Sep 08, 2022.

Forecasting: Principles and practice

1.1 how well we understand the factors that contribute to it

2. Data available
3. How much the future is similar to the past
4. Wether the forecast can affect the thing we trying to predict.

- Understand its limits
- Forecasts rarely assumes that the environment is unchanging
  - ↳ The way it changes now will change in the future.
- Naive as fundamental method for forecasting.

1.2 Forecasting Goals and Planning.

Forecasting: Predicte the future the accurate as possible.

Goals: What you would like to happen.

Not often occur.

Planning: Appropriate actions.

1.3 Determining what to forecast

→ The dataset structure

- Product or group of products
- monthly / annualy?
- By region?

1.4 Forecasting data and methods

→ No data: qualitative forecasting
  ↳ Chap. 06

→ Quantatiu forecasting

- # data
- Reason to believe the patterns will continue.

Time Series Forecasting

- Monthly Rainfall

Everything that is observed sequentially over time is a time series.

Ask !

Explanatory x Mixed models

→ It has been used to forecast.

1.5 Some cases of studies.

1.6 The basic steps in forecasting task

1. Problem definition
2. Gathering information
3. Preliminary (exploratory) analysis
   ↳ Graph the data
4. Choosing and fitting models
5. Using and Evaluating a forecasting model.

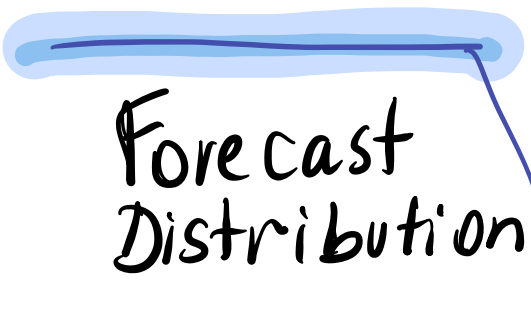
1.7 The statistical forecasting perspective

The forecasted variable is a random variable.

Variation shrinks as the event approach.

→ The forecast is the middle value.

↳ Comes with the prediction interval



Average of possible future values. (Point Forecast).

$(\hat{y}_t | I)$ → forecast distribution

$\hat{y}_{t|t-1}$

Information given.

Exercices

1. Case 3

F Brand of the car / Services made on the car TS

TS Interest Rate

TS Damages - Overall condition of the car

TS Inflation

TS Km driven

Time Series

Case 4

TS Australian Calendar

TS Ticket pricing

F Purpose of the trip

F Length of the trip

Time of departure

TS Size of the plane

TS Benefits from each class

2. 1. Problem Definition

Predicting resale car values to maximize profits

2. Gathering information

Previous data collected before on their buys and ressale values, Brand of the car, Interest Rate

Damages - Overall condition of the car, Inflation

Km driven

3. Preliminary (exploratory) analysis

↳ Graph the data

- Histogram
- Boxplots (Brand x Price of ressale)
- Summarise the data

4. Choosing and fitting models

Timeseries model

5. Using and Evaluating a forecasting model.

Accuracy technique.

- R^2
- Confusion Matrix

The forecast distribution and its range. (Prediction interval).
