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Non-Attendance to Attribute Non-Attendance in Stated Preference Research

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Abstract. Stated preference methods are often used to estimate benefits and costs for environmental and natural resource policy analysis, commonly relying on choice experiment questions in which respondents evaluate hypothetical scenarios with varying attributes. These applications generally assume that respondents pay attention to all attributes when making choices. However, attribute non-attendance, in which individuals ignore one or more attributes, may affect model estimates and willingness to pay. This paper critically examines the current state of research on attribute non-attendance in stated preference studies. We review the recent stated preference research to document when and how attribute non-attendance is incorporated in empirical applications. We then illustrate the implications of attribute non-attendance using marine resource choice experiment data in two case studies. We find differences in willingness to pay estimates between naïve and attribute non-attendance models in both.

Key words: Attribute non-attendance, stated preferences, willingness to pay

JEL Codes: Q51

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Introduction

Stated preference (SP) methods can be used to provide estimates of benefits and costs for policy analysis. In the choice experiment question format, respondents answer a series of questions about how they would behave in hypothetical situations. For example, respondents might be asked if they would vote in favor of a policy that improved the environment but also raised taxes (to pay for the policy). The attributes, the amount of the tax and the amount of the change in environmental quality, are varied across choice scenarios. In another example, respondents might be asked about their preferences for a recreational fishing trip. The cost of the trip and regulations on catch are varied across choice scenarios. With both types of questions researchers typically assume that respondents pay full attention to the variation in choice experiment attributes when making these voting or trip decisions.

In 2020, Marine Resource Economics (MRE) published a special issue on attribute non-attendance (Lew and Whitehead, 2020a: "This special issue of Marine Resource Economics focuses on attribute non-attendance (ANA) in stated preference research. ANA occurs when individuals ignore one or more attributes in stated preference choice experiment (CE) questions. If present but unaddressed, ANA can lead to biased model coefficients and welfare estimates (p. 195)." Lew and Whitehead (2020a) found that articles using ANA methods had remained constant from 2013 to 2019 but citations had grown each year. This suggested that ANA was receiving greater recognition in the literature but not becoming a part of standard SP empirical research. The goal of the special issue was to raise awareness about ANA, the problems that might arise when ignoring it and encourage development of improved ANA methods.

The purpose of this paper is to consider the state of the science and encourage a future research agenda on ANA methods in SP non-market valuation. It has three sections. First, we review the recent (2021-2025) SP literature in six top environmental and resource economics journals. We report on the number of SP articles that employ choice experiment data that would support ANA analysis, the number that mention ANA, the number that report ANA robustness checks, the number that use ANA empirical methods and a summary of results for those using ANA. We note that the goals of the MRE special issue have not been achieved, i.e., ANA has not been adopted as a standard robustness check in environmental and resource valuation research.

Second, we provide an illustration of the gains from using ANA methods with two marine resource SP data sets. In the first case study, we use previously unexploited data. Hindsley, Landry, and Morgan (2020), in the MRE special issue on ANA, use site intercept choice experiment data and consider stated ANA in combination with a hypothetical bias certainty correction. They find that stated preference mitigation does not significantly affect willingness to pay estimates. We use a different data set from the same study using the same survey and pursue a simpler, but similar, investigation (Hindsley and Morgan 2014). Similarly, we find evidence that stated ANA inflates the standard error of the cost coefficient but it has no effect on willingness to pay. We find evidence of ANA in an inferred ANA model and changes in willingness to pay estimates.

In the MRE special issue, Petrolia and Hwang (2020) re-estimated their own published data with inferred ANA methods and found significant differences between the published results and the results from the ANA models. We pursue a similar exercise in the second case study. We conduct an ex-post re-estimation of a National Marine Fisheries Service choice experiment from

Liese and Carter (2017). We find significant ANA in an inferred ANA model and show that ignoring ANA leads to bias in willingness to pay estimates. These inferred methods can be used with any SP data set with repeated observations. This case study illustrates why research should proceed with re-estimation of past SP studies in an effort to determine the bias in ignoring ANA throughout the literature

In the concluding section we recognize that the goals of the MRE special issue on ANA have not been reached. We speculate on and debunk potential reasons for non-attendance to attribute non-attendance. We also provide suggestions for future research. In particular, we emphasize that SP research should almost always include some discussion of efforts to assess and adjust for ANA. When this practice is not undertaken, data should be shared with other researchers so that efforts to re-estimate results with inferred ANA methods can be made.

