Compendium of Practitioner Perspectives for Resources For the Future Workshop on Sample Representativeness. October 2, 2006

August 17, 2007

DRAFT: DO NOT CITE OR QUOTE

Compiled by David A. Evans and Alan Krupnick*
Resources for the Future

Practitioner Survey Template Written by David A. Evans and Alan Krupnick

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[1] CV: Contingent Valuation, CE: Choice Experiment/Conjoint, Ref: Referendum

Introduction

On October 2, 2006, Resources for the Future hosted a day-long workshop bringing together experts in survey methodology, statisticians and stated preference surveys practitioners to share their knowledge, insights and experiences regarding assuring sample representativeness in stated preference surveys. Participants also included interested government representatives.

In preparation for this workshop we asked practitioners of recently performed or pending high profile stated preference surveys to summarize and describe their studies and results, and how they tested for and addressed any biases in their sample. To maintain consistency in the descriptions of the surveys, the practitioners were provided a template along with instructions for completing the template. We received full cooperation from the participants that we asked to complete these templates.

None of the summaries have been subject to any external review. Please contact the practitioners with any questions about these studies, including their status.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: Environmental Risks to Children's Health: Parents' Risk Beliefs, Protective Actions, and Willingness to Pay.

2. Sponsor(s): U.S. EPA, ORD/NCER.

3. Date work was (is expected to be) finished: Dec 31, 2005.

4. Timeline (if any) for review of this survey by OMB: N/A.

5. Team members and affiliations (including survey administrator, e.g. KN):
   Survey #1 & #2: Mark Dickie & Shelby Gerking, University of Central Florida.
   Survey #2: KN, survey administrator

6. Author of this summary: Mark Dickie & Shelby Gerking.

7. Purpose of the study: To estimate parents' marginal rates of substitution between risks to their own and to their children's health. USEPA provided funding for two surveys to examine the extent to which results from a local sample would mirror results from a national.

8. Type of stated preference survey (e.g. CV, conjoint): CV.

9. Where are descriptions/results of the study published/available? An OECD report and three working papers:

Dickie, Mark and Shelby Gerking. (2006). "Valuing children's health: parental perspectives," in *Economic Valuation of Environmental Health Risks to Children*, (ed.) Pascale Scarpecci, OECD: Paris.

Dickie, Mark and Shelby Gerking. (2006). "Parental altruism and environmental risks to health of parents and the children," Department of Economics, University of Central Florida, http://www.bus.ucf.edu/wp/.

Dickie, Mark and Shelby Gerking. (2006). "Parental altruism, protective behavior, and effectiveness of policies to reduce children's environmental risk," Department of Economics, University of Central Florida.

Dickie, Mark, Shelby Gerking and William L. Goffe. (2006). "Valuation of non-market goods using computer assisted surveys: A comparison of data quality from Internet and RDD samples," Department of Economics, University of Central Florida.

10. Sampling description

i. Population of interest (e.g. voters, adults, households): Parents with biological child/children aged 3-12 years living at home.

ii. Frame(s) (e.g. RDD): Survey #1 (summer 2002): RDD in Hattiesburg, Mississippi. Survey #2 (summer 2005): KN.

iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves)**:** Survey #1: computer-administered in-person. Survey #2: via KN Internet/WebTV.

iv. Location of administration (central facility, home): Survey #1: central facility. Survey #2: home.

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): Survey #1: Approximately 26680 working residential numbers. Survey #2: Survey fielded to 1199 KN panelists.

vi. Response and Contact Rates[2]: Note eligibility requirements in 10(i) above. Survey #1: Approximately 30% of calls to presumed working residential numbers yielded no contact with an adult after three attempts at different times of the day and days of the week. In 64% of cases in which a call reached an adult, the adult stated that the household did not meet eligibility requirements (no biological children aged 3-12 living at home). Parents agreeing to participate in the study constituted 3.5% of working residential numbers, 5% of contacts with adults, and 14.3% of contacts with adults who did not declare the household ineligible. Finally, 68% of persons agreeing to participate completed the instrument. Survey #2: Transmitted to 1199 panelists and 755 (63%) panelists agreed to complete the survey. Of those who agreed to complete the survey, 644 panelists were eligible to participate (had one or more biological children aged 3-12 living at home. (Twenty-eight percent of these parents completed the survey by WebTV©.)

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

Survey #1: respondents paid $25 for completing 25-min survey at central location. In recruiting sample, up to three calls made to working numbers – weekday, weekday evening, weekend. Call-backs to no-shows.

III. Ex Post Analyses of Sample Representativeness and Consequences

[2] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

Analysis focused on non-black parents because African-American parents perceived little risk of skin cancer and therefore had little incentive to think about precautions that might be taken to avoid this disease or about how their own risk might differ from that of their children. Survey #1: 93% of the 488 non-black parents were white and 7% were members of other races. Their mean age was 35 years, 75% were female, 83% were married, 58% were college graduates, mean household income (in 2005 dollars) was $64,000 per year, and the mean number of persons per household was 4.02. Survey #2: 77% of the 592 non-black KN parents were white, the mean age was 37 years, 61% were female, 82% were married, 30% were college graduates, mean household income was $58,000 per year and the mean number of persons per household was 4.18. Thus, at the 1% level, a significantly greater percentage of males participated in the KN survey than participated in the Hattiesburg survey. A possible explanation for this outcome is that in the KN survey, respondents could complete the survey at