**Infectious Disease Modelling course, Fudan University 2019**

**Economic evaluation of infectious disease interventions**

Practical

Open the worksheet “measles economics.xls”. This is the same measles model which you have seen before, with a timescale of 200 days. Births and deaths have not been included due to the short time scale.

Notice that a new table has been added entitled “Economic parameters”. This gives the cost of treating a measles case, the cost of vaccinating someone with measles and the QALYs lost due to a case of measles. The discount rate is set to 3%.

1. Fill in Columns Q to S with the number of new measles cases every day, the cost of treating those cases, the cost of vaccinating people and the QALYs lost due to those cases respectively. Assume that vaccination happens at time 0.

2. Fill in cells Q12, R12 and S12 to find the total number of measles cases and their cost and QALY loss implications over the course of the 200 days.

3. Increase vaccine coverage to 80% (by inserting 0.80 in to cell N9). How many cases of measles are prevented, both directly and through herd protection?

4. What is the net difference in costs spent and QALYs lost with vaccination? Hint: Remember to take into account the cost of vaccination.

5. Would you recommend a measles vaccination programme in this situation?

6. The next step is to recalculate your outcomes taking into account discounting. The discount factor at each time step is the factor with which to multiply your costs and QALYs lost at that time step. It is given in column T. Look at the formula used and see if you can understand it.

7. Work out the discounted costs spent and QALYs lost with vaccination by filling in columns U and V. Did the answer change much? Why or why not?

8. The model you have built does not take into account people who die of measles. If this was incorporated, what would be the effect on the cost-effectiveness calculations you have made? Would the difference between discounted and undiscounted results change?