Bed bugs, *Cimex lectularius*, are pests to humans that are often controlled with chemicals, such as pyrethroids. Several populations have developed resistance to chemicals, and such resistance might have demographic consequences to the survival and fecundity of the populations. Researchers raised two bed bug populations in a laboratory to try to better understand their demography and to compare the life cycles of insect populations with and without resistance to pyrethroid chemicals (populations are called ‘susceptible’ and ‘resistant’ in the spreadsheet). Laboratory populations were reared using chicken blood and survival and fecundity were measured. A cohort of individuals were followed. The population started out with all eggs, and these individuals were monitored weekly until all individuals died. The number of individuals in the cohort that were alive at the start of each week is in the excel spreadsheet. Each adult female produces on average 0.64 female eggs each day she is alive.

Scientific questions: What is the population growth rate of bed bugs and does it differ between the susceptible and resistant population? What are the sensitive vital rates for the population?

Please present:

1. A short overview of bed bugs*,* including a life cycle graph.
2. Hypotheses
3. Your methods (modelling approach)