

Module: Data Visualisation

Problem Set 6

Topics Covered: *Time Series, Forecast Errors*

Exercise 1. The sales revenue for a car-dealership for 6 months is given by the following table:

Month	Sales €1000
1	194
2	158
3	180
4	149
5	168
6	191

Using this data set, answer the following

- (a) Draw a line graph to represent this data
- (b) From this graph, determine if there is a trend in the data set
- (c) Find the average monthly sales \bar{y}_t
- (d) Use the **No Trend Model**

$$\hat{y}_t = \bar{y}_t$$

to answer the following:

- (i) Find the **MAD** and **MSE** for this model
- (ii) Estimate the sales in the 8th month.

Exercise 2. The closing price of a stock on 5 consecutive days is given by the following table

Day	Closing €
1	18.50
2	22.50
3	21.00
4	25.50
5	26.00

- (a) Draw a line graph to represent this data
- (b) From this graph, determine if there is a trend in the data set
- (c) Find the parameters a and b for the **Linear Trend Model**

$$\hat{y}_t = a + bt$$

- (d) Use this trend model to answer the following:
 - (i) Find the **MAD** and **MSE** for this model
 - (ii) Estimate the closing price on the 10th day.