Targeted Layered Containment Studio

1   Intervention Variables

The kind of numerical data is very important

- (Integer) type: 0 = vaccination, 1 = antiviral, 2 = social distancing, 3 = workClosure, 4 = schoolClosure, 5=infecting, 6=rollback, 7=stayHome

- (Float) compliance: values from 0.0 to 1.0

- (Int) duration: how many days this intervention action will be in effect

- (Int) delay: period from the day when intervention is submitted to the day when it will become effective

- (Float) efficacy-in: Node probability of getting infected by any other nodes, values from 0.0 to 1.0

- (Float) efficacy-out: Node probability of infecting other nodes, values from 0.0 to 1.0

2   Ring Intervention

The trigger is the number of days before an infectious individual gets diagnosed, it will activate an intervention to every contact in his household. The intervention will be administrated to the household contacts if there's availability.

2.1   Parameters to run the Ring intervention:

The epistudy_configs file has one intervention defined (intervention0)
intervention0

- iql_key: key description of the intervention e.g: i0 (already defined for intervention0)

- intervention variables (1)

- (Float) ascertain: values from 0.0 to 1.0

- (Int) days ill: days before an infectious individual gets diagnosed

- (Int) vaccines: number of vaccines

- (Int) atday: beginning of the distribution

The README file inside the (epistudy_configs/ring) folder has a detailed description of the intervention file.

3   Household Intervention

intervention0: All symptomatic individuals retire home from the workplace after x days of being ill.
intervention1: Household contacts receive y days of treatment.

3.1   Parameters to run the Household intervention:

intervention0

- iql_key: key description of the intervention e.g: i0 (already defined for intervention0)

- intervention variables (1)

- (Float) ascertain: values from 0.0 to 1.0

- (Int) days ill: days before an infectious individual gets diagnosed

  intervention1

- iql_key: key description of the intervention e.g: i1 (already defined for intervention1)

- intervention variables (1)

The README file inside the (epistudy_configs/household) folder has a detailed description of the intervention file.

4   Isolation Intervention

intervention0: All symptomatic individuals retire home from the workplace after x days of being ill.
intervention1: Then isolate from contacts outside of home for x days.

4.1   Parameters to run the Household intervention:

intervention0

- iql_key: key description of the intervention e.g: i0 (already defined for intervention0)

- intervention variables (1)

- (Float) ascertain: values from 0.0 to 1.0

- (Int) days ill: days before an infectious individual gets diagnosed

  intervention1

- iql_key: key description of the intervention e.g: i1 (already defined for intervention1)

- intervention variables (1)

The README file inside the (epistudy_configs/isolation) folder has a detailed description of the intervention file.

5 Sweep

- parameter: to sweep

- (Float) start_val: value starting the sweep

- (Float) inc: value incrementing the value of the sweep

- (Float) end_val: value ending the sweep

e.g. Compliance values (0.5, 1.0):
$< start\_val > 0.5 < /start\_val >$
$< inc > 0.5 < /inc >$
$< end\_val > 1.0 < /end\_val >$

e.g. Replicate values (0, 1):
$< start\_val > 0 < /start\_val >$
$< inc > 1 < /inc >$
$< end\_val > 1 < /end\_val >$

6 Epifast

- seed: If it is desired that every time the simulation runs on the same configuration, it generates the same set of random realizations, then specify a fixed random seed in the xml configuration file as follows.

$< seed > 7654321 < /seed >$
SimulationRandomSeed = 7654321 where $< seed >$ can be replaced by any integer. If the value is not specified the default value for seed is 12345.

7 Running the Intervention

To run the intervention:

- Modify: epistudy_cfg.xml

- Run:

    - > . /home/pgxxc/public/dicex/dicex.sh
    - > epistudy_workflow.sh epistudy_cfg.xml.

