

Rob J Hyndman  
George Athanasopoulos

# FORECASTING PRINCIPLES AND PRACTICE

A comprehensive introduction to the latest forecasting methods using R. Learn to improve your forecast accuracy using dozens of real data examples.



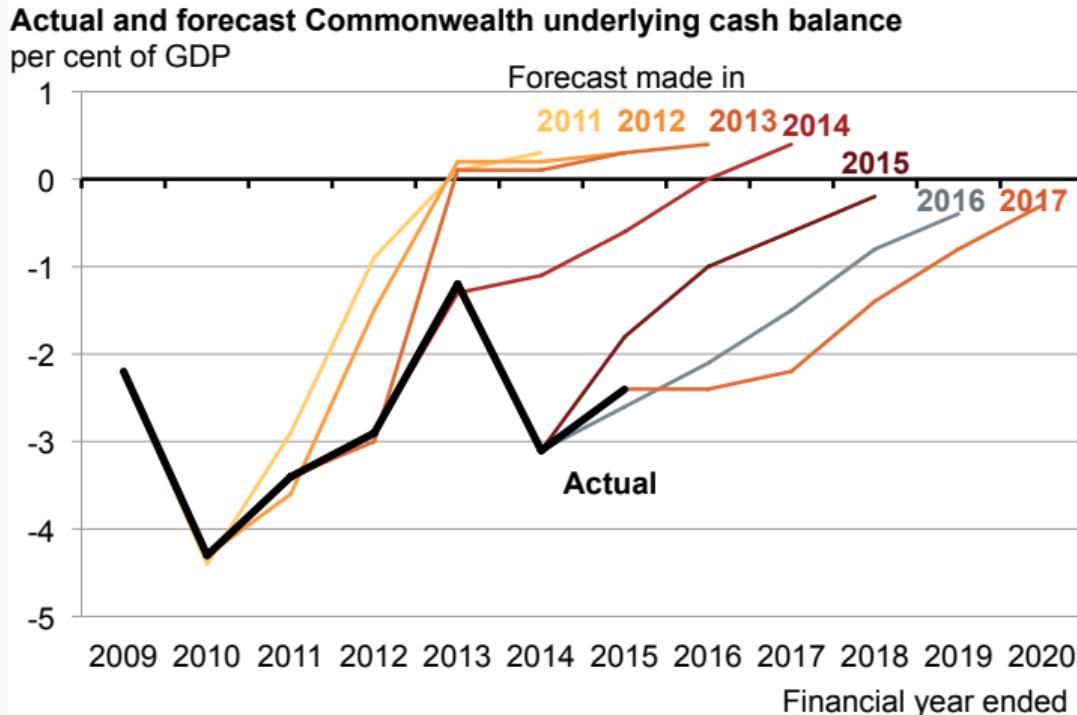
