The art and science of model evaluation

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MODELS SUPPORT DECISIONS

JUSTIFY
COMMUNICATE
CRITICISE
INFORM

(A)

Critical care beds occupied per 100,000 of population

- Surge critical care bed capacity
- Do nothing
- Case isolation, household quarantine and general social distancing
- School and university closure, case isolation and general social distancing

Flattening the curve

Without mitigation
Increasing healthcare capacity

Imperial College

Wikipedia/RCraig09
ESCAPE ROUTES FROM MODEL LAND

• Checking against data: was the model any good in the past?

• Judging model quality: is the model based on assumptions that we expect to continue to be true?
Confidence is based on **data**

Confidence is based on **expert judgement** about quality of assumptions.

**Interpolation**

**Extrapolation**

**Assumption-driven models**

**Data-driven models**

**Assumption-driven models**
ENSEMBLES OF MODELS
Models tend to look like each other
So how do we escape from Model Land?
“In today's complex and fast moving world, what we need even more than foresight or hindsight is insight.”

(anonymous)