

Foresighting to improve anticipatory scientific capacity and strategic planning

Alistair Hobday



The Future – preparation is human nature

- Rapidly changing world
 - Historical patterns not enough
 - We need to anticipate and increase lead-time to implement options
- How do we see the future?
 - Models
 - Foresighting
- Examples
 - **Quantitative foresighting (Hobday et al 2020)**
 - **COVID foresighting (Hobday et al in review)**
- How can institutions use foresighting?

Strategic Foresighting

‘a structured process for exploring alternative future states’

(Cook et al. 2014)

“Foresighting” is a term associated with **“Future Studies”** to describe activities such as:

- critical thinking concerning long-term developments,
- debate and effort to create wider participatory democracy,
- shaping the future, especially by influencing public policy.

Value of foresighting for...

- People
 - Training staff to be forward looking, nimble, proactive
 - Encourage wide reading and out of box thinking
- Organisation
 - Responsive to emerging trends
- Society
 - Is this the future you want?

Example 1- Long-term foresighting

One Earth



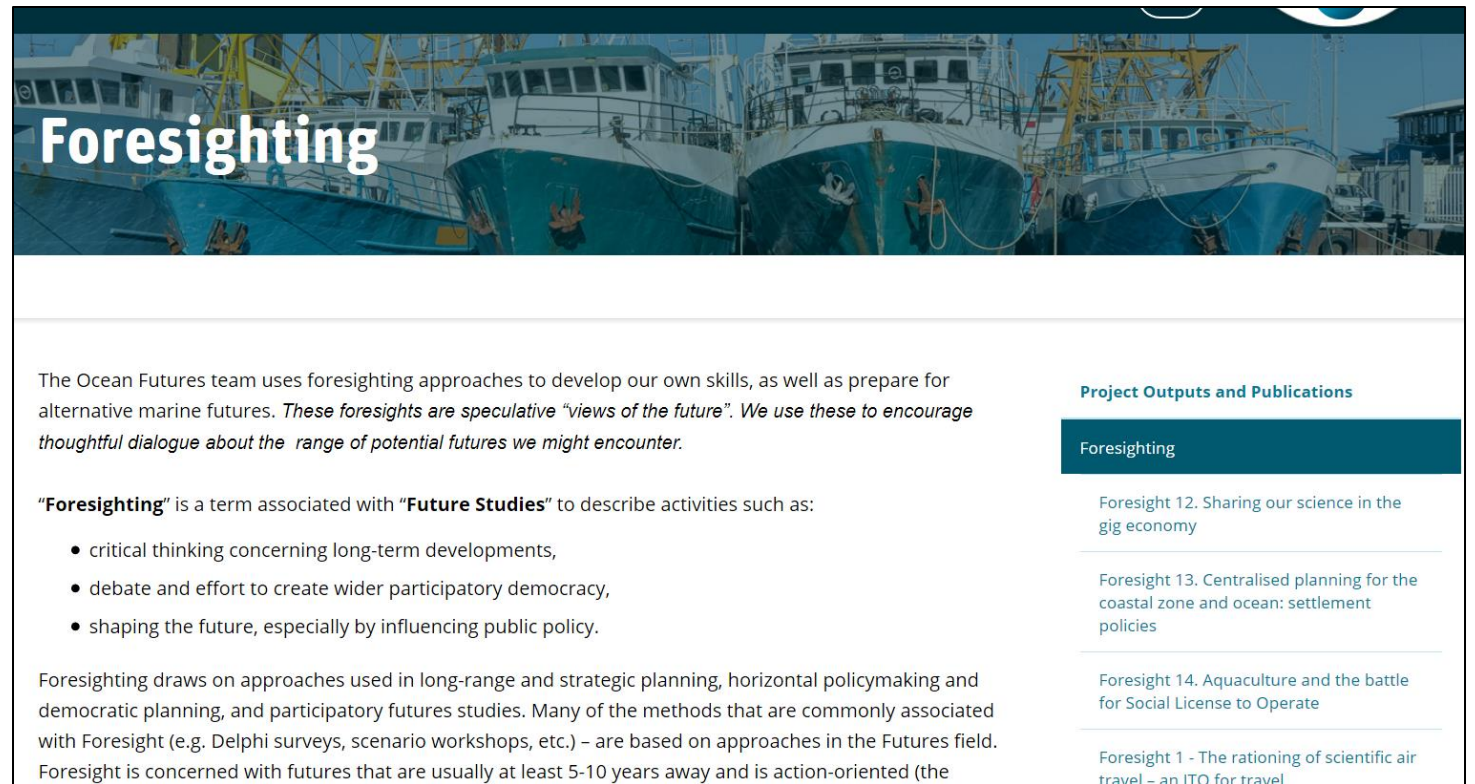
Article

Quantitative Foresighting as a Means of Improving Anticipatory Scientific Capacity and Strategic Planning

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Example 1- Long-term foresighting

- Repeatable approach, iterated in face-to-face discussion
- Recipe (3-4 pages)
 - Background info
 - Scenario(s)
 - Indicators (5-10)
 - Outcomes
 - Individuals
 - Science
 - Policy
 - Society



Foresighting

The Ocean Futures team uses foresighting approaches to develop our own skills, as well as prepare for alternative marine futures. *These foresights are speculative “views of the future”. We use these to encourage thoughtful dialogue about the range of potential futures we might encounter.*

“Foresighting” is a term associated with **“Future Studies”** to describe activities such as:

- critical thinking concerning long-term developments,
- debate and effort to create wider participatory democracy,
- shaping the future, especially by influencing public policy.

Foresighting draws on approaches used in long-range and strategic planning, horizontal policymaking and democratic planning, and participatory futures studies. Many of the methods that are commonly associated with Foresight (e.g. Delphi surveys, scenario workshops, etc.) – are based on approaches in the Futures field. Foresight is concerned with futures that are usually at least 5-10 years away and is action-oriented (the

Project Outputs and Publications

- Foresighting
- Foresight 12. Sharing our science in the gig economy
- Foresight 13. Centralised planning for the coastal zone and ocean: settlement policies
- Foresight 14. Aquaculture and the battle for Social License to Operate
- Foresight 1 - The rationing of scientific air travel – an ITO for travel

