**Defense questions and responses:**

Faculty:

1. Motivated work by saying there is no other framework for evaluating no-take reserves, but there are 100s of frameworks. How does your work fit into that context and any innovations we have done that these other frameworks are not addressing?

-We provide how to use the indicators and a tool for evaluating them, not just what the possible indicators are. We selected indicators for no-take only and that our client could possibly get data for.

2. What types of questions did we have in the survey and for which indicators were we trying to collect data for?

-Gaps for governance indicators and trying to fill these gaps. Used the Niparaja survey. Reduced the questions and focused on getting the perceptions of fishers. First: demographics, Second: community leaders, Third: fishers. Don’t get facts out of survey but perceptions of fishers.

3. Difference between DiD and BACI?

-Averaging everything for control and reserve site before and then average everything for control and reserve site after and them compare them. Get the estimate of the DiD but not the SE. We have estimate of DiD and SE around that coefficient, which informs us about how certain we are about that estimate.

4. How does the linear regression model account for potential interactions or effects of the MPA with other offshore actions? (Way too difficult to understand what he is trying to say here)

-Reserve and control sites are not right next to each other, so we don’t expect that the reserve affects the control site directly. However, if the reserve is super effective and there is lots of spillover, you would expect to see an effect in your control site. However, if there is still fishing pressure in those control sites, you would see that the trend in the reserve would still be greater than in the control site.

5. Set expectations of how indicators might change. Some things change rapidly and some may take decades to change. How deal with that?

-Some indicators may take time to change, didn’t have a way to say how fast would change. We focus on slope of line and emphasize that the manager should keep analyzing their reserve to see when/if a change occurs. Section on how to interpret results: Ex. If biomass doesn’t change, why could this be? If only been 2 years, may not see results=project our client is currently working on. They are trying to determine how long it takes to see an effect.

-Their response: You should describe which of these might be good leading indicators that should be paying most crucial attention to.

6. Given that this is a framework made for places that have a lot of data, how do you deal with teaching communities to collect data?

-COBI trains fishers. In guidebook, explains different methodologies of collecting data correctly.

7. Some things are responses and others are characteristics of the system that ought to affect those responses; how do we interpret the difference between these?

-Have numeric and descriptive indicators. In guidebook, mention that some indicators will respond to the effect of the reserve and some will hinder or benefit the reserve.

8. In the Shiny app, you showed the overall scores. How do you determine those scores? Do you think they are all of equal importance? Do all 29 indicators matter the same? Is there a reason to think that some are more important for the objective you are trying to achieve?

-Based on the percent of positive scores and everything is equally weighted. When select objectives on Shiny app, it automatically selects appropriate indicators for that objective. You can unselect ones that don’t think that are a good measure or select others if think they are a good measure. For now, we have each weighted equally because it might change for each community or reserve as the government might think some are more important than others.

9. If the indicators influence each other or are highly connected, it might be like double counting. Have you thought about the mechanisms of how each interacts with each other in assigning the score?

-Apply equal weights because the user might have a perverse incentive to put more weight on indicators that are doing good if we allow them to choose the weights. If you do it as X% are positive, how much you care about which ones are positive or negative is up to you. That information (the percent positive) is available in the report you download. We don’t assign a number like the Ocean Health Index that weights them.

-User would select their objective and that populates the right indicators for that objective-Costello.

10. How the user takes that information (results) and decides what to do next? How determine what are most effective things that should do next.

-Use the descriptive indicators for recommendations for improvement (no guaranteed causality though). Ex. Increase enforcement and/or seek legal recognition for reserve if see that biophysical and socioeconomic indicators aren’t being met.

Audience:

11. So many frameworks, big innovation is the shiny app to streamline things. How make recommendations from that is interesting. How do they select proper control sites?

-Our project comes in during the evaluation part (not implementation), but say in guidebook that need to have similar environmental characteristics as reserve but still has fishing pressure. That’s what our client does. They make sure aren’t comparing a rocky bottom to a sandy bottom, for example. In guidebook, we direct the user towards literature where they can learn about proper control site selection.

12. How to make sure communities understand the results and not just blindly follow what the scorecard tells them?

-The guidebook breaks down our analysis in a simple way so they can learn about what goes into our analysis, how it is performed, and interpret results.