Africast-Tidy Time Series & Forecasting Using R

Instructor

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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.

Key reference

Hyndman, R. J. & Athanasopoulos, G. (2021)
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

Kolassa S., Rostami-Tabar B., & Siemsen, E. (2023) *https://dfep.netlify.app/*, 1st ed.

Kolassa S., Rostami-Tabar B., & Siemsen, E. (2023) *https://dfep.netlify.app/*, 1st ed.

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- Free and online
- Not an in-depth technical book
- Mindset behind forecasting
- Overview of forecasting methods and processes

International Institute of Forecasters (IIF)

- Certificate will be provided by IIF. You need to attend all lectures and exercise sessions to get the certificate.

- a nonprofit organization founded in 1982, is dedicated to developing and furthering the generation, distribution, and use of knowledge on forecasting

Forecasting for Social Good committee

- Follow us on Linkedin
- Follow us on Twitter
- Use #AFRICAST, #F4SG if you post on social media about the workshop

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?

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?

Install required packages

```r
install.packages(c(
  "tidyverse",
  "fpp3",
  "GGally",
  "sugrrants",
  "astsa"
))
```

Approximate outline

Session	Topic	Chapter
1	1. Basics of time series and data structures	2
1	2. Time series patterns and basic graphics	2
2	3. Transforming / adjusting time series	3
2	4. Computing and visualizing features	4
3	5. Basic modeling / forecasting	1,3,5
3	6. Forecasting with regression	7,10
4	7. Exponential smoothing	8
4	8. ARIMA models	9
5	9. Basic training and test accuracy	5
5	10. Residual diagnostics and cross validation	5

https://workshop.f4sg.org/africast/