

INCENTIVIZING TRANSPARENCY

Evaluating drivers for vessel tracking technology adoption in small-scale fisheries

BACKGROUND

Small-scale fisheries are integral to the livelihoods and food security for millions of people worldwide.

Despite their significance, there is a spatiotemporal data gap that limits our knowledge of their activities and hinders their sustainable management. Tracking technology provides a means to collect fishing activity data, which can improve transparency and other benefits to fishery management.

- Small-scale fisheries:**
- Provide 70% of the global catch for domestic human consumption
 - Employ nearly 90% of the world's estimated 120 million fishers.
 - Contribute to 50% of global catch



Figure 1. Fisher selling catch in Indonesia.

MOTIVATION

Less than 0.4% of small-scale fishing vessels utilize tracking technology. This leaves potential for fishers to be connected to tracking technology through a program that is incentive-compatible to their preferences.

This was the crux of our project that drove us to answer:

"How can a vessel tracking program be incentivised for small-scale fishers?"

RESEARCH QUESTIONS

- What are the fishers' preferences on tracking technology design?
- Are fishers willing to pay for a tracking technology, or do they have to be paid?
- Do individual specific factors affect the willingness to pay?

KEY FINDINGS

Our findings indicate that given proper incentives, a majority of small-scale fishers would be willing to participate in and pay for a vessel tracking program. We also found that individual fisher characteristics influence willingness to pay more than tracking technology features.

SAFETY IS IMPORTANT

- Safety is the most important attribute
- Privacy is preferred, but not significant
- Government and fisher owned data is preferred over industry and public owned

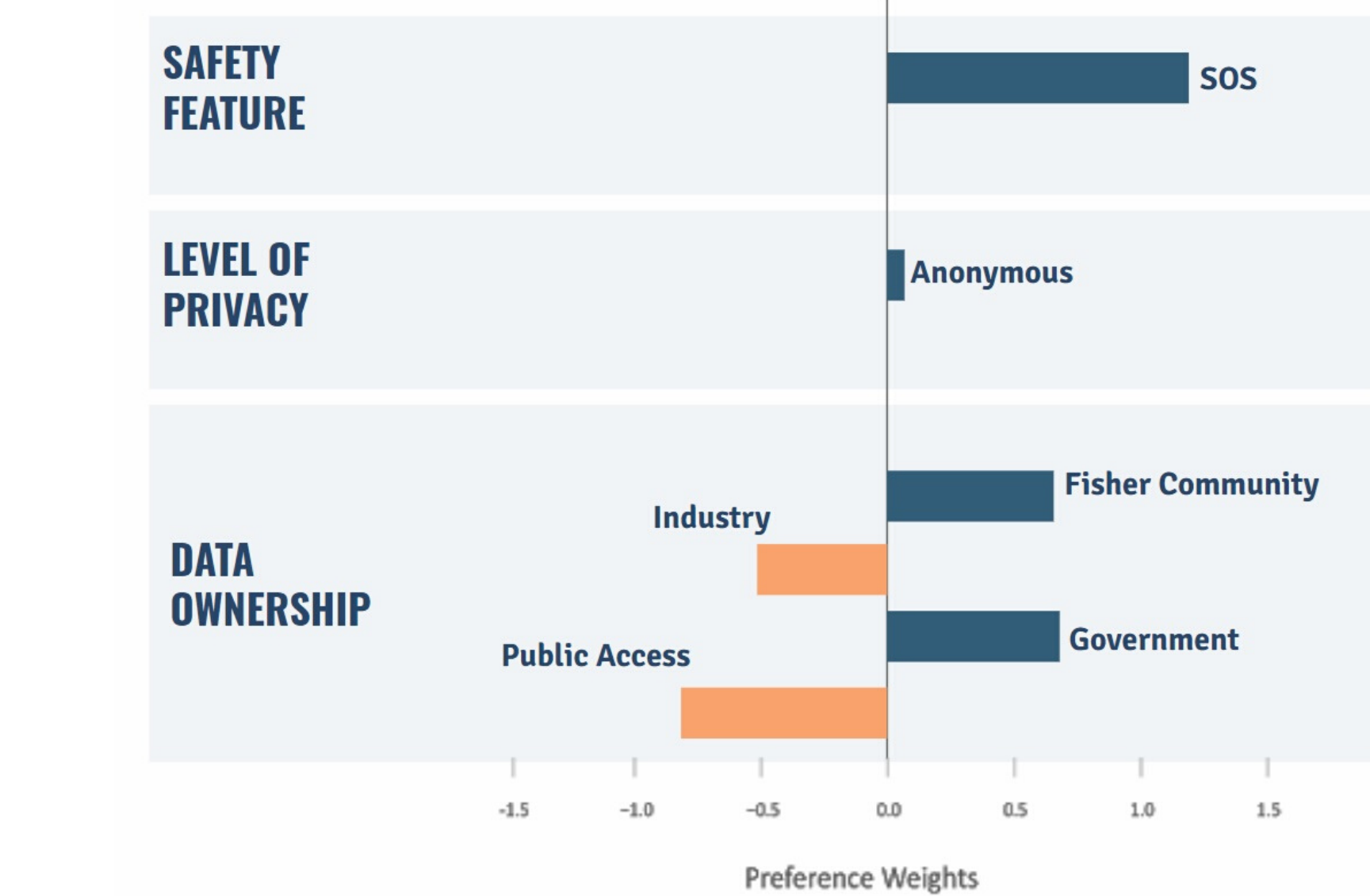


Figure 2. Conditional logit results. On the x-axis, negative numbers indicate features that are not preferred, with larger numbers indicating strong non-preference. Positive numbers indicate features that are preferred, with larger numbers indicating stronger preference. On the y-axis are the attributes from the choice experiment.

FISHERS ARE WILLING TO BE TRACKED

89% of fishers are willing to participate and willing to pay an average of \$USD 2.76/month

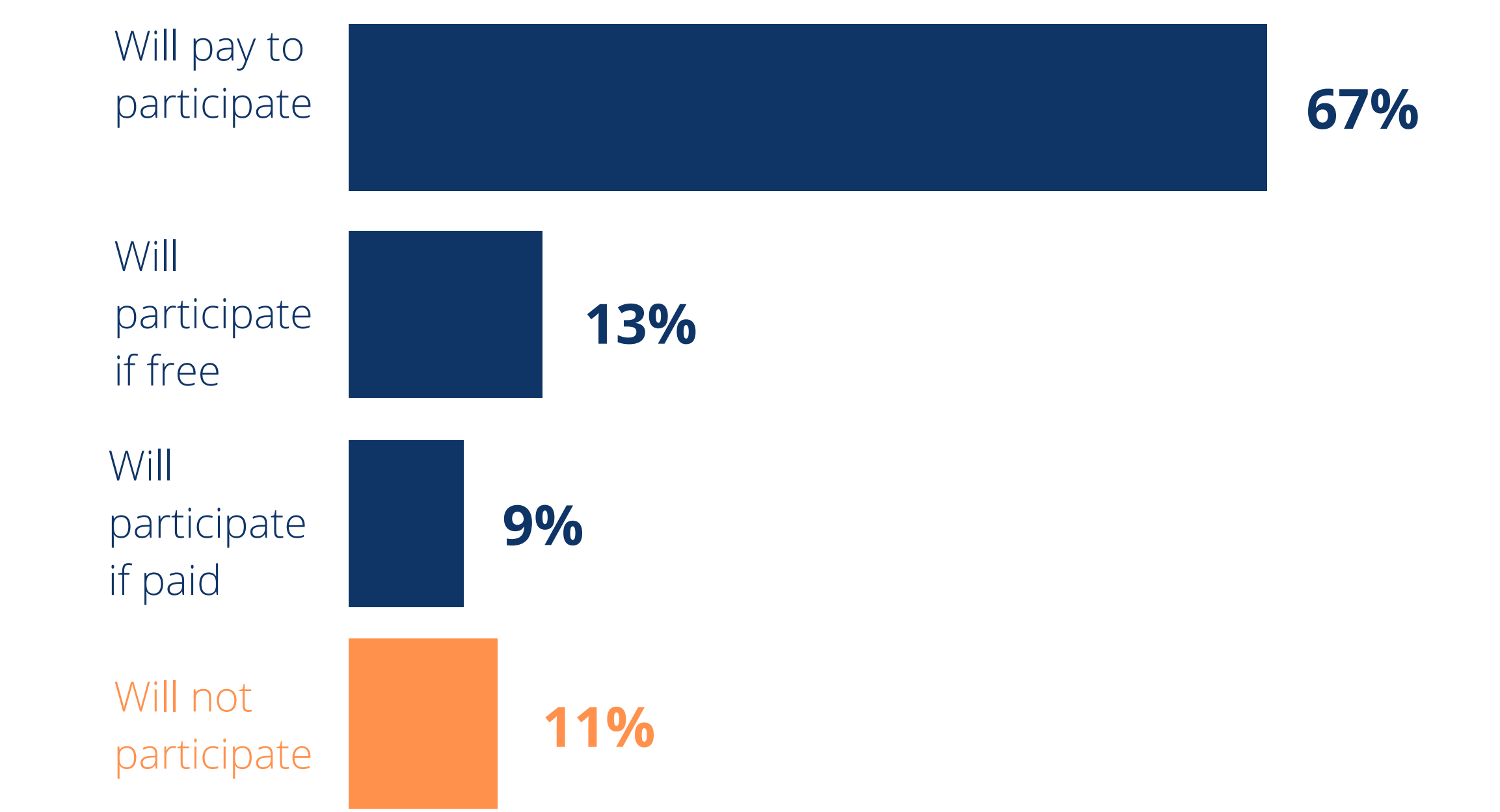


Figure 3. Distribution of willingness to pay. Percentage of survey of respondents who fell into each willingness to pay category. The 11% of participants highlighted in orange were unwilling to participate in a vessel tracking program regardless of the payment amount offered.

CHARACTERISTICS MATTER

Education, use of technology, and fishery problems affect willingness to pay

Willingness to pay for a vessel tracking device increased with:

- Higher levels of education
- Higher exposure to fishing technology
- Perception of corruption problems in fishery (when compared pollution, extreme weather, and illegal fishing)

FISHERS WANT TRACKING DATA

Top three benefits fishers want from a tracker:

- On-board electrical power for charging cell phones and other electronics.
- Detailed tracking information for your vessel (e.g. drop a pin at specific location).
- Data to help obtain sustainable seafood certification.

APPROACH

We designed a survey to uncover fisher preferences for a vessel monitoring program that included a dual response choice experiment, bidding game, and questionnaire. Respondents were first asked to choose their preferred program out of two offered packages, then were given a choice to opt out. Those that kept their package were asked how much they were willing to pay for it and those that opted out were asked how much they wanted to be paid before they would accept. Responses were used to create two models to help answer our research questions.



- Sample population: Small-scale fishers (n = 211)
- Location: Mexico & Indonesia

Attribute	# of Levels	Levels
SAFETY FEATURE	2	SOS No SOS
LEVEL OF PRIVACY	2	Anonymous Not Anonymous
DATA OWNERSHIP	4	Fisher Community Industry Government Public Access

Table 1. Dual response choice experiment design. Vessel monitoring programs were designed as packages composed of three attributes: safety, privacy, and data ownership. Each package contained one level from each attribute, creating 16 unique packages.

NEXT STEPS

Continue to explore preferences for vessel tracking programs among representative samples of small-scale fishers.

Evaluate more measures and implement more surveys in a variety of villages to help create a more representative dataset that can lead to a more refined model. The new model can expand to include different variables, such as levels of trust, that were not fully analyzed in our model.

- RECOMMENDATIONS**
- Design vessel tracking technology with SOS signal capability.
 - Consider tailoring payments to the characteristics of each village.
 - Create and implement a randomized controlled trial.

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