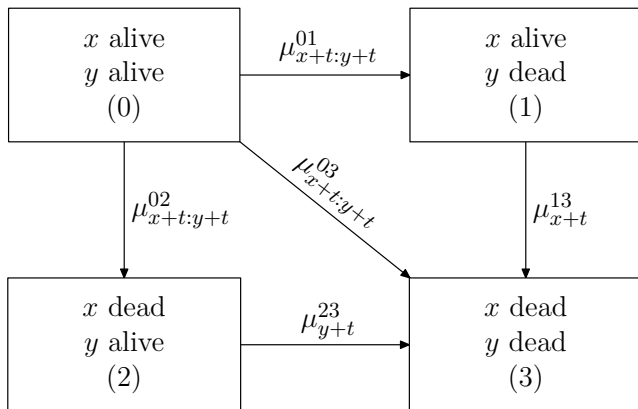


# The model with a common shock



## Illustrative example: SOA Spring 2014 Question # 7

The joint mortality of two lives ( $x$ ) and ( $y$ ) is being modeled as a multiple state model with a common shock (see diagram in the previous page).

You are given:

- $\mu^{01} = 0.010$
- $\mu^{02} = 0.030$
- $\mu^{03} = 0.005$
- $\delta = 0.05$

A special joint whole life insurance pays 1000 at the moment of simultaneous death, if that occurs, and zero otherwise.

Calculate actuarial present value of this insurance.