Two groups of foresights

Science in the 21st century

- relevant to the wider context of the scientific research endeavour

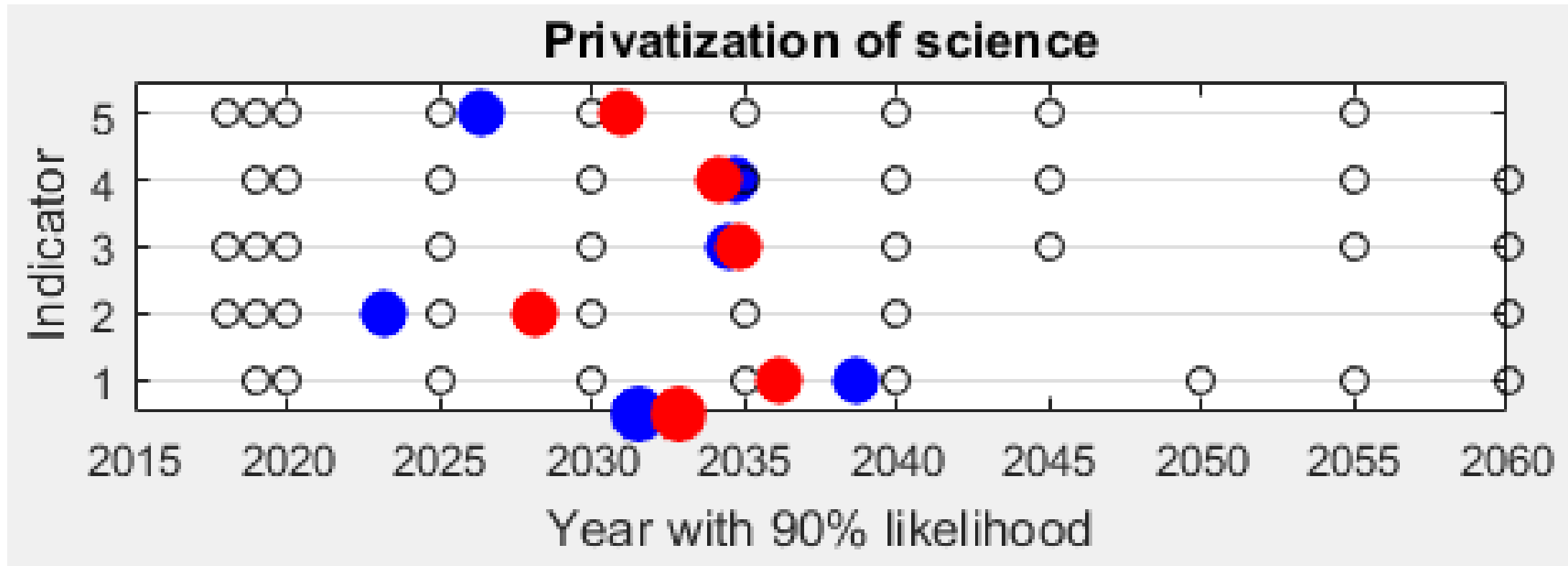
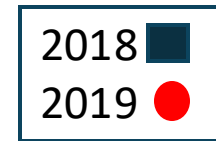
1. Rationing of air travel
2. Privatization of science
3. Trans-disciplinarity & participatory governance
4. Advances in automation & Artificial Intelligence (AI)
5. Social media as truth
6. Rise of populism
7. Science in a 'gig' economy

Marine Resource Management

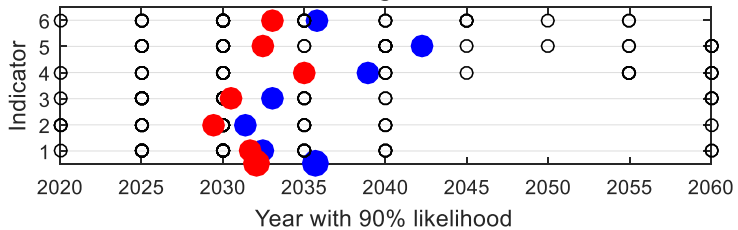
- relevant to the management of fisheries, aquaculture and biodiversity

1. Hi-tech precision fishing
2. Blue revolution
3. Rigid coastal planning & settlement policies
4. Aquaculture and social license to operate
5. Rise of ocean protection
6. Fast climate change
7. Energized conservation due to space travel

