic must be smaller than the critical value (they are negative)

Judge based on p-value as usual

DEMO

Your turn now

Are you ready?!

Trend Elimination / Rectification

Trend elimination/rectification

Taking the log / sqrt

Subtracting the SMA WMA

Differencing

DEMO

Your turn now

Are you ready?!

Time series Decomposition

Time series decomposition

Additive

Multiplicative

DEMO

Your turn now

Are you ready?!

Reflection

What have you learned?

What outcomes do you still feel you need to work on?

What steps are you going to take to make that happen?