**ISVEE Halifax pre-symposium course - Day 2 exercises**

Exercises can be done in groups or individually. If possible, participants that are experienced in coding can team up with participants that are experienced with a particular disease, to make a strong team.

*Exercise 1:  2009 H1N1 Influenza Virus*

You are asked by the government to make a simulation model that can be used for predicting the spread of the 2009 H1N1 swine influenza virus through a pig farm. The outcome of interest is the number of infected animals and duration of the epidemic if one pig is initially infected. You must choose realistic variables with distributions (no. of pigs, transmission rates, transmission mode etc.)

Simulate three different scenarios:

* Normal spread (no prevention).
* Prevention scenario 1: Removing clinically infected pigs.
* Prevention scenario 2: Vaccinate all pigs with a vaccine that reduces the susceptibility with 50%.

At the end of day 2 you must present the scenarios for the other participants at the course

*Exercise 2: Avian influenza in a poultry farm*

An outbreak of high pathogenic avian influenza has hit a large turkey farm with 28.000 turkeys. 10% of the turkeys are already infected. The government wants to know when this farm was possibly infected, and how long the outbreak will continue if nothing is done. You must choose the right simulation model for the purpose, find transmission parameters in literature and simulate the necessary scenarios. At the end of day 2 you must present the scenarios for the other participants at the course

*Exercise 3: Individual project*

Build a simulation model within your own area of research. You must choose the outcome variable of interest and the proper model type for the application. You should use the tools you have learned on the first day of this course. Simulate relevant scenarios for your topic, produce graphical output and present it for the other participants at the end of day 2.