8 Running the plots

- Open the file dbsession_Region_Intervention.py to get the server_ip value

- Connect to the server_ip e.g. ssh sfx058

- Go to the study folder and run:

- – > . /home/pgxxc/public/dicex/dicex.sh
- – > replicate_analysis_infections.sh epistudy_cfg.xml

The following is an example of the household intervention infections plots running with compliance values of {0,0.5,1.0} for intervention 2, each with 2 replicates {0,1}.
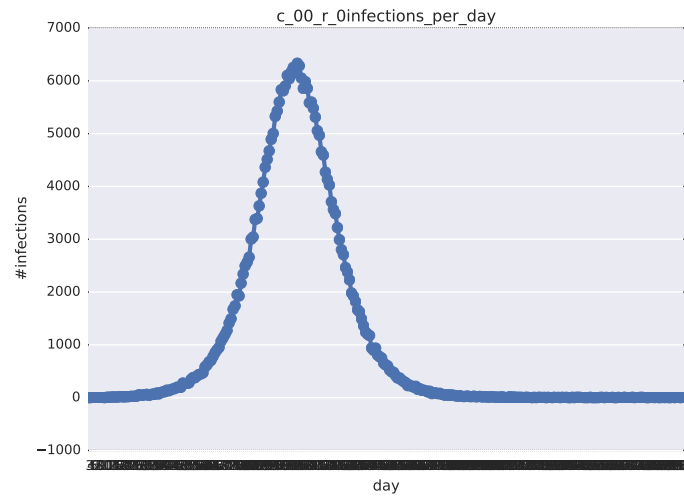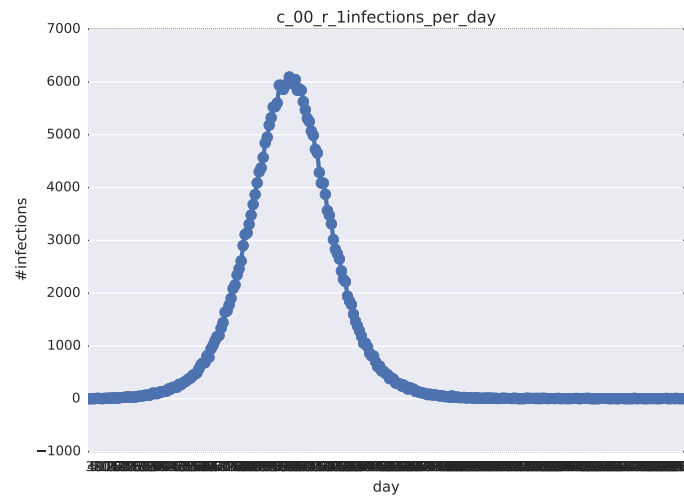

Figure 1: Compliance 0, Replicate 0

Figure 2: Compliance 0, Replicate 1

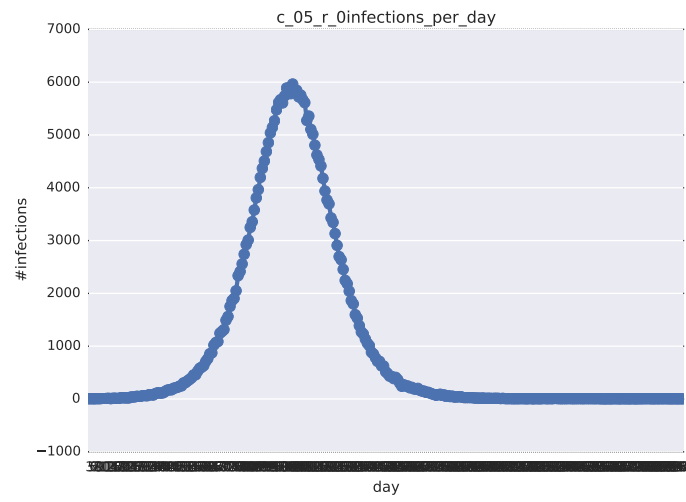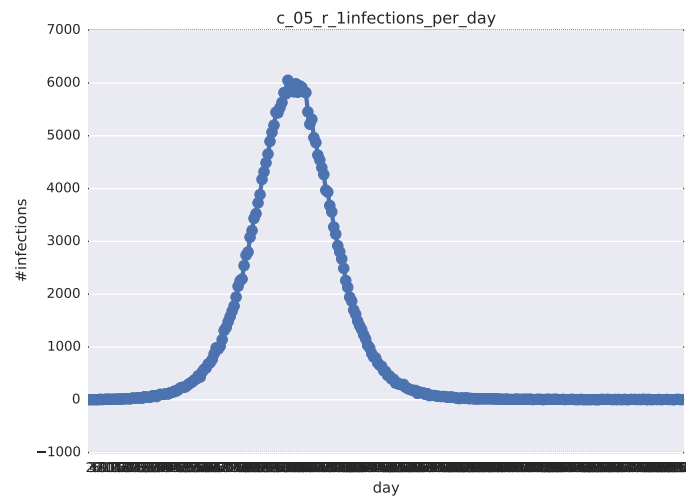Figure 3: Compliance 0.5, Replicate 0
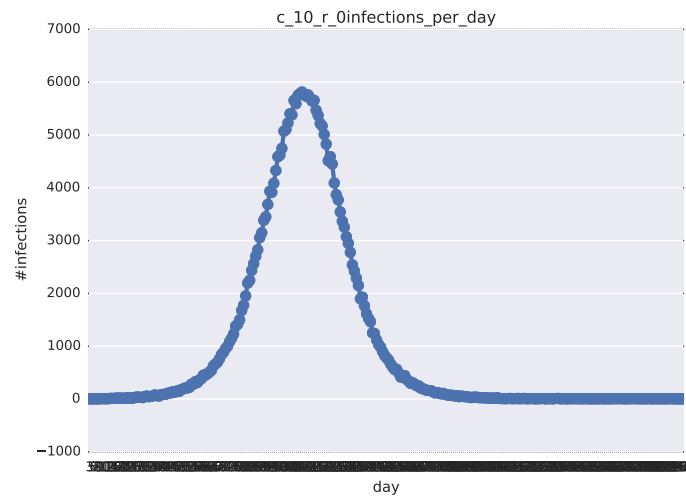