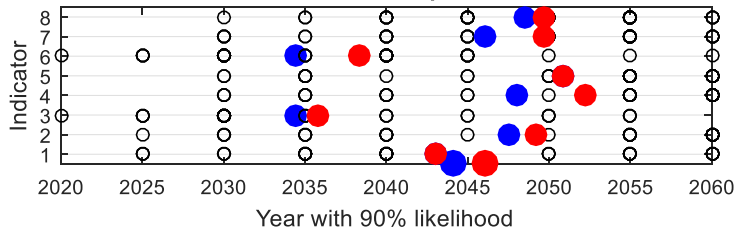
Example result – one participant



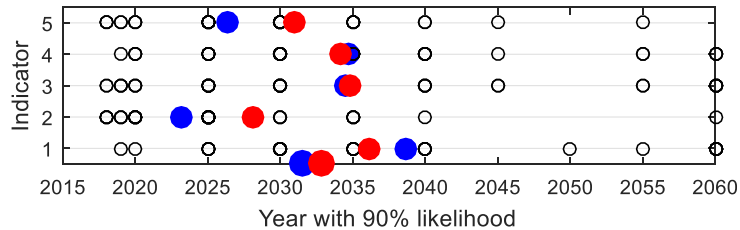
The rationing of air travel



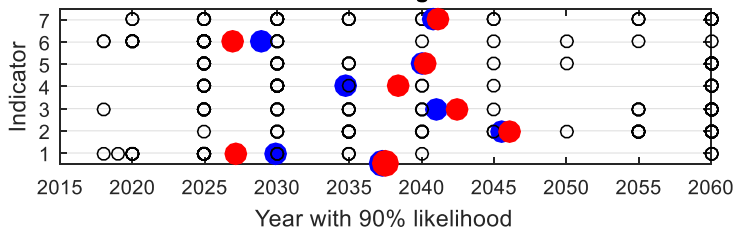
The rise of ocean protection



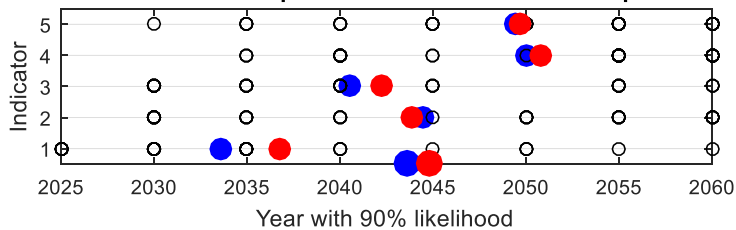
Privatization of science



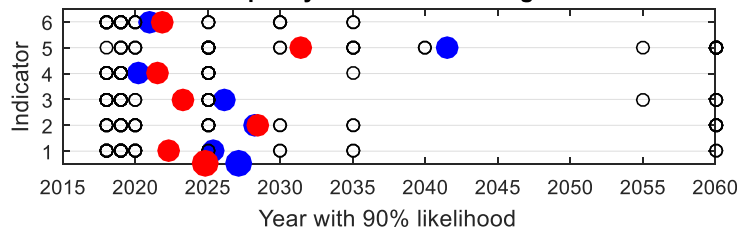
Transforming silos



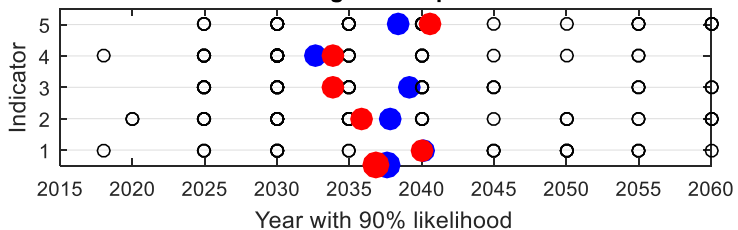
Is science as a profession vulnerable to disruptive



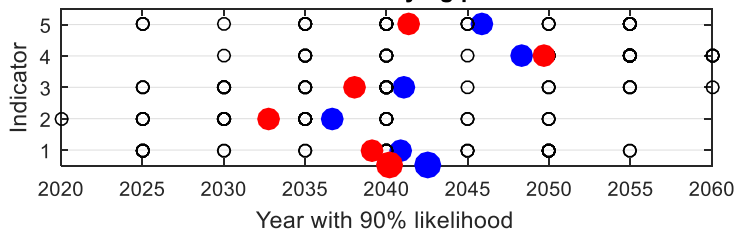
Science and policy discourse: Is the growth of soc



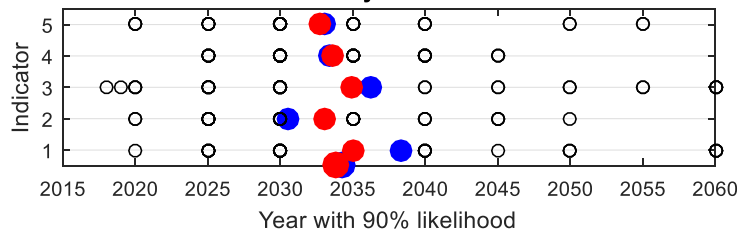
Astronaut views grow cooperation on earth



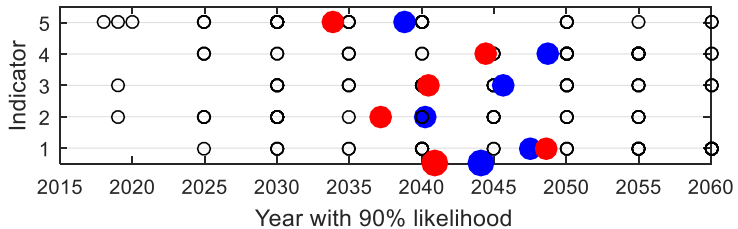
Out of the frying pan



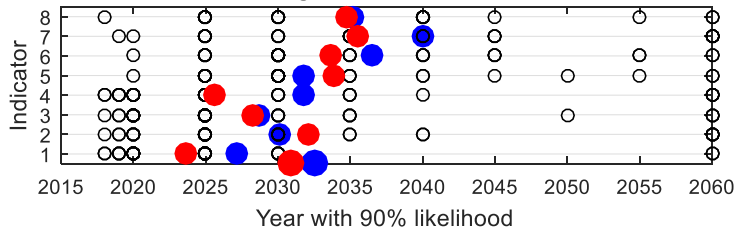
The Skynet Future



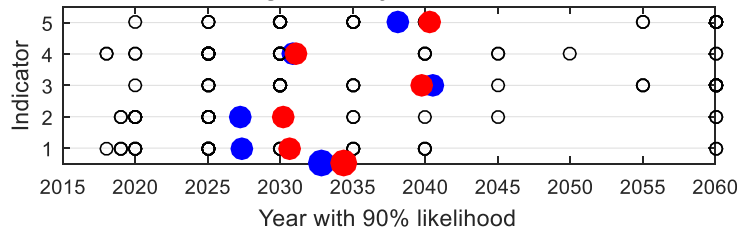
The Blue revolution



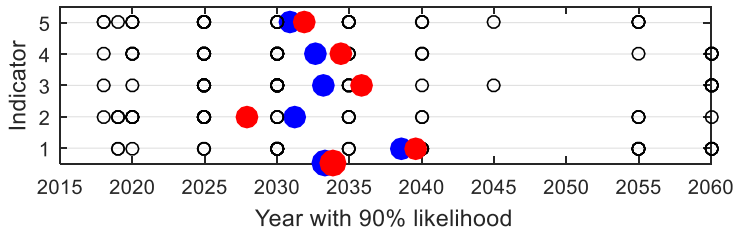
Dogmatism rules, OK



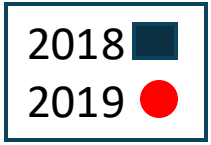
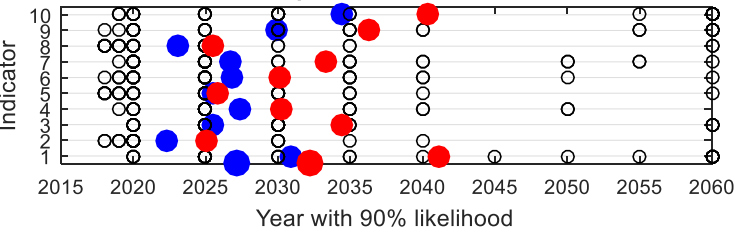
Gig Economy and Science



