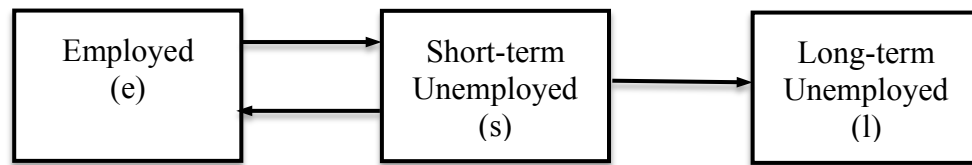


3. The following 3-state Markov model with constant transition intensities is used to model the transition from employment to long-term unemployment.



- (i) Write out the assumptions of the Markov model and comment on their appropriateness.
- (ii) Obtain the likelihood function for this model.
- (iii) The following data were collected from 1000 individuals who were monitored from 1/1/1999 to 31/12/2002:
 - total waiting time in state e: 30000 months
 - total waiting time in state s: 5600 months
 - total number of transfers from state e to state s: 200
 - total number of transfers from state s to state e: 150
 - total number of transfers from state s to state l: 60

Find the maximum likelihood estimates of the transition intensities, together with estimates of their standard errors.