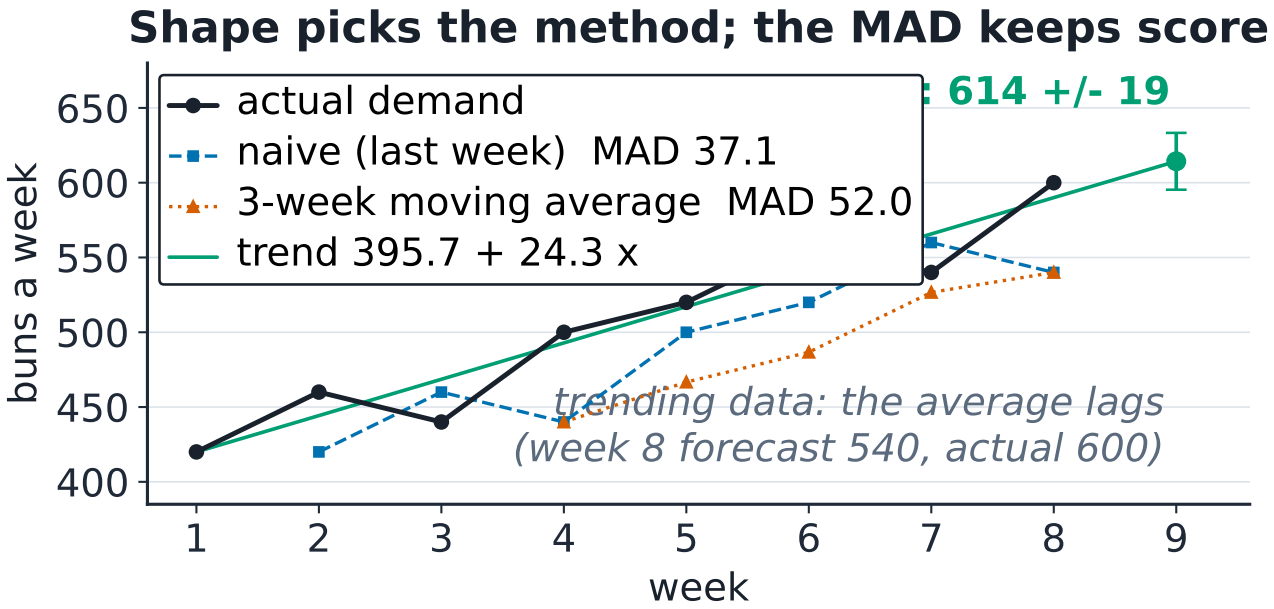
Exercise walk-through

10.5
Supply chains

University Business

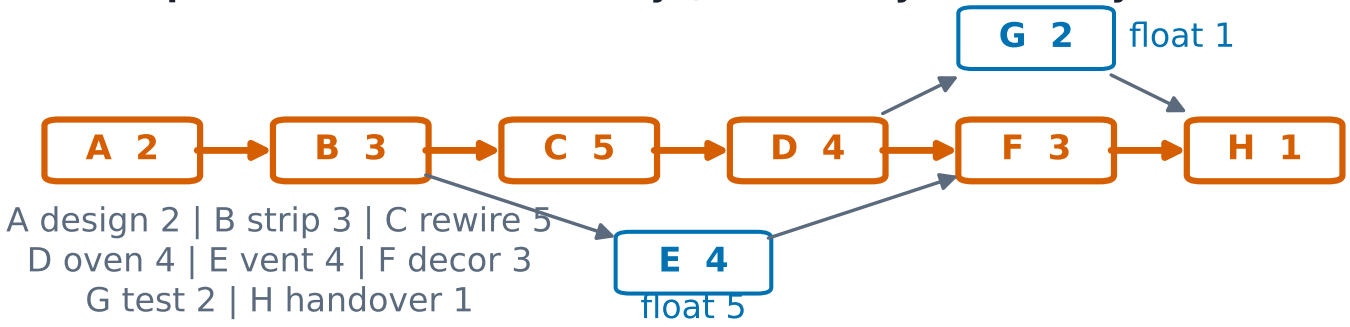
Forecasting: shape picks the method



The trend line beats the averages: week 9 forecast 614 +/- 19.

Project management: the critical path is the project

Critical path A-B-C-D-F-H = 18 days; crash C by 2 and D by 1 to reach 15

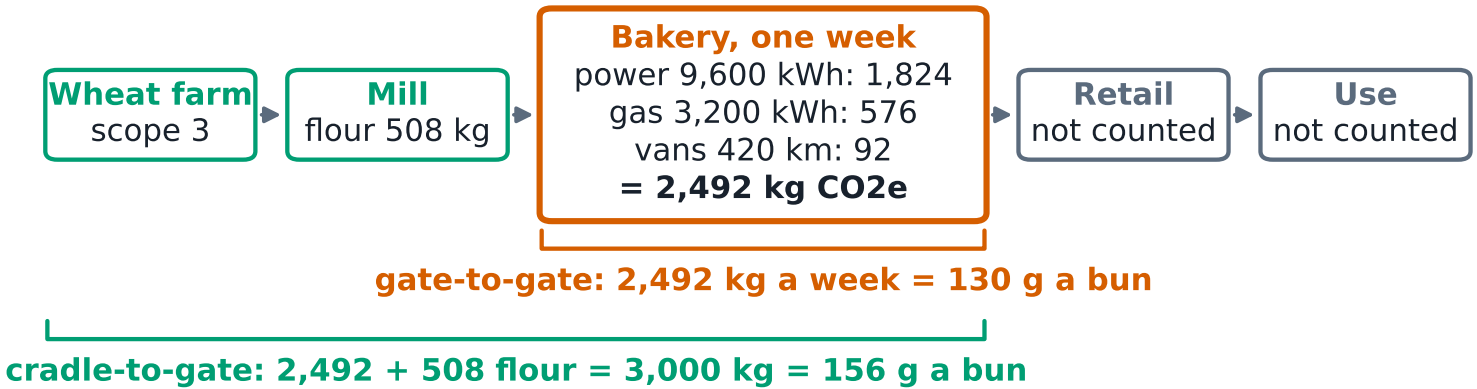




Critical path 18 days; at day 10, CPI 0.824 and EAC 72,800.

Sustainability in operations: the boundary is the claim

Same bun, two footprints: the boundary is the claim



renewable tariff at 0.06 kg/kWh cuts electricity 1,824 to 576: the site week halves to 1,244; the flour does not move

2,492 kg a week gate-to-gate; 3,000 kg with the flour counted.

Exercises 2.1·2.2

2.1 Three depots, each weekly sd 200, independent, $z = 1.645$, one-week lead. Safety stock separate and pooled, and the saving in units and per cent. [4]

2.2 A supplier offers 1.42 a kg against 1.50 on 20,000 kg a year, but lead time 12 days against 4; holding 1.60 a kg a year. The price saving, the extra pipeline stock and its cost, and the net. [4]

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Exercises 2.1–2.2

2.1 Three depots, each weekly sd 200, independent, $z = 1.645$, one-week lead. Safety stock separate and pooled, and the saving in units and per cent. [4]

2.1

- Separate $3 \times 1.645 \times 200 = 987$.
- Pooled $1.645 \times 200\sqrt{3} = 570$; saving $417 = 42.3\% = 1 - 1/\sqrt{3}$.

2.2 A supplier offers 1.42 a kg against 1.50 on 20,000 kg a year, but lead time 12 days against 4; holding 1.60 a kg a year. The price saving, the extra pipeline stock and its cost, and the net. [4]

2.2

- Price $0.08 \times 20{,}000 = 1{,}600$ saved.
- Pipeline $8 \times 20{,}000/365 = 438$ kg at $1.60 = 701$; net $+899$.

Exercises 2.3·2.4

2.3 Five pack formats, each sd 150 a week. Safety stock held per format against one generic pool ($z = 1.645$), and the cut. [3]

2.4 The cheap supplier is 95% on time against 99.5%; 24 deliveries a year; a miss costs 2,500. Expected misses and cost for each; verdict on the net from 2.2. [4]

Exercises 2.3·2.4

2.3 Five pack formats, each sd 150 a week. Safety stock held per format against one generic pool ($z = 1.645$), and the cut. [3]

2.3

- Per format $5 \times 1.645 \times 150 = 1{,}234$; generic $1.645 \times 150\sqrt{5} = 552$.
- Cut $55.3\% = 1 - 1/\sqrt{5}$.

2.4 The cheap supplier is 95% on time against 99.5%; 24 deliveries a year; a miss costs 2,500. Expected misses and cost for each; verdict on the net from 2.2. [4]

2.4

- Misses $24 \times 0.05 = 1.2$ against $24 \times 0.005 = 0.12$.
- Cost 3,000 against 300: the 2,700 difference wipes out the 899 net - stay, or dual-source.

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