Introduction to Time Series

A Story of decomposition function

$$Xt = Tt + St + Et$$

KopdaR

Jakarta, March 23, 2019

Bobby Gulliano

- Chrono Magus -

"People hear statistics, but they feel stories.

What is a Time series?

Notion of a real world
event as an abstraction of a sequence
of timely activities.

Teen's life saved by Fitbit after device detects potentially fatal heart condition

Sarah-Jayne McIntosh, 18, was revising for exams when she noticed her her heart rate had soared from to 210bpm on her new Fitbit Surge

●○○○○ O2-UK 📶   18:21   ✳ 21% ▭

‹ Heart Rate   **Wednesday**

❤ Beats Per Minute   ⤢

198

134

70

00:00   NOON   23:59

TIME SERIES

We can use time series analysis when:

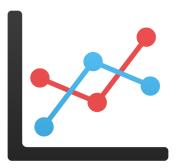- We have full information regarding the changes in the data
- Pattern in our time series can be explained only using the data itself

Characteristics of Time Series:

- Time or period of time is matter
- Have a regularly ordered-time (not random order)

Time series components:

- Trend: changes in mean
- Seasonality: cycle in a natural period
- Random: remainder component not captured by trend and seasonality

Code Demo

R Packages

dplyr
tidyverse
magrittr
skimr
dygraphs
data.table
lubridate

anomalize
seasonal
TSstudio
forecast
tsfeatures
seastests
TTR

Belajar GNU-R Indonesia
https://t.me/GNURIndonesia

Time Series Analytics
https://t.me/TSAnalytics