

Validation process for ABM

Model validity = adequate for its purpose

* model purpose is important *

Different aspects on validation

①. Input validation

- are the input to model meaningful?
- document input validation
 - ↳ listing data sources, data collection process

② process validation

- how well the process represent in the model reflect the real world?
- justification for spatial & temporal scale that we choose, processes that are included, how we incorporate interaction

* stochastic environment ??? *

③ Descriptive output validation

- how well can model output captured the feature data used to build model (input data)

↳ model suppose to reproduce real-world pattern

- ④ Predictive output validation
- model is able to predict data that we haven't feed/used in the model (independent data)
 - If independent data isn't available, we should justify why model can be trusted.
- data that is acquired later, another case study

Potential challenges during validation process

- ①. stochastic nature
- model and real-world system are involved randomness and uncertainty
- ②. Predictive vs. Retrodictive capability
- model can generate reasonable prediction of future states but not able to recreate past states.
 - it can happen due to complexity and non-linearity of real-world system.
- ③ Data quality and reliability
- data from real-world system might incomplete, have some error.
- ④ Path dependency
- outcomes are sensitive to specific initial conditions and sequence of events during simulation