

# forecasting

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T-7

$$(1) \quad S_t = 50,00,000 + 1,00,000t$$

$$4, 8, 12, 16$$

$$(a) \quad (17, 18, 19)t$$

$$(b) \quad 20=t$$

$$(c) \quad 2014 \times 581.5 + 124.5$$

$$(8PM) \quad 152.5 + 12.45 = 164.95$$

$$(d) \Rightarrow t=17,$$

$$50,00,000 + 1,00,000 \times 17$$

$$(5.1)(84) = 67000003$$

$$1.2 = 16700$$

$$t=18 \Rightarrow 6800 + 124.5$$

$$t=19 \Rightarrow 6900 + 124.5$$

$$(b) \quad t=20, \Rightarrow 7000$$

$$(c) \quad \text{Actual} + 4 \Rightarrow 5400$$

$$8 \Rightarrow 5800$$

$$12 \Rightarrow 6200$$

$$16 \Rightarrow 6600$$

$$\Rightarrow \text{Mean} = \frac{4+8+12+16}{4}$$

$$= 6000$$

$$\text{Seasonal adjustment} = \frac{5400}{5450} + \frac{5800}{5860} + \frac{6200}{6270}$$

$$(13221) \nearrow + \frac{6600}{6680}$$

$$= 0.99 + 0.98 + 0.98 + 0.98$$

$$= 3.93 \Rightarrow \frac{4.04}{4} = 1.01$$

$$\text{mean} = \frac{0.9825 + 0.0275}{4}$$

Actual  
forecasted

$$\therefore 7000 \times 1.01$$

$$= \underline{7070}$$

(2)	Feb	1	450	$\Sigma S = nS_0 + b \Sigma t$
(3)	Mar	2	495	$\Sigma S \cdot t = S_0 \Sigma t + b \Sigma t^2$
(4)	Apr	3	518	
(5)	May	4	563	
(6)	Jun	5	584	

t Inc

t Inc

t	S	S × t	t <sup>2</sup>
1	450	450	1
2	495	990	4
3	518	1554	9
4	563	2252	16
5	584	2920	25
15	2610	8166	55

$$2610 = 550 + 15b \quad (\times 3)$$

$$8166 = 1550 + 55b$$

$$7830 = 1550 + 45b$$

$$10b = 336$$

$$81 \times 10 + 10 \times b = 33.6$$

$$S_0 = \frac{26100 - 15 \times 336}{50}$$

$$S_0 = \frac{26100 - 5040}{50} = 421.2$$

$$S_t = 421.2 + 33.6t$$

$$\text{July } t = 6 \Rightarrow \underline{622.8}$$

Actual

forecasted

(3)	t	Demand	Demand
	1	20	14
	2	18	18.2
	3	15	18.06
	4	12	17.6
	5	5	15.918
	6		13.1754
			7.552
			10.6682
			5.112

$$F_6 = wA_5 + (1-w)F_5$$

$$= 0.7 \times 5 + 0.3 \times 15$$

$$= 3.5 + 4.5$$

$$= 8$$

$$F_{t+1} = wA_t + (1-w)F_t$$

$$F_2 = 0.7 \times 20 + 0.3 \times 14$$

$$= 14 + 4.2$$

$$= 18.2$$

$$F_3 = 0.7 \times 18 + 0.3 \times 14$$

$$= 12.6 + 4.2$$

$$= 16.8$$

$$F_4 = 0.7 \times 15 + 0.3 \times 18.06$$

$$= 10.5 + 5.418$$

$$= 15.918$$

$$F_5 = 0.7 \times 12 + 0.3 \times 15.918$$

$$= 8.4 + 4.7754$$

$$= 13.1754$$

$$F_6 = 0.7 \times 5 + 0.3 \times 13.1754$$

$$= 3.5 + 3.95262$$

$$= 7.45262$$

$$F_6 = 0.7 \times 5 + 0.3 \times 13.175$$

$$= \underline{7.452}$$

$$(c) RMSE = \sqrt{\frac{\sum (A - F)^2}{n}}$$

$$= \frac{(12 - 17.6)^2 + (5 - 15)^2}{2}$$

$$= \frac{31.36 + 100}{2}$$

$$= \sqrt{65.68}$$

$$= \underline{8.104}$$

$$\rightarrow \sqrt{\frac{36 + 0.04 + 9.3636 + 15.350124 + 66.8371652}{5}}$$

$$= \sqrt{127.59089}$$

$$= \underline{11.295}$$