



Forecasting: principles and practice

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Wrap up

CASE STUDY 1: Paperware company

Problem: Want forecasts of each of hundreds of items. Series can be stationary, trended or seasonal. They currently have a large forecasting program written in-house but it doesn't seem to produce sensible forecasts. They want me to tell them what is wrong and fix it.

Additional information

- Program written in COBOL making numerical calculations limited. It is not possible to do any optimisation.
- Their programmer has little experience in numerical computing.
- They employ no statisticians and want the program to produce forecasts automatically.



CASE STUDY 1: Paperware company

Methods currently used

- A** 12 month average
- C** 6 month average
- E** straight line regression over last 12 months
- G** straight line regression over last 6 months
- H** average slope between last year's and this year's values. (Equivalent to differencing at lag 12 and taking mean.)
- I** Same as H except over 6 months.
- K** I couldn't understand the explanation.

CASE STUDY 2: PBS



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The **Pharmaceutical Benefits Scheme** (PBS) is the Australian government drugs subsidy scheme.

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- Many drugs bought from pharmacies are subsidised to allow more equitable access to modern drugs.
- The cost to government is determined by the number and types of drugs purchased. Currently nearly 1% of GDP.
- The total cost is budgeted based on forecasts of drug usage.

CASE STUDY 2: PBS



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POLITICS

Opp demands drug price restriction after PBS budget blow-out

The Federal Opposition has called for tighter controls on drug prices after the Pharmaceutical Benefits Scheme (PBS) budget blew out by almost \$800 million.

The money was spent on two new drugs including the controversial anti-smoking aid Zyban, which dropped in price from \$220 to \$22 after it was listed on the PBS.

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FEATURES

Public Record
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[For a fresh perspective on the federal election, reach into ABC Online's campaign weblog, The Poll Vault.](#)

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CASE STUDY 2: PBS

- In 2001: \$4.5 billion budget, under-forecasted by \$800~million.
- Thousands of products. Seasonal demand.
- Subject to covert marketing, volatile products, uncontrollable expenditure.
- Although monthly data available for 10 years, data are aggregated to annual values, and only the first three years are used in estimating the forecasts.
- All forecasts being done with the FORECAST function in MS-Excel!

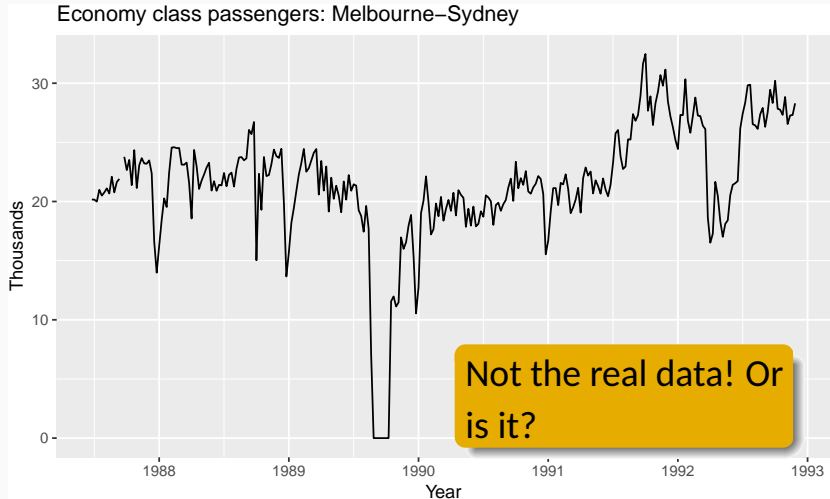
CASE STUDY 3: Airline



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CASE STUDY 3: Airline

Problem: how to forecast passenger traffic on major routes?

Additional information

- They can provide a large amount of data on previous routes.
- Traffic is affected by school holidays, special events such as the Grand Prix, advertising campaigns, competition behaviour, etc.
- They have a highly capable team of people who are able to do most of the computing.

Workshop resources

- Slides
- Exercises
- Textbook
- Useful links

robjhyndman.com/nyc2018

Useful resources for forecasters

Organization: International Institute of Forecasters.

Annual Conference: International Symposium on Forecasting, Thessaloniki, June 2019.

Journals:



Links to all these at
forecasters.org

Useful resources for forecasters

Blog

- robjhyndman.com/hyndsight

Questions

- stackoverflow.com (for R questions)
- crossvalidated.com (for statistics questions)

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Happy forecasting

Good forecasters are not smarter than everyone else, they merely have their ignorance better organised.