## 1. Getting started

### 1.1 What can we forecast?

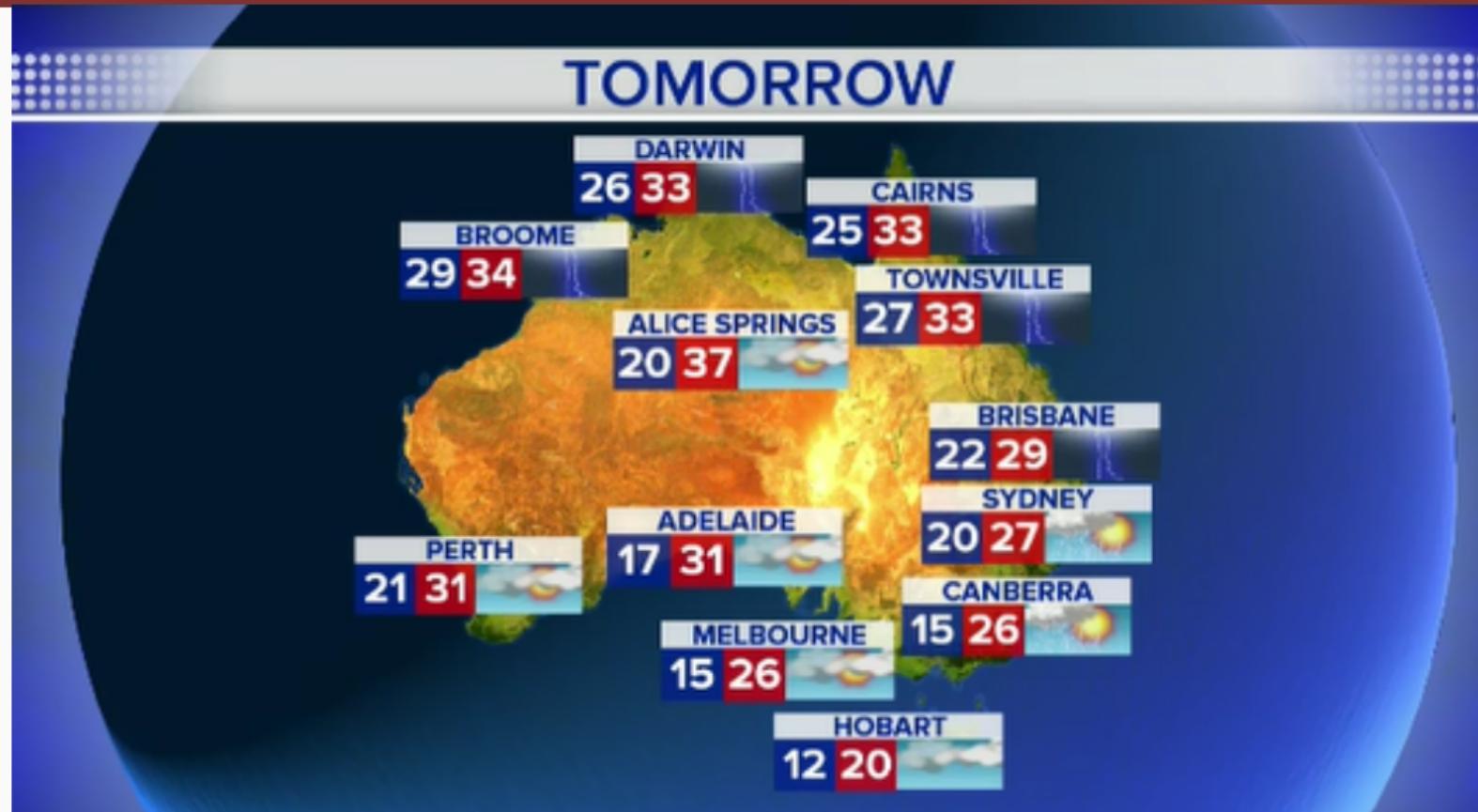
[OTexts.org/fpp3/](http://OTexts.org/fpp3/)

# Forecasts that aren't forecasts

Commonwealth plans to drift back to surplus **GRATTAN** Institute  
show the triumph of experience over hope



