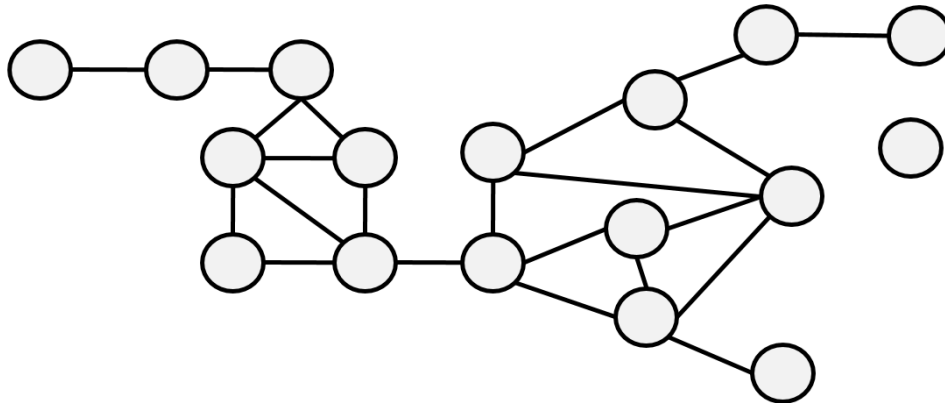


How does an epidemic spread on a network?



Modelling

Day 1

Everyone starts off **susceptible**, apart from one **infected** person

Day 2

- Go round infected person's contacts in turn
- Roll dice. If number is 1, 2 or 3 infect that person
- Continue for all contacts, then infected person recovers (and can't be reinfected)

Continue each day until epidemic ends

Try this simulation a few times, recording your results.

Day	How many infected
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	

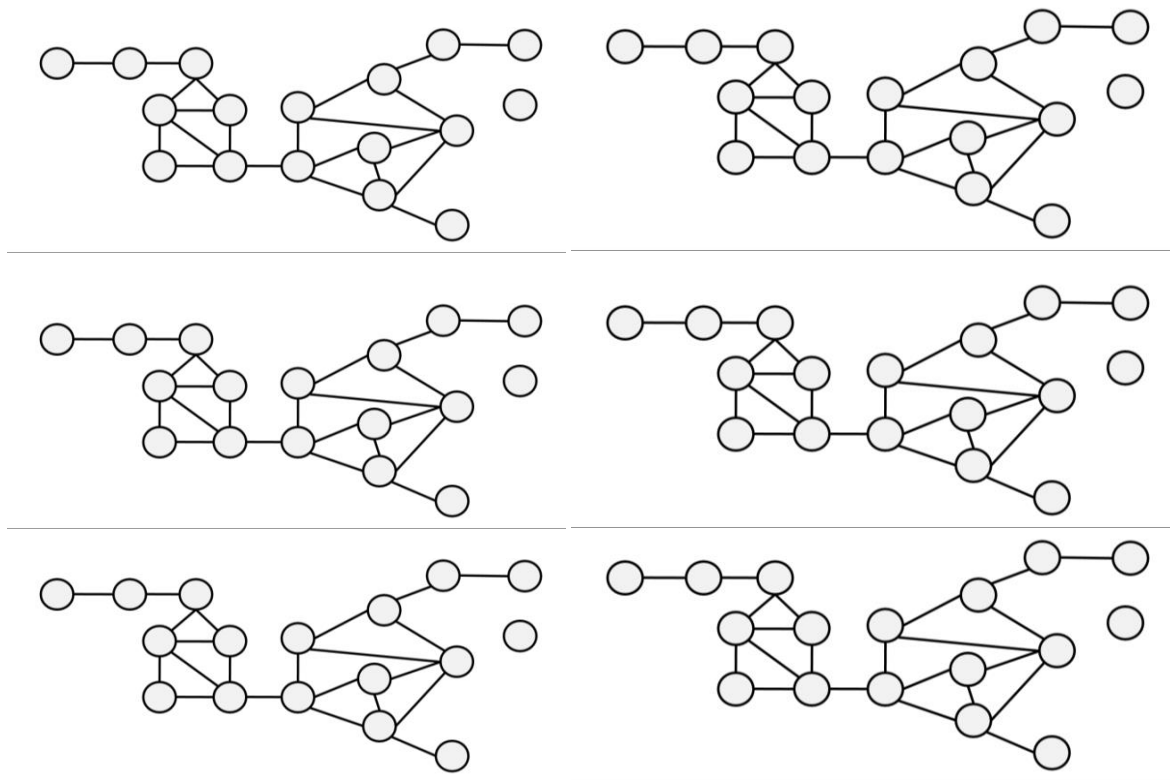
Day	How many infected
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	

Day	How many infected
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	

Day	How many infected
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	

Day	How many infected
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	

Day	How many infected
Day 1	
Day 2	
Day 3	
Day 4	
Day 5	



As a group, can we find the average number of people each infected person infects in this simulation?

Now try changing:

- The first person infected on Day 1
- The number of people infected on Day 1
- Adapt the model to include vaccinated people
- If you had a limited supply of the vaccine and wanted to prevent the epidemic spreading, who would you vaccinate?
- The network (you could create your own to model your contacts)

Follow up websites:

<https://www.bbc.co.uk/news/health-52473523>

<https://www.washingtonpost.com/graphics/2020/health/coronavirus-how-epidemics-spread-and-end/>

<http://www.r2d3.us/covid-19/>