

Forecasting in R

Webinar

Bahman Rostami-Tabar



Outline

- 1 Team
- 2 Your experience in R and forecasting
- 3 Outline of the workshop
- 4 Requirements for the workshop
- 5 Who is using forecasts?

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Poll: How experienced are you in forecasting and R

Please complete the pools:

- 1 How experienced are you in forecasting
- 2 How experienced are you in R

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Approximate outline

session	Topic
1.1	Forecasting and decision making
1.2	Prepare data
1.3	Time series patterns and graphics
1.4	Forecaster's toolbox
1.5	Forecaster's toolbox: modeling accuracy
1.6	Exponential smoothing models
1.7	ARIMA models
1.8	Regression

Key reference

Hyndman, R. J. & Athanasopoulos, G.
(2020) *Forecasting: principles and
practice*, 3rd ed.

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[OTexts.org/fpp3/](https://otexts.org/fpp3/)

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■ Recommended

- ▶ Profit From Your Forecasting Software
- ▶ Principles of Business Forecasting

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Install required packages

Please bring your own laptop and install the latest version of R and Rstudio

Install fpp3 package

```
# please install the fpp3 package before the w  
library(fpp3)
```

Practice tidyverse

- Manipulate data with dplyr functions
- Visualise data with ggplot2
- Work with data/time object using lubridate

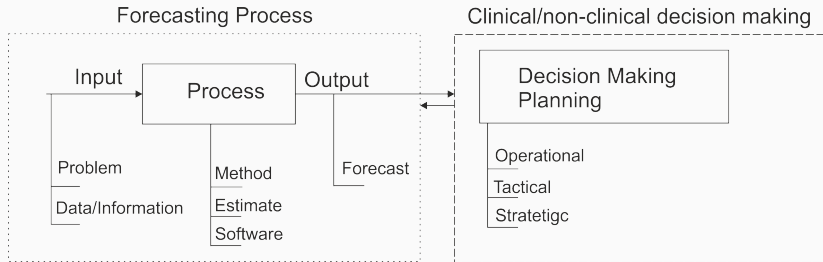
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Why do organisations need forecasting?

Forecasting required in many situation	Forecast
Whether to build a new hospital in next 10 years?	?
How many staff does an A&E need next week?	?
How many units of bandages is required next month?	?

Forecasting and decision making



Different type of decisions that may require forecast

- Short-term

- ▶ e.g. Scheduling of personnel

- Medium-term

- ▶ e.g. Determining future resource requirements

- Long-term

- ▶ e.g. Strategic planning, investment

Assignment 1

- Think about your organisation and various situations where you make decisions about the future that requires an estimation of the future.
- Describe at least one situation/task.
- Finally, provide details of what you need to forecast to support that particular task:
 - ▶ List the possible predictor variables that might be useful
 - ▶ For how long you need that forecast? e.g. 7 days, 1 week, 3 months,...

Assignment 1: submission

Deadline to complete the assignment: Thursday 20th of February

You can complete the Google Doc. or create a similar Microsoft Word document and send it to rostami-tabarb@cardiff.ac.uk

Asking for help



I'm stuck



I'm not stuck, but I need help
on my computer



I need help
understanding something
(which likely means others
do too)