**Flow of the whole analysis**

**(fin.) 1. Parameter specification.**

- Estimate virus shedding distribution.

**2. Geographical data preparation.**

- (fin.) Prepare vaccination coverage data at a district level.

- Read vaccination coverage data.

- Visualise vaccination coverage data.

- (fin.) Prepare under 5 years old population map.

- Change aggregation scale. (TODO: decide an appropriate scale of aggregation).

- (fin.) Visualise the population size map, also set a threshold for the exclusion criteria.

- (fin.) Relate the population size to the vaccination coverage.

- (fin.) Calculate mobilisation probability using the radiation model.

- (fin.) Save population data (full), unimmunised population, mobilisation probability

- (fin.) Visualise mobilisation parameters in a histogram, and bubble plot.

**3. Single cohort model.**

- (fin.) Run transmission model, surveillance models.

- (fin.) Visualise the cumulative probability of detection, and lead time distribution.

**4. Spatio-temporal model**

- Run transmission model for baseline

- Visualise baseline scenarios

- Visualise example epidemic trajectories for the baseline setting.

- Visualise the cumulative probability of detection, and lead time distribution.

- Relationship

- Record the computation time and aggregation scale for a histogram

- Run transmission model varying R0 and α.

**5. Surveillance model and visualisation.**

- Run ES and AFP surveillance model for baseline parameters

- Varying sampling frequency, ES catchment area, detection sensitivity.

- Visualise the relationships of

- Run ES and AFP surveillance model for sensitivity analysis.

**6. Visualise the main results.**

- Visualise the baseline scenario.

- Visualise the baseline sensitivity analysis.