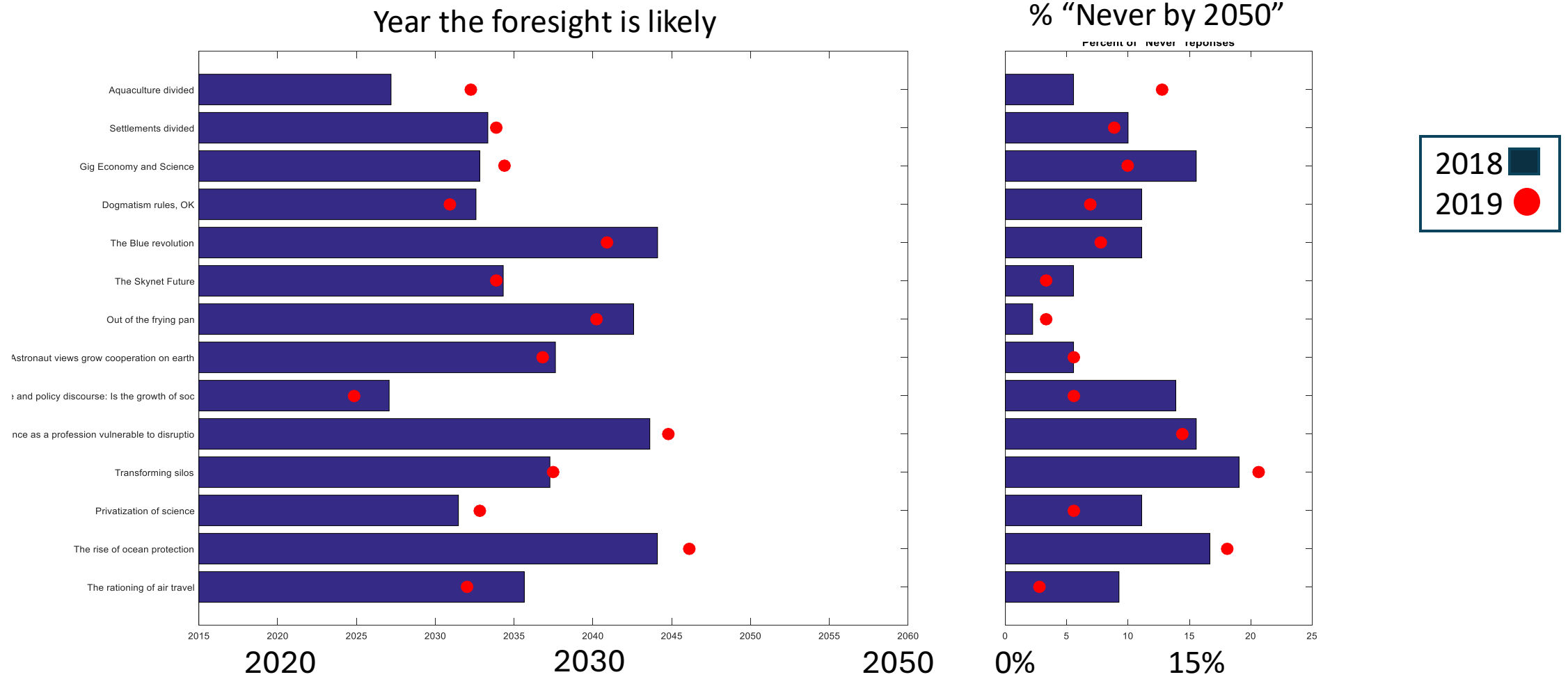
Settlements divided



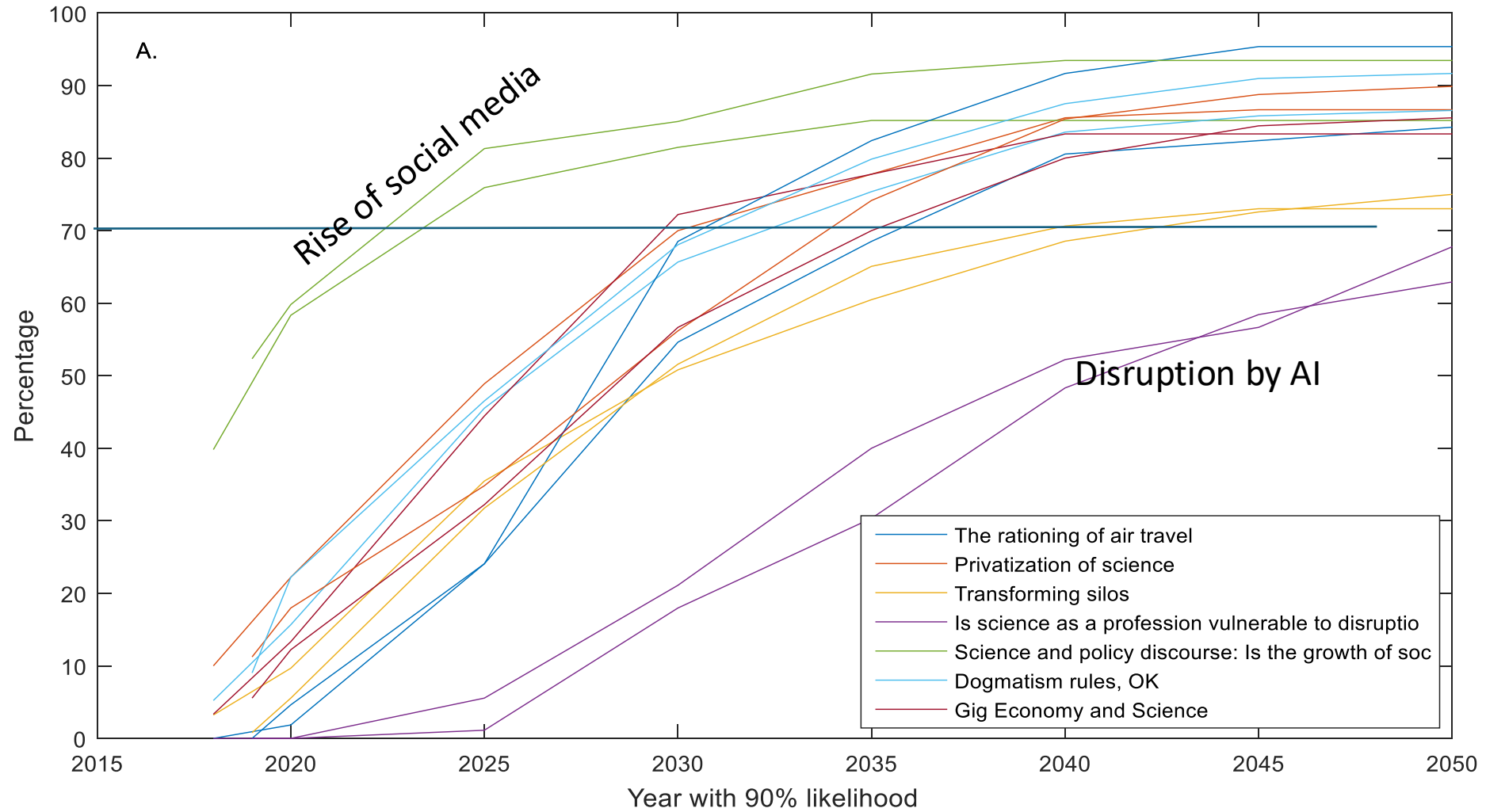
Aquaculture divided



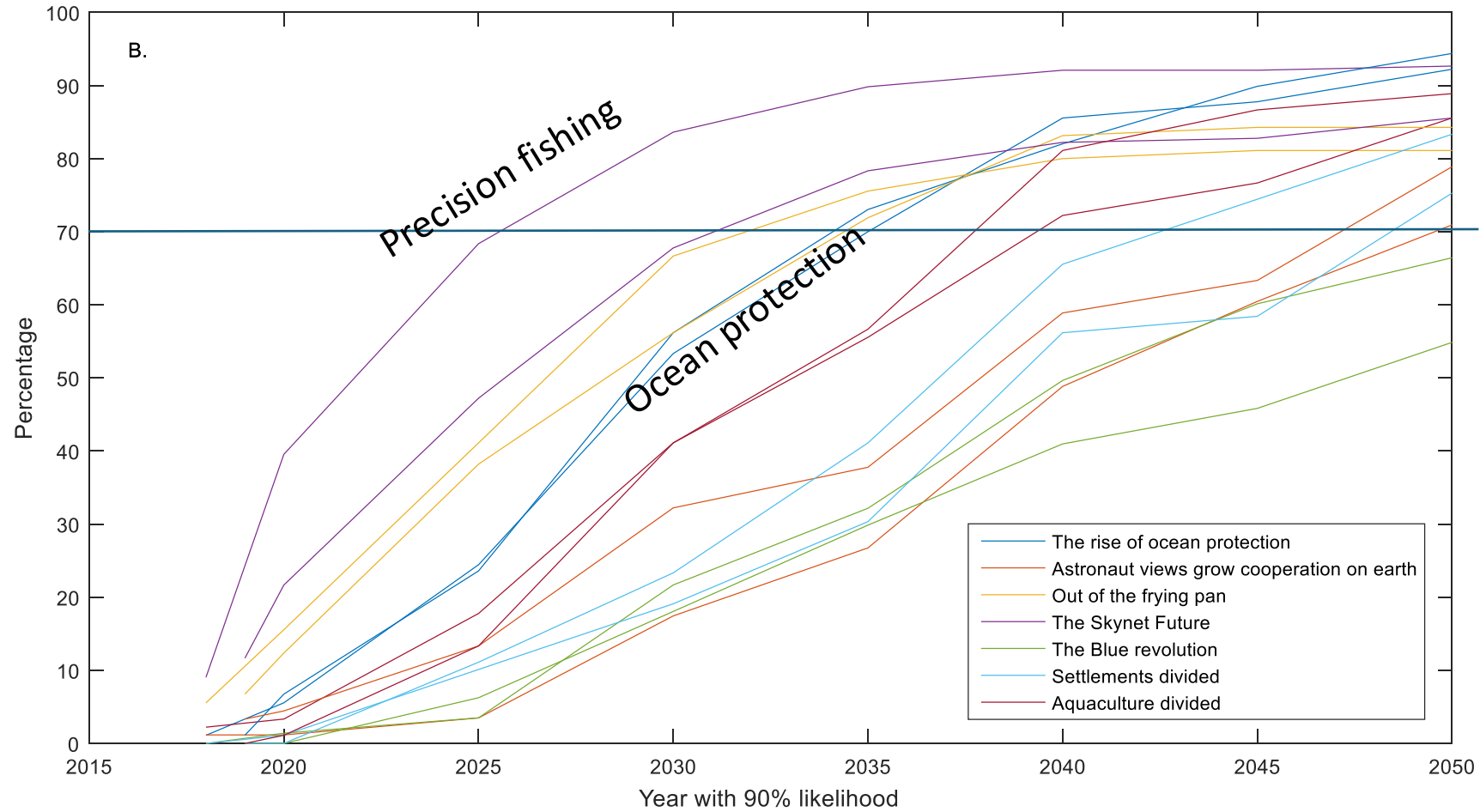
Comparison across two years – expert consistency



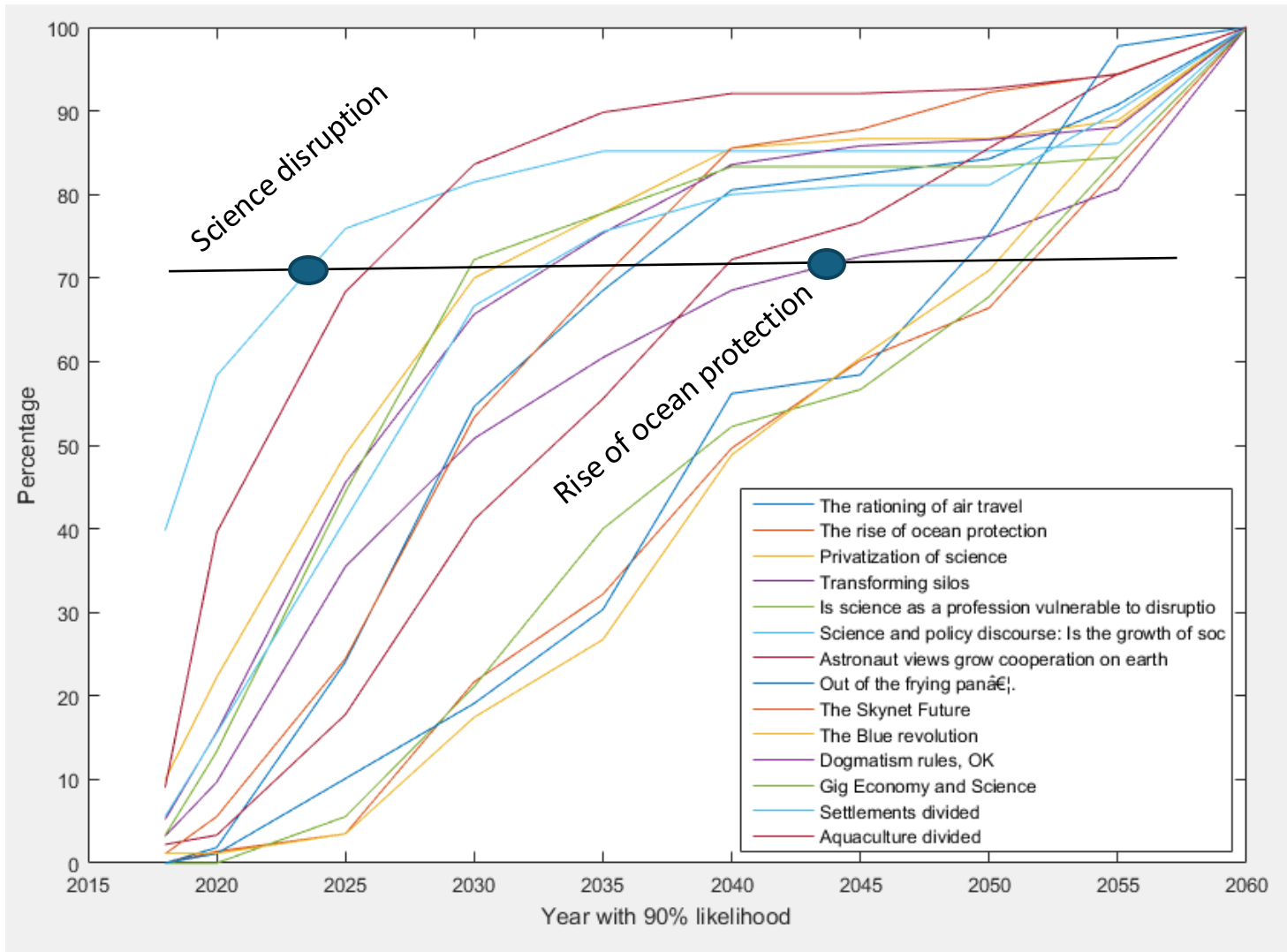
Results – 21st C Science(2 years)



Results – Marine Management (2 years)

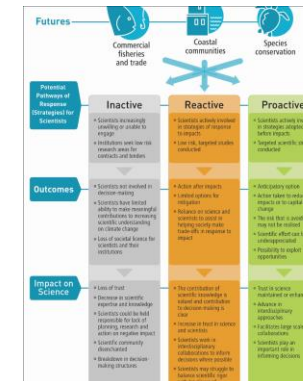


Responses to foresight “predictions”



Informs our actions

- Do nothing
- Reactive
- Proactive



Example 2. Foresighting the COVID19 period

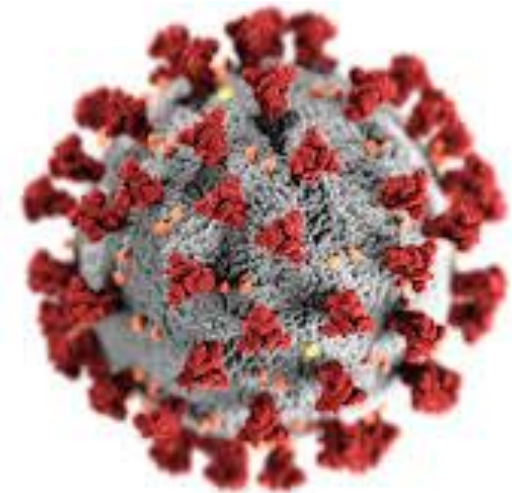
March 2020 (pre-border closures in Australia)

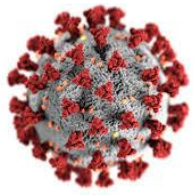
1. What will be the influence of this disruption on our science within your research program, and institute (over the following periods of time)?
2. How will the unfolding COVID-19 epidemic impact on access to, and quality of resources and natural assets, in marine sectors.
3. What future world will we have after COVID-19?

32 staff participated

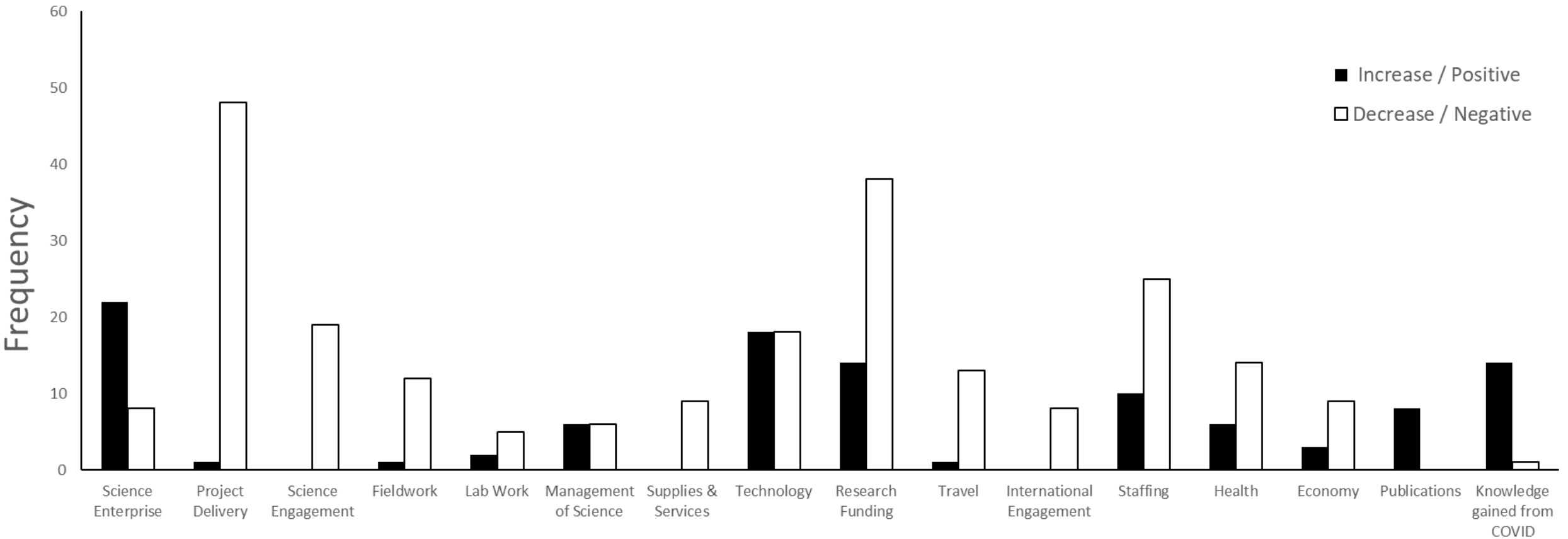
Supplied predictions

Evaluated 36 months later



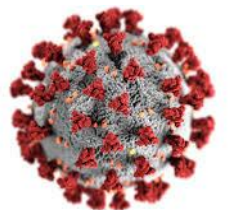


Q1. Potential impacts of COVID-19 on doing marine science



36 months later: Evaluated the predictions regarding the impact on “science”

- All major predictions were supported by evidence in subsequent publications and/or by evidence from our institution.
 - consistent with subsequent outcomes for 9 of 16 predictions (56%)
 - no change or a mixed response for 3 of 16 predictions (19%)
 - incorrect for 4 of 16 predictions (25%)
- 4 incorrect predictions were for negative outcomes, but positive outcomes occurred.



Q2. Potential impacts of COVID-19 disruption on marine sectors

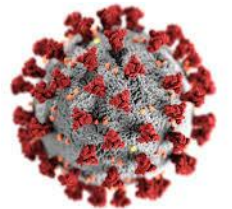
Sectors: Fisheries, biodiversity, marine pollution, conservation

32 respondents - A total of 404 responses regarding potential impacts on the sectors, of which 309 could be classified as

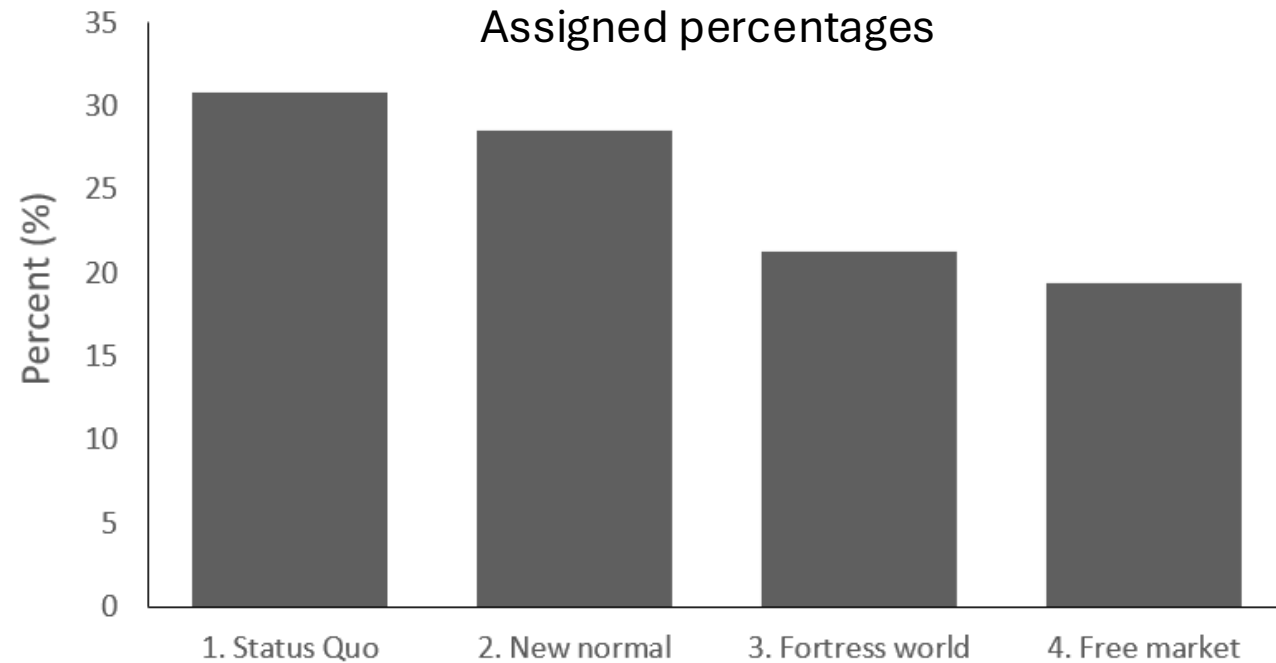
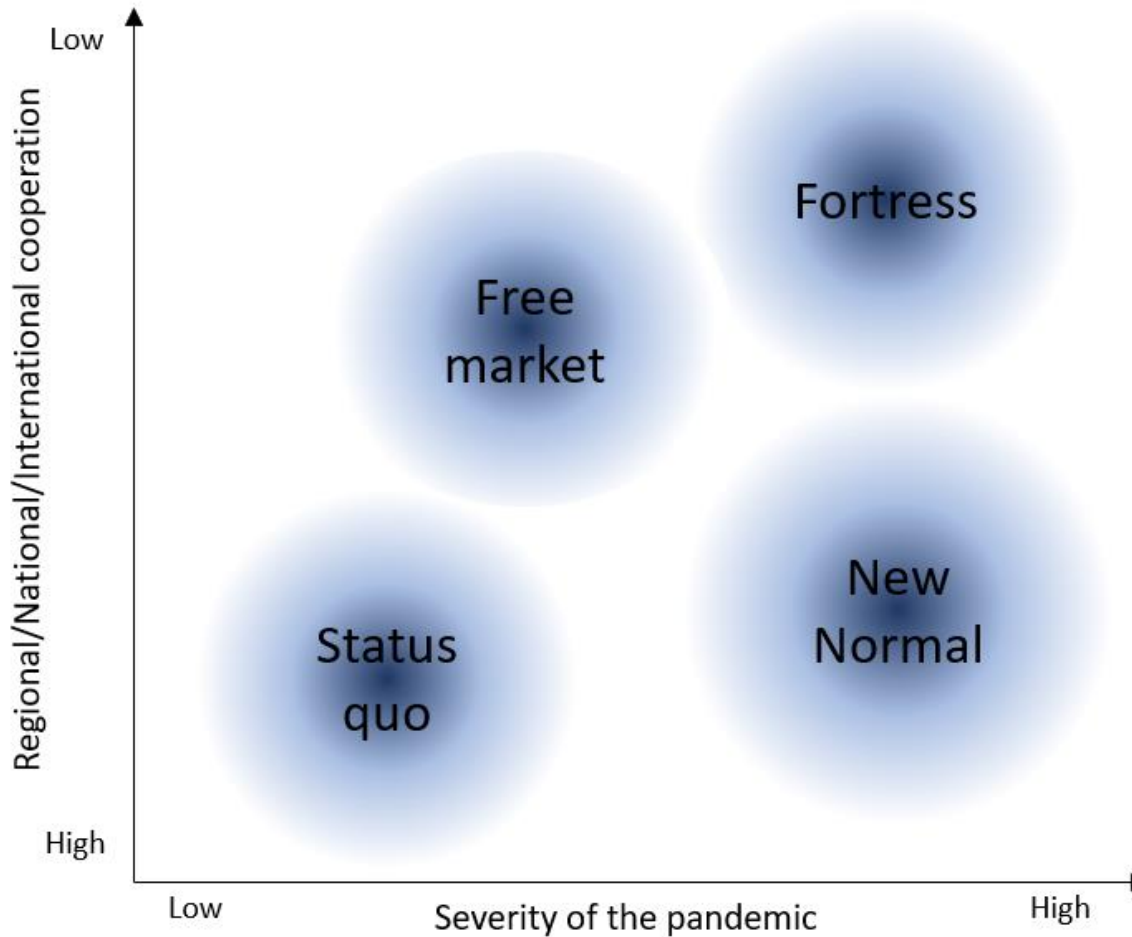
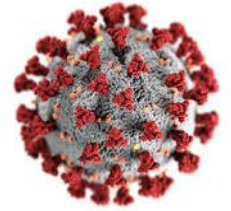
- (i) positive/increase,
- (ii) negative/decrease, or
- (iii) no change

Evaluation after 36 months

- positive or negative outcome observed correctly for 8/11 areas (73%)
- incorrectly for 2/11 (18%)
- mixed outcome was observed for 1/11 (9%)



Q3. The future: what world post-COVID?



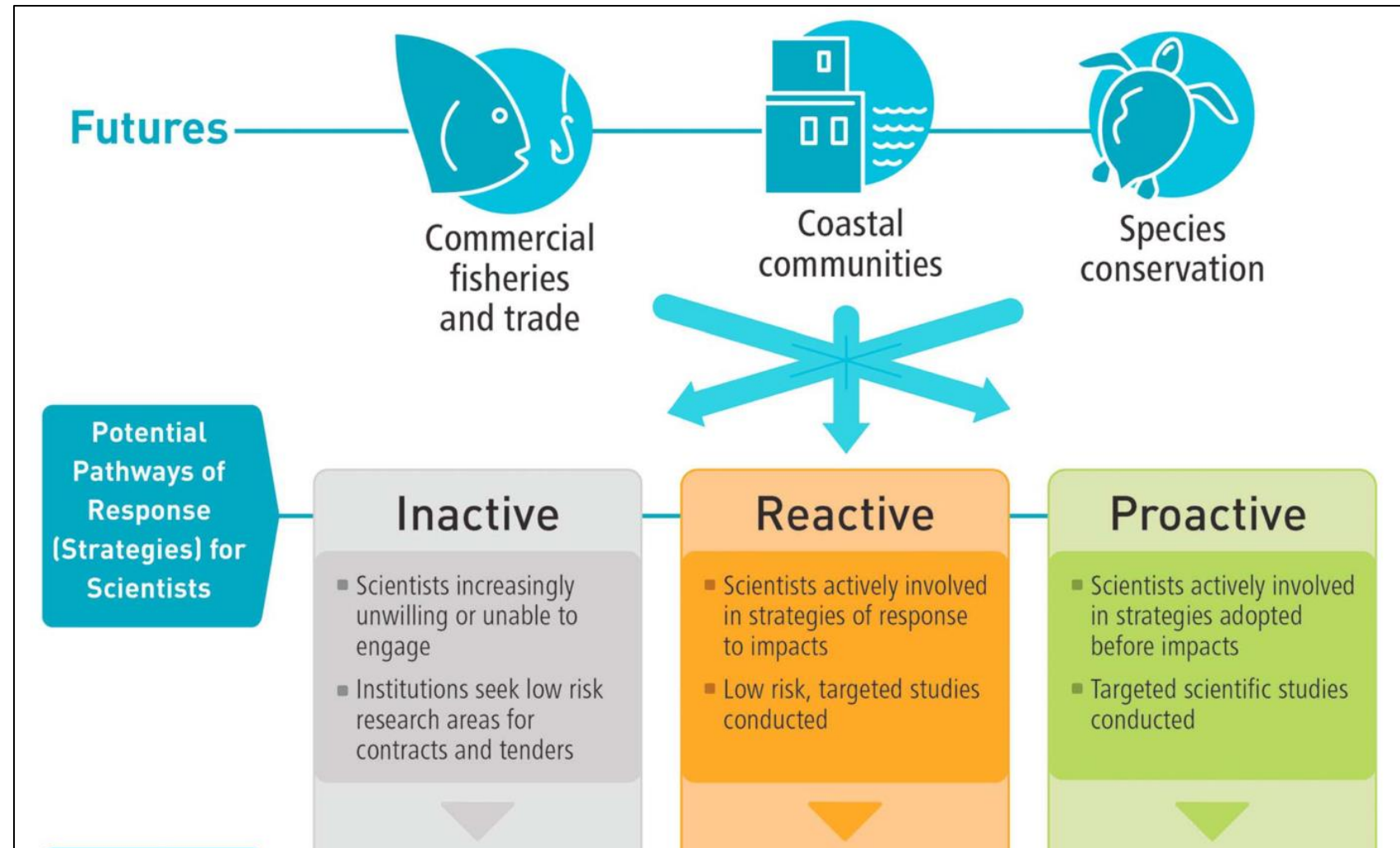
	Future Scenario			
	Status Quo	New Normal	Free Market	Fortress World
Science outcome	<ol style="list-style-type: none"> 1. Air travel resumes as before 2. Conferences resume with face-to-face the dominant mode. 3. Austerity measures in place due to government debt 4. Rationalisation of science agencies 	<ol style="list-style-type: none"> 1. Reduction in air travel due to changes in science norms 2. Conferences resume with remote attendance the dominant mode. 3. Increased science funding 4. Respect for science increases 5. Flexible working arrangements endure 	<ol style="list-style-type: none"> 1. Air travel resumes as before 2. Gig economy for science rises 3. Scientists employed by private sector, delivering both IP protected and public science output. 4. Inequity in resources for scientific research and training 	<ol style="list-style-type: none"> 1. Reduction in air travel due to government regulation 2. Scientific activity directed to priority activities 3. Collaboration restricted internationally. 4. Domestic collaboration increases and international barriers prevent it, 5. Privatisation of science, with IP protected output
Sector outcome – (e.g., Fisheries, Conservation, Marine Pollution)	<ol style="list-style-type: none"> 1. Single sector management practices resume. 2. Slow responses to global threats such as warming, pollution and coastal development. 	<ol style="list-style-type: none"> 1. Improved supply chains, with greater diversity, local, national and international elements balanced. 2. Integrated management begins to take hold. 3. Faster progress in response to local and global threats. 	<ol style="list-style-type: none"> 1. Fisheries supply chains become even more international and product is moved to the most valuable markets. 2. Use of marine space is dominated by the most valuable sector and smaller industries are squeezed out. 	<ol style="list-style-type: none"> 1. Food security research becomes prominent 2. Food security and resource extraction dominate over sustainable management 3. Energy generation and pollution rise as inefficient systems result.

Foresighting – Ocean Futures™

We are quite “good” at predicting the short and medium future in our areas of expertise.

What to do?

Use the future thinking of researchers in organisational planning and responses



Our strategic planning – walking the talk

- We are responding to some futures
 - Directed funding into AI/ML areas
 - Upskilling scientists in big data
 - Resisting the gig economy
 - Working on integrated management
 - Maintaining international collaborations
- Using approach with stakeholders wanting to prepare for uncertain future
 - Fisheries RD&E plan for Australia (2020-2030)

