Tidy Time Series & Forecasting Using R

Australian Department of Education

Acknowledgement of Country

I would like to acknowledge the Ngunnawal people, the Traditional Custodians of the land on which we are meeting and also the Wurundjeri people of the Kulin Nation from where I come.

I recognize and respect their deep and enduring connection to this land, water, and community and pay my respects to their Elders past and present.

Instructors

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Assumptions

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

Expectations

In order to get the most out of this workshop, I ask that you:

- Ask relevant questions any time, Q&A during breaks.
- Be kind and respectful.
- Make mistakes and learn!

Hyndman, R. J. & Athanasopoulos, G. (2021)
Forecasting: principles and practice, 3rd ed.

Key reference

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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 software, teach forecasting, and 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(c(
  "tidyverse",
  "fpp3",
  "readabs",
  "GGally",
  "sugrrants"
))
```

Approximate outline

Day	Topic	fpp3 chapter
1	1. Introduction to tsibbles	2
1	2. Time series graphics	2
1	3. Transformations	3
1	4. Decomposing patterns	3
1	5. Forecasting basics	5,7
2	6. Accuracy evaluation	5
2	7. Exponential smoothing	8
2	8. ARIMA models	9,10
2	9. Multivariate modelling	12
2	10. Forecast reconciliation	11

workshop.nectric.com.au/tidyfc2024

Fun post-forecasting training project

The members of the Economic Analysis Team will be conducting a project following the forecasting training session to engrain the learnings and practice our skills.

Other attendees are welcome to join in the fun, particularly if you're not in a forecasting area and would otherwise not be using your newly acquired skills.