# What can we forecast?



# What can we forecast?



# What can we forecast?



# What can we forecast?



# What can we forecast?



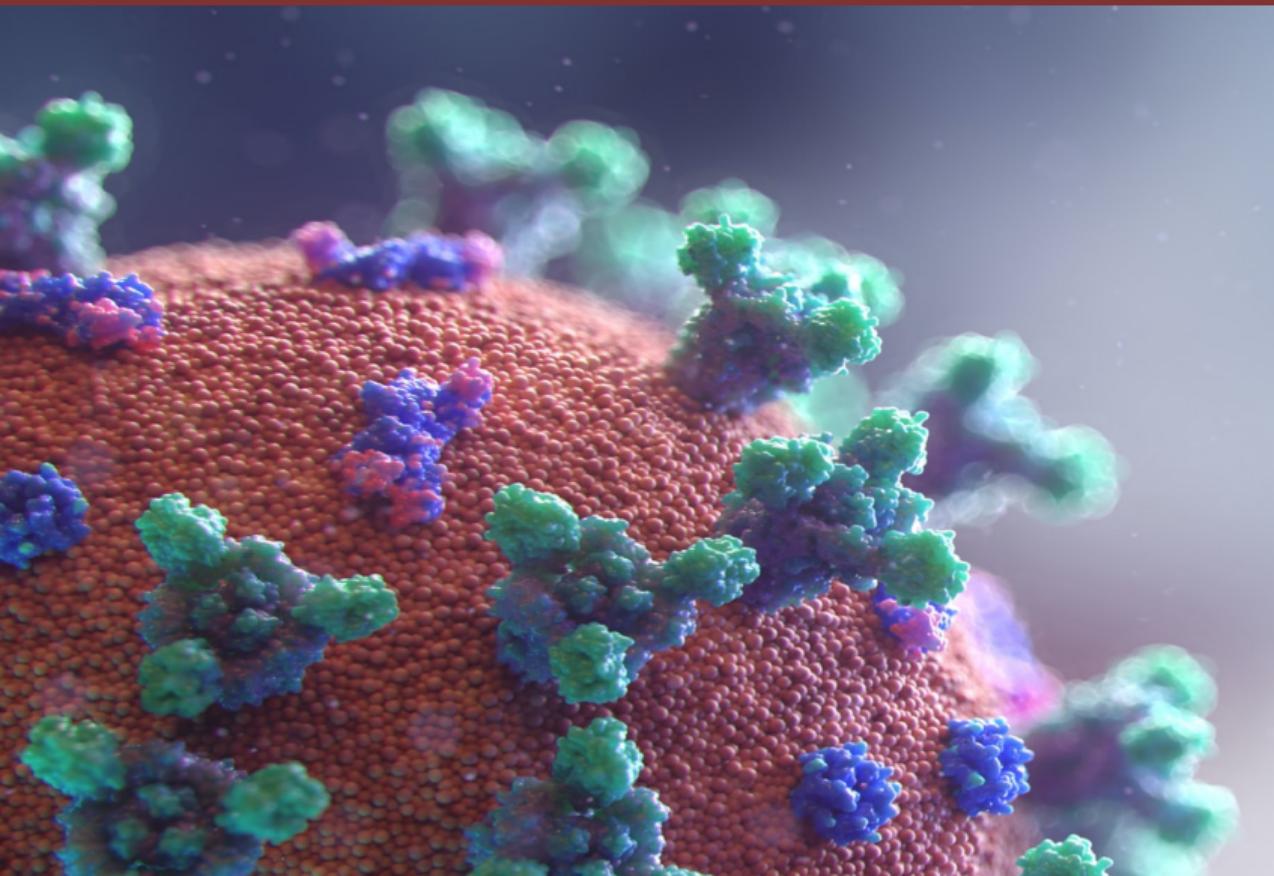
# What can we forecast?



# What can we forecast?



# What can we forecast?



# What can we forecast?



# Which is easiest to forecast?

- daily electricity demand in 3 days time
- time of sunrise this day next year
- Google stock price tomorrow
- Google stock price in 6 months time
- maximum temperature tomorrow
- exchange rate of \$US/AUS next week
- total sales of drugs in Australian pharmacies next month
- timing of next Halley's comet appearance

# Which is easiest to forecast?

- 1 time of sunrise this day next year
- 2 timing of next Halley's comet appearance
- 3 maximum temperature tomorrow
- 4 daily electricity demand in 3 days time
- 5 total sales of drugs in Australian pharmacies next month
- 6 Google stock price tomorrow
- 7 exchange rate of \$US/AUS next week
- 8 Google stock price in 6 months time

# Which is easiest to forecast?

- 1 time of sunrise this day next year
  - 2 timing of next Halley's comet appearance
  - 3 maximum temperature tomorrow
  - 4 daily electricity demand in 3 days time
  - 5 total sales of drugs in Australian pharmacies next month
  - 6 Google stock price tomorrow
  - 7 exchange rate of \$US/AUS next week
  - 8 Google stock price in 6 months time
- how do we measure “easiest”?
  - what makes something easy/difficult to forecast?

# Forecastability factors

Something is easier to forecast if:

- 1 we have a good understanding of the factors that contribute to it
- 2 there is lots of data available;
- 3 the future is somewhat similar to the past
- 4 the forecasts cannot affect the thing we are trying to forecast.