The ANA Literature

The ANA literature includes two primary approaches for identifying and accounting for ANA behavior in SP studies: the stated and inferred ANA approaches (Lew and Whitehead 2020b). In the stated ANA approach, survey respondents provide self-reported information about attributes that have been ignored or given less than full attention. In one empirical approach, these statements are used to estimate different parameters for those who pay attention to variation in the attributes and those who do not. In the inferred ANA approach, econometric models are used to probabilistically uncover ANA behavior from the data. There have been three systematic reviews of the ANA literature that have appeared since 2020. Each of these find significant non-attendance behavior in SP data with potential impacts on willingness to pay estimates.

Lew and Whitehead (2020a), in the introduction to the MRE Special Issue on ANA, found 86 empirical articles with a focus on ANA during the years 2009 and 2019.[1] Thirty-seven of these studies were in the field of environmental and resource economics. In nearly all of these 37 empirical studies, ANA affects the size of regression coefficients. ANA-adjusted coefficients are typically further away from zero, since ignoring the attribute is generally considered a utility parameter equal to zero. The authors identified 10 articles that provide clean WTP comparisons and find that ignoring ANA leads to upwardly-biased WTP estimates in naïve models.

Gonçalves, Lourenço-Gomes, and Pinto (2022) identified 20 environmental valuation ANA studies published between 2005 and 2021. They found that the cost attribute was ignored by between 60% and 90% of respondents. In 45% of these studies the ANA model generated better model fit and willingness to pay decreases of approximately 50%, relative to naïve models. Twenty percent of the studies produced mixed results and 20% found no differences relative to naïve models.

Petrolia and Hwang (undated) review 32 articles focused on ANA over the years 2008 to 2023. They quantify the shares of respondents who fully attend to all attributes, who do not attend to at least one non-cost attribute and do not attend to the cost attribute. The average share of full attendance is 47% with a range of 6% to 100%. The average share of those not attending to at least one non-cost attribute is 42% (0% to 85%). The average share of those not attending to the cost attribute is 30% (0% to 78%).

These studies show that, when researchers do not ignore the possibility of non-attendance, ANA is pervasive in the literature. Next, we consider how often researchers ignore ANA. We review the post-MRE special issue SP literature (2021-2025) in six top environmental

and resource economics journals: Environmental and Resource Economics, Journal of the Association of Environmental and Resource Economists, Journal of Environmental Economics and Management, Land Economics, Marine Resource Economics and Resource and Energy Economics. Using the Web of Science, we search on the journal name then search for "choice experiment" within the journal. We read the abstracts and then decide whether the study data would support analysis with ANA methods. We double checked this list against a Google Scholar advanced search on "choice experiment" published in the journal. We then searched for "non-attendance", "nonattendance" and "attendance" within these articles. When the keywords appeared we read the relevant sections of the articles. When the keywords did not appear we skimmed the article to determine if anything was missed.

We then classified the extent of ANA included in the article. If an article only mentions the concept of ANA then it is categorized as "mentioned". If the article reports responses to stated ANA questions or a qualitative description of further results with ANA empirical models then the study is categorized as "robustness check". If the article includes any incorporation of ANA into the empirical analysis ranging from exclusion of units of analysis that exhibit ANA to explicit ANA modelling in tables in the text, then the article is categorized as "analysis".

The result of this review appears in Table 1. We identified 70 choice experiment articles in these six journals from 2021 to 2025.[2] Twenty-eight of the articles appear in Land Economics, 14 are in Environmental and Resource Economics, 9 appear in Resource and Energy Economics, 7 appear in the Journal of Environmental Economics and Management and 6 in the Journal of the Association of Environmental and Resource Economists. Three-fourths of these studies do not mention ANA. Fourteen percent mention ANA, 13% use ANA as a robustness check and only

8% conduct an ANA analysis.

Of the five studies categorized as conducting an ANA analysis, one dropped ANA respondents from the sample and one used ANA variables to explain risk perceptions. In these two studies it is not clear how, or if, accounting for ANA affected willingness to pay estimates. Vossler et al. (2025) report stated ANA and a (non-ANA) latent class model in an appendix. They estimate 5-class latent class models for samples with and without an "independence script". They find that 2 classes in the no "independence script" sample have statistically insignificant coefficients on the cost attribute (a total class probability of 27%). However, ANA constraints are not imposed and tested in these models. And while these small and statistically insignificant coefficients will have implications for WTP estimates a clean comparison between the latent class models and naïve models are not made.

