**Time Series Analysis in R the Tidyverse Way**

**Subtitle:** *A practical, beginner-friendly guide using tsibble, fable, and friends*

**1. Introduction**

* What is time series data?
* Why time series matters (real-world applications)
* Overview of tidy time series workflow
* Datasets to be used (e.g., built-in aus\_production, tourism, my own data -attached)

**2. Setting Up**

* Required packages (tidyverse, tsibble, fable, feasts, lubridate)
* Installing and loading them

**3. Tidy Time Series Basics**

* Coomon time series formats and how to import them
* Converting data to a tsibble
* Understanding index and key columns
* Dealing with time gaps and irregularities

**4. Working with Dates & Times**

* Using lubridate to manipulate date components
* Extracting year, month, weekday, etc.
* Creating new time variables

**5. Exploratory Time Series Analysis**

* Visualising trends with ggplot2 + feasts::autoplot()
  + Line plots by group or variable
  + Faceted plots for multiple time series
  + Highlighting seasonality or anomalies
* Exploring patterns with feasts
  + Decomposition (STL)
  + Seasonal plots
  + ACF/PACF plots
  + Rolling statistics

**6. Preparing for Forecasting**

* Transformations for variance stabilisation
* Checking for stationarity
* Differencing
* Splitting into training/testing sets (if necessary)

**7. Forecasting with fable**

* Simple models:
  + Mean,
  + Naïve,
  + Seasonal Naïve
* Advanced models:
  + ARIMA,
  + ETS and
  + other models
* Fitting and comparing models
* Generating and plotting forecasts
* Evaluating Forecast Accuracy (accuracy metrics)

**8. Putting It All Together**

* A complete workflow from data preparation to forecasting
* Best practices and common pitfalls
* Sample mini project idea

**9. Conclusion and Further Learning**

* Summary of learned concepts and key takeaways
* Recommended resources to continue learning (books, fpp3, blogs)

**Bonus:**

Cheatsheet (PDF)