

OPTIONAL BONUS ASSIGNMENT (15 POINTS)  
TIME SERIES

- This is an optional bonus assignment to be solved **individually**. You must upload your solution (**html and Rmd files**) at Aula Digital. NO NAME, NO GRADE!
- **Due date:** January 22nd, 2025 at 23.55h.
- **NO late assignments will be allowed.**

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To complete this assignment create a .Rmd file with your answers. Once completed, generate an .html document and upload both documents at Aula Digital in the space provided. Make sure your names are visible at the top of the document and show your R code.

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This assignment uses the `a10` dataset available in the “fpp” package. This data was recorded by the Australian Health Insurance Commission and offers monthly anti-diabetic drug sales in Australia from 1992 to 2008. Type `?a10` for information on the variables.

Consider the following **research question**: Utilize the data provided to build predictive models for 2009 monthly sales.

To answer this question you will: a) Plot the data and study trend and seasonality; b) Smooth the data using different methods; c) Make predictions for drug sales in 2009 and plot your results; d) Evaluate your results.

The document you turn in should explain data preprocessing (if any), application of smoothing and predictive models (and use of different parameters), evaluation of results and a conclusion. The conclusion summarises all the work done and what you have learned. A conclusion closes the assignment stating how you have achieved the proposed objectives. Comment on anything interesting about the assignment completed.