Practice worksheet | Matrix models

Closed-system assumptions and model limitations

Name: _____ Date: _____

6 questions | 18 marks

1. Name two assumptions behind a six-month forecast T^6x_0. [3 marks]

2. A matrix has columns totalling 1 but an entry -0.1. Why is it invalid as a transition-probability matrix? [3 marks]

3. Predicted counts are $(120, 80)$, observed $(112, 88)$. Find absolute errors and their sum. [3 marks]

4. The same 30 travellers estimate a matrix and are then used to claim its forecast is perfect. Explain a weakness. [3 marks]

5. A model predicts proportions $(0.35, 0.65)$ for 1000 members. [3 marks]

(a) Find expected counts. [1 mark]

(b) Does observing $(340, 660)$ alone prove failure? Explain. [2 marks]

6. A new bus route changes behaviour halfway through a year. How should the model respond? [3 marks]