

# Tidy Time Series & Forecasting Using R



- WiFi:
  - ▶ Network: Posit Conf 2023
  - ▶ Password: conf2023
- Gender-neutral bathrooms: Grand Suite
- Meditation/prayer rooms: Grand Suite 2A and 2B. Open Sunday - Tuesday 7:30 am – 7:00 pm, Wednesday 8:00 am – 6:00 pm.
- Lactation room: Grand Suite 1. Open Sunday - Tuesday 7:30 am – 7:00 pm, Wednesday 8:00 am – 6:00 pm.
- Participants who do not wish to be photographed have red lanyards; please respect their choices.
- Code of conduct & COVID policies:  
<https://posit.co/code-of-conduct/>. Please review carefully.  
Violations can be reported in person, by email, or by phone.

# Instructors



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## Tutors

- Cosima Meyer
- Davis Vaughan
- Joscelin Rocha-Hidalgo

# 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/](https://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

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

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**Posit Cloud**

**[bit.ly/tidytscloud](https://bit.ly/tidytscloud)**

# 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      | 3       |
| 1   | 5. Time series features        | 4       |
| 2   | 6. Introduction to forecasting | 1,5     |
| 2   | 7. Exponential smoothing       | 8       |
| 2   | 8. ARIMA models                | 9       |
| 2   | 9. Dynamic regression          | 10      |
| 2   | 10. Hierarchical forecasting   | 11      |

**[pos.it/tidyts](https://pos.it/tidyts)**

# Sticky notes

I need help

I've finished



I have a  
question