Homework Jan-16: Updated Model Diagram
7 points total

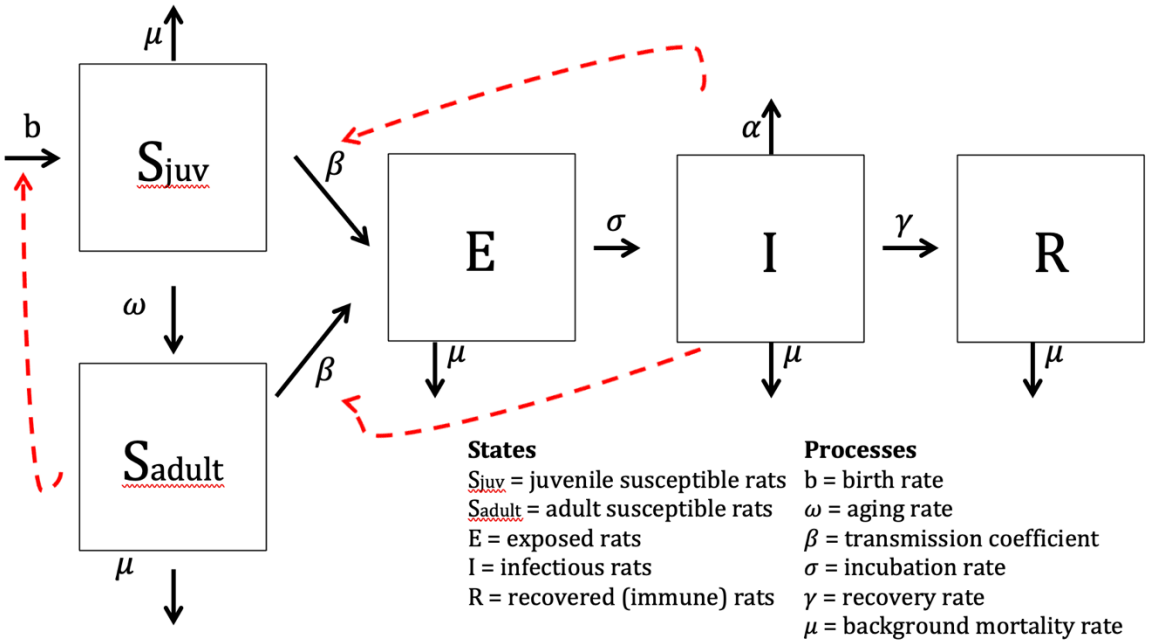
By 9am on Tuesday, January 16, please upload a Word document with your file to the corresponding Canvas assignment. Please follow the naming convention:
HW_Jan16_UpdatedModelDiagram_LastName_FirstName.doc/docx

Assignment details (see example on page two):

- On the top half of the page, present a repeat of the homework assignment from January 15, including any edits you made after Monday's 'Model Telephone' session. *(2 points)*
- On the bottom half of the page, write out a detailed model description based on your experience in class on Monday. *(5 points)*

Example:

Can the Malagasy black rat (*Rattus rattus)* population independently maintain transmission of the plague bacterium, *Yersinia pestis?*



Model Description:

Susceptible juvenile rats enter the population through birth, at rate *b,* which is influenced by the proportion of uninfected (susceptible) adult rats in the population at a given time. Juvenile rats age into the adult class, on average $1/\omega$ time units after they are born. Both juvenile and adult susceptible rats can be infected by contact with infectious rats of any age, based on a force of infection proportional to the prevalence of infectious rats in the population. Once infected, rats enter the exposed class. The incubation period is $1/\sigma$ time units (on average), after which the animals develop clinical plague, which is equivalent to transitioning from the exposed class to the infectious class. A subset of rats recover from plague to become immune, based on rate γ. All rats in the population experience background mortality with hazard μ, and infectious rats experience an additional disease-induced hazard of mortality, α.