Figure 4: Compliance 0.5, Replicate 1
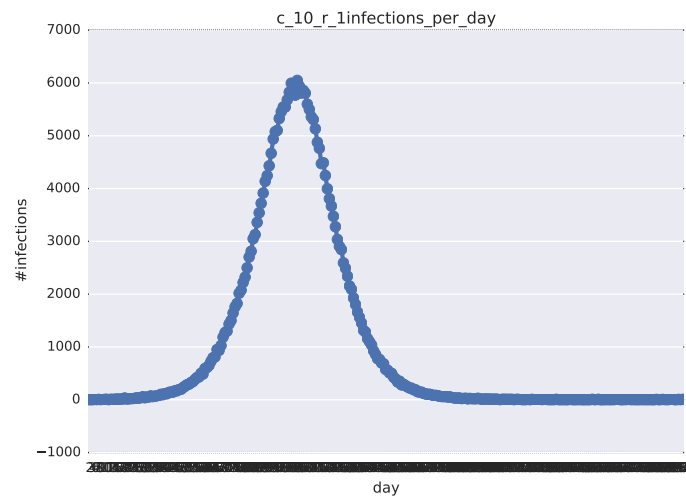
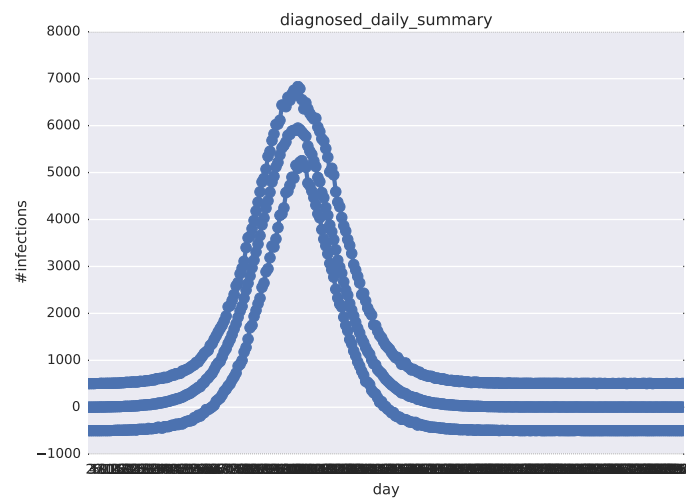Figure 5: Compliance 1.0, Replicate 0

Figure 6: Compliance 1.0, Replicate 1

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Figure 7: Diagnosed Daily Summary