The Need for a Systematic and Iterated Comparison of Different Policy Models

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North Atlantic Cod Fisheries Collapse

The Harris Commission said that modellers “…failed to recognize the statistical inadequacies in their bulk biomass model…” and that they had concerns that “…weaknesses in scientific management and the peer review process permitted this to happen.”

- Models were simplistic
- Focus of models had narrowed
- Excluded input from fishers
- Based on very little data
Covid Spread Epidemiology

In early 2020, Neil Ferguson + team used a complex model to simulate the spread of COVID19 under a range of scenarios, forecasting 100,000s of deaths in the UK if policies to reduce its spread were not enacted

- This model was influential but not the sole basis of the subsequent policy change in the UK
- Model was quickly adapted from one 13 years earlier about flu, consisting of “thousands of lines of undocumented C” not made public at the time
- So had not been critiqued and developed by the community of other researchers since then
Some Dangers of Policy Modelling

1. People who develop a model tend to get engrossed in it and not see the weaknesses – a strong form of “Kuhnian Spectacles”

2. Models are increasingly complex so hard to completely understand and analyse

3. Policy modelling is often made on a largely theoretical basis, not tested against data

4. Different models make different assumptions

5. Some models developed over short time scales

6. Models often made on a ‘one-off’ basis
Model comparison projects (MIP)

(Such as those over many decades on climate change)

• Allow modellers to build on the past rather than re-inventing the wheel
• Encourages the independent reproduction and analysis of existing models resulting in their being better understood
• Helps to determine which kinds of models are better for which aspects of problems or what kinds of situation they are applicable in
• A continuously updated and refined base of models helps build credibility
• Forms a more credible and robust basis from which to inform policy
Conclusions

• A policy model that has not been *independently replicated* is not a reliable model

• Good policy models take *many iterations of development* to improve

• A *variety of models*, each with different approaches, assumptions gives an idea of what kinds of approach work in what kinds of situation

• Better understanding of the *empirical track-record of models* is needed – do not rely on a purely theoretical model

• We need to ‘get our act together’ and *organise long-term systematic model comparison* for any application in policy sensitive areas
Thanks for your attention

These slides and papers that go with this presentation can be found on the page:
http://cfpm.org/model-comparison