Only two of these reviewed SP studies used ANA methods as a main component of the empirical analysis. Li and Ando (2023) estimate an equality constrained latent class (ECLC) inferred ANA model and classify respondents into four classes. The largest class is when the cost variable is unattended, 40%. The scope non-attendance class probability is 14% and the cost and scope non-attendance class probability is 11%. Marginal willingness to pay estimates are biased upwards in a naïve mixed logit model. Whitehead, Howard and Cornicelli (2025) argue that cost ANA can be interpreted as hypothetical bias and scope ANA can be interpreted as insensitivity to scope. They employ an ECLC inferred ANA model and find the cost non-attendance class probability is 14%, the scope non-attendance class probability is 31% and the cost and scope non-attendance class probability is 11%. Accounting for ANA decreases willingness to pay at low scope levels and increases willingness to pay at high scope levels due to a higher scope

elasticity, relative to the naïve model.

Two Empirical Examples

In this section we present two empirical ANA analyses with the ECLC inferred ANA model. The first is an example of an SP referendum voting choice experiment. The second example is a choice experiment for recreation trips. In the typical latent class model different coefficient vectors are estimated for each class of respondent. In an ECLC model, a potential 2^k latent classes can be estimated, where k equals the number of attributes, and various combinations of zero coefficient ANA constraints can be imposed. Non-zero coefficients are constrained across class. Class probabilities provide clues about the extent of ANA. Trial and error can lead to a best fit model which is found statistically with the minimum AIC statistic, among others.

In the two examples that follow we pursue a simpler approach. We employ two classes, a full preservation class and a non-attendance class. In the "full preservation" class the coefficients on the attributes are estimated. In the non-attendance class all of the coefficients are constrained to be equal to zero (i.e., respondents who did not pay attention to the cost and scope attributes). Malone and Lusk (2018) argue that the non-attendance class probability provides an ANA diagnostic that is straightforward to use in most studies. We do not claim that the models presented are optimal, but our presentation represents one of the first steps in an inferred ANA analysis and, even in these simple models, common, if not standard, results from the ANA empirical literature are found.

Sarasota Bay Estuary

The purpose of the Sarasota Bay study was to provide economic values for environmental resources of the estuary and its adjacent barrier islands (Hindsley and Morgan 2014). An internet panel survey captured the information related to regional resource users' and non-users' preferences. The internet panel survey utilizes a survey design with two strata of (1) residents of Manatee and Sarasota Counties; and (2) residents of those counties adjacent to Manatee and Sarasota Counties (Pinellas, Hillsborough, Polk, Hardee, Desoto, and Charlotte). The survey was developed in collaboration with an online survey software group, Online Survey Solutions, Inc (OSS). The sample consists of 906 survey respondents.

The choice experiment investigates natural resource management options using six attributes: wetland restoration, oyster bed restoration, increased sea grass coverage, enhanced artificial reefs, ecological parks with estuarine access, and a one-time increase in tax payments. The initial level of each program attribute is described as the status quo condition, which represents an estimate of current resources in the Sarasota Bay Estuary. Within each choice set, respondents were given a choice between current conditions and two management alternatives with improved environmental conditions.

In each choice alternative, respondents were given one level from five potential levels of each of the attributes. The status quo option maintains the current level of coastal wetlands which is 9,596 acres. The two alternative management options would create and restore wetlands for five years at either 0, 6, 12, 18 or 24 acres per year. The status quo for oyster beds is 1,596 acres. The two alternative management options would create and restore oyster beds over a five-year period at either 0, 0.5, 1, 2 or 4 acres per year. The status quo for Sarasota Bay seagrass beds is

12,641 acres. The two alternative management options would improve water quality conditions so that seagrass beds would increase over a five-year period at either 0, 20, 40, 60 or 80 acres per year. The status quo of artificial reef domes is 3,000. The two alternative management options would enhance the number of artificial reef domes over a five-year period at either 0, 20, 40, 60, or 80 reef domes per year. The status quo of ecological parks with estuarine access is 38 parks. The two alternative management options would create new ecological parks with public access over a five-year period at either 0, 1, 2, 3, or 4 additional parks.

The payment vehicle was a compulsory, one-time increase in local, state, and federal tax payments for all households. The status quo was provided at zero additional cost, while the tax payment associated with the two alternatives varied at $5, $15, $50, $100, or $350 per household. Respondents were asked to vote for the management alternative that they most prefer for the Sarasota Bay Estuary.

In Table 2 we present the naïve conditional logit model (with standard errors clustered at the respondent level).[3] The tax coefficient is negative and statistically significant and the attribute coefficients are all positive and statistically significant, as expected. In the ECLC inferred ANA model the full preservation class has a probability of 76% and the non-attendance class has a probability of 24%.[4] The AIC statistic is lower for the inferred ANA model, indicating that it is statistically preferred. The sign and significance of the coefficient estimates are similar qualitatively to those in the naïve model. The tax coefficient is 50% larger in absolute value and the attribute coefficients are between 20% and 28% larger in the inferred ANA model. In addition, the coefficients are estimated with greater statistical precision.

We construct marginal willingness to pay estimates in the standard way -- as the negative

of the ratio between the attribute and tax coefficients (Table 3). The difference in the magnitude of the coefficient estimates ensures that willingness to pay estimates are biased upwards in the naïve model. When respondents ignore attributes they place a zero value on its impact on utility. This zero value biases coefficients towards zero in naïve models. The willingness to pay estimates from the inferred ANA model are between 15% and 20% lower than those from the naïve model.

South Atlantic Charter Fishing Boat Trips

We next present an empirical application in the context of outdoor recreation. Liese and Carter (2017) estimate anglers' WTP for changes in saltwater fishing regulations in the South Atlantic using a choice experiment focused on bag-limit regulations. The sample is from addresses of anglers who were intercepted during the 2009 Marine Recreational Information Program (MRIP) Access Point Angler Interview Survey in Georgia, North Carolina, and South Carolina. The SP survey was administered by mail.

The survey presented respondents with a series of hypothetical fishing trip choices in which the attributes described regulatory outcomes and other characteristics of the trip. Each choice task asked anglers to choose between alternative regulatory scenarios characterized by different bag limits for dolphinfish (5 or 10 fish), red snapper (0, 1, 2 or 3 fish), an aggregate snapper species (5 or 10 fish), aggregate grouper species (0, 2, 4 or 6 fish), and king mackerel (0, 1, 2 or 3 fish). Bag limits for each species were framed as the maximum number of fish an angler would be allowed to keep on a trip. The other trip characteristics were the length of the trip (full or half day), the vessel size (40 or 50 foot length), and whether the captain's reputation was known. The cost attribute was the charter fee: \$400, \$600, \$800, \$1000, \$1200, \$1400).[5] Each

choice task required respondents to select their preferred trip of two alternatives.

Liese and Carter (2017) surveyed both charter boat and private boat anglers but we use the charter boat data (n=485). The number of choice sets answered by respondents ranged from 1 to 6 and averaged 5.41.

In Table 4 we present the naïve conditional logit model (with standard errors clustered at the respondent level). The fee coefficient is negative and statistically significant and the attribute coefficients are all positive and statistically significant. The full preservation class ECLC inferred ANA Model has a probability of 55% and the non-attendance class has a probability of 45%, indicating more ANA behavior relative to the Sarasota Bay Estuary case study. The AIC statistic is again lower for the inferred ANA model, indicating that it is statistically preferred. The sign and significance of the coefficient estimates in the ECLC model is similar qualitatively to those in the naïve model. The tax coefficient is 57% larger in absolute value and the all but one of the attribute coefficients are between 25% and 116% larger. The vessel size attribute is no different across models. The coefficients are estimated with greater statistical precision in the naïve model.

The marginal willingness to pay estimates are presented in Table 5. The willingness to pay estimates for bag limit changes from the inferred ANA model are between 14% and 27% larger than those from the naïve model, except for king mackerel which is 26% lower. This is due to the large increases in the bag limit coefficient estimates in the inferred ANA model. The full day trip willingness to pay is 20% lower in the inferred ANA model and the vessel size willingness to pay becomes statistically insignificant. The willingness to pay for a captain with a known reputation is 38% higher in the inferred ANA model.

Hindsley et al. (2023) use similar National Marine Fisheries Service SP data in a joint revealed preference (RP) and SP estimation exercise. This exercise shows a wide divergence between the willingness to pay estimates from the RP and SP data. Employing inferred ANA methods with the SP data narrows this divergence. Combining RP and SP data, while addressing ANA in the SP cost parameter, offers considerable advantages in producing more valid measures for allocation and other types of policy analysis.[6]

Conclusions

The goals of the MRE special issue on ANA have not been reached. In this paper we have shown that the SP research community has come to mostly ignore the issue of ANA in the period after the MRE special issue. Only 2 of 70 choice experiment studies in six top environmental and resource economics journals during the past 5 years seriously address the issue of ANA in the analysis of the data. Each of these studies finds that mitigation of ANA has implications for willingness to pay estimates. It is our assertion that each of the other 68 studies should have more explicitly addressed ANA and its effects on willingness to pay estimates in some way. Robustness checks in empirical economic research has become standard and ANA robustness checks should become standard in SP research.[7]

In the reviewed studies that mention ANA as robustness checks, no evidence is presented that ANA has a null effect on willingness to pay estimates. In the reviewed studies that do not mention ANA or mention ANA without serious consideration of it, no evidence is presented that ANA has no impact the empirical analysis. At least one of the studies that did not mention ANA included stated ANA questions in the survey instrument, so the data may be there for many studies. Plus, these studies could always use inferred ANA methods. The reasons are not clear

why these studies do not employ ANA methods. It could be that ANA modelling was attempted but the effects were small or, as we suspect, the potential impact of ANA was naively ignored.

We know of no clear reasons why the possibility of ANA is being ignored by the SP research community, but we can speculate. Inattention to ANA may be considered optional for five potential reasons.

1. Many researchers, editors and reviewers may view ANA as one of several optional robustness checks rather than a requirement for SP data analysis. This perception has reduced incentives for authors to routinely incorporate ANA. As we have shown here, in our review of reviews and two case studies, there is evidence that attention to ANA has significant implications for willingness to pay estimates and should be explicitly addressed in every choice experiment study.
2. Empirically, ANA can be confounded with preference heterogeneity. Latent class ANA models can capture the variance that might otherwise be captured by mixed logit models and researchers may question whether estimated classes truly represent non-attendance. But, the converse is not implied. Preference heterogeneity models do not explicitly capture ANA.[8] When confounding of preference heterogeneity is a concern, researchers can turn to latent class mixed logit models (Rollins 2023).
3. Stated ANA depends on respondents accurately reporting which attributes they ignored. These self-reports may suffer from measurement error and endogeneity. When this is a concern researchers can turn to endogenous stated ANA models where the ANA behavior is modeled as part of the decision process (Lew 2024).
4. ANA estimation models require more effort relative to a standard mixed logit model. For

many applied papers, the cost of estimation may be viewed as greater than the benefits for some researchers. We believe the opposite is true.

5. Researchers, editors and reviewers may feel that attribute attention has improved through various scripts, reminders, certainty scales, consequentiality treatments and et cetera.[9] These ex-ante survey treatments may be considered as substitutes for modeling non-attendance ex-post by many. This presumption is misguided given that ex-ante treatments and ex-post analysis address different survey behaviors.

We strongly encourage SP researchers to explicitly use ANA methods. This is especially true when willingness to pay estimates are used for policy analysis. And, since most policy analysis is conducted with benefit transfer methods, any research study could become part of a meta-analysis and used for policy (Petrolia et al. 2021). In the absence of evidence that past SP studies do not suffer from ANA, we can only assume that the bias inherent in naïve willingness to pay estimates is part of the policy process. Beyond this exhortation, we suggest continued comparisons of stated and inferred ANA behavior in stated preference data to better understand the extent to which ANA reflects hypothetical bias and insensitivity to scope. We also recommend studies that address measurement error and endogeneity in stated ANA models and incorporation of preference heterogeneity in inferred ANA models. More technical suggestions for future research can be found in Lew and Whitehead (2020b).

Table 1. Inclusion of attribute non-attendance (ANA) in choice experiment studies in 5 top environmental and resource economics journals: 2021-2025

Journal	None	Mentioned	Robustness Check	Analysis
ERE	10	1	3	0
JAERE	1	1	1	3
JEEM	3	3	1	0
LAND	23	1	2	2
MRE	5	1	0	0
REE	6	2	1	0
Total	48	9	8	5
Percentage	75%	14%	13%	8%

Note: ERE is Environmental and Resource Economics, JAERE is the Journal of the Association of Environmental and Resource Economics, JEEM is the Journal of Environmental Economics and Management, LAND is Land Economics and REE is Resource and Energy Economics. The "Mentioned" category indicates that the concept of ANA is mentioned in the text of the article. The "Robustness check" category includes reporting of responses to stated ANA questions and qualitative description of ANA models. The "Analysis" category includes any incorporation of ANA into the empirical analysis including exclusion of units of analysis that exhibit ANA and explicit ANA modelling in tables in the text, footnotes and/or appendices.

Table 2. Sarasota Bay Logit Models

	Naïve Model			Inferred ANA Model		
	Coeff.	SE	t-stat	Coeff.	SE	t-stat
Tax	-0.00065	0.00018	-3.54	-0.00098	0.0002	-4.30
Wetlands	0.01504	0.00088	17.04	0.01809	0.0006	31.31
Oyster beds	0.06441	0.00499	12.92	0.08054	0.0036	22.67
Seagrass acres	0.00326	0.00025	13.00	0.00411	0.0002	23.03
Artifical reefs	0.00304	0.00026	11.65	0.00390	0.0002	22.16
Ecological park	0.08035	0.00574	14.00	0.09939	0.0035	28.04
ASC	3.26186	0.23231	14.04	2.61839	0.1334	19.63
				Probability	SE	t-stat
Full preservation				0.74	0.02	43.65
Non-attendance				0.26	0.02	15.42
LL(B)	-3760.99			-3150.11		
LL(0)	-3945.30			-3981.37		
AIC	7536			6316		
Individuals	906			906		
Observations	4			4		
Sample	3624			3624		

Table 3. Sarasota Bay Marginal Willingness to Pay

	Naïve Model			Inferred ANA Model		
Attribute	WTP	SE	t-stat	WTP	SE	t-stat
Wetlands	23.19	6.46	3.59	18.45	4.29	4.30
Oyster beds	99.36	27.85	3.57	82.16	19.35	4.25
Seagrass acres	5.02	1.40	3.58	4.20	0.96	4.36
Artifical reefs	4.69	1.31	3.58	3.98	0.94	4.24
Ecological park	123.94	34.47	3.60	101.40	23.93	4.24

Table 4. Charter Boat Trip Logit Models

	Naïve Model			Inferred ANA Model		
	Coeff.	SE	t-stat	Coeff.	SE	t-stat
FEE	-0.0026	0.0005	-5.76	-0.0041	0.0009	-4.36
FULLDAY	1.1120	0.2936	3.79	1.3919	0.5912	2.35
FT50	0.0921	0.0600	1.54	0.0884	0.1192	0.74
KNOWN	0.9768	0.1038	9.41	2.1127	0.2932	7.20
DOLPHIN	0.0499	0.0079	6.33	0.0896	0.0186	4.82
RED	0.0548	0.0192	2.86	0.1010	0.0439	2.30
GROUPER	0.0871	0.0118	7.39	0.1742	0.0304	5.74
KING	0.0580	0.0186	3.12	0.0678	0.0406	1.67
				Probability	SE	t-stat
Full preservation				0.55	0.06	9.42
Non-attendance				0.45	0.06	7.83
LL(B)	-1591.10			-1569.85		
LL(0)	-1731.17			-1732.17		
AIC	3198.2			3157.7		
Individuals	485			485		
Observations (mean)	5.15			5.15		
Sample	4998			4998		

Table 5. Charter Boat Trip Marginal Willingness to Pay

	Naïve Model			Inferred ANA Model		
Attribute	WTP	SE	t-stat	WTP	SE	t-stat
FULLDAY	423.93	51.16	8.29	338.02	79.28	4.26
FT50	35.10	20.19	1.74	21.46	26.06	0.82
KNOWN	372.41	38.58	9.65	513.06	85.04	6.03
DOLPHIN	19.03	4.68	4.07	21.77	6.61	3.29
RED	20.89	8.05	2.60	24.53	11.82	2.08
GROUPER	33.19	7.35	4.52	42.29	12.15	3.48
KING	22.11	8.15	2.71	16.46	10.44	1.58

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Endnotes

[1] Seventy-six additional articles mentioned ANA in the text.

[2] Using the same methods we have identified 201 potential choice experiment studies in the American Journal of Agricultural Economics (23), Ecological Economics (124), Energy Economics (33), and Journal of Environmental Economics and Policy (21).

[3] The models are estimated using NLOGIT 6.0.

[4] The mean stated ANA responses range from 70% to 80% across attributes.

[5] Liese and Carter (2017) divide the charter fee by fishing party size but we estimate the logit models at the fee levels.

[6] Lopes and Whitehead (2025) present an analysis of jointly estimating RP and SP data with a subset of the Liese and Carter (2017). The analysis with ANA mitigation can be found in Hindsley et al. (2018).

[7] Note that the studies we have characterized as providing robustness checks in Table 1 are not providing the type of thorough robustness checks that are found in other areas of empirical economics.

[8] This is especially true when researchers ignore the distributions of coefficients in mixed logit models and estimate willingness to pay with the means of the coefficients, which is mostly the case.

[9] The checklist of perceived requirements for a valid SP study is long.