Tidy Time Series & Forecasting in R

robjhyndman.com/workshop2020

Resources

- Slides
- Exercises
- Textbook
- Useful links

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Brief bio

- Professor of Statistics, Monash University
- Head of Department of Econometrics & Business Statistics, Monash University
- Editor-in-Chief, *International Journal of Forecasting*, 2005–2018

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How my forecasting methodology is used:

- Pharmaceutical Benefits Scheme
- Cancer incidence and mortality
- Electricity demand
- Ageing population
- Fertilizer sales

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Assumptions

- This is not an introduction to R. I assume you are broadly comfortable with R code and the RStudio environment.
- This is not a statistics course. I assume you are familiar with concepts such as the mean, standard deviation, quantiles, regression, normal distribution, likelihood, etc.
- This is not a theory course. I am not going to derive anything. I will teach you forecasting tools, when to use them and how to use them most effectively.

Key reference

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

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OTexts.org/fpp3/

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- Free and online
- Data sets in associated R package
- R code for examples

Poll: How experienced are you in forecasting

1. Guru: I wrote the book, done it for decades, now I do the conference circuit.
2. Expert: It has been my full time job for more than a decade.
3. Skilled: I have been doing it for years.
4. Comfortable: I understand it and have done it.
5. Learner: I am still learning.
6. Beginner: I have heard of it and would like to learn more.
7. Unknown: What is forecasting? Is that what the weather people do?

Poll: How proficient are you in using R?

1. Guru: The R core team come to me for advice.
2. Expert: I have written several packages on CRAN.
3. Skilled: I use it regularly and it is an important part of my job.
4. Comfortable: I use it often and am comfortable with the tool.
5. User: I use it sometimes, but I am often searching around for the right function.
6. Learner: I have used it a few times.
7. Beginner: I've managed to download and install it.
8. Unknown: Why are you speaking like a pirate?

Install required packages

```r
install.packages("fpp3", dependencies=TRUE)
```

Approximate outline

Day	Topic	Chapter
1	1. Introduction to tsibbles	2
1	2. Time series graphics	2
1	3. Transformations	3
1	4. Seasonality and trends	7
1	5. Time series features	–
2	6. Introduction to forecasting	1,3
2	7. Exponential smoothing	8
2	8. ARIMA models	9
2	9. Dynamic regression	10
2	10. Hierarchical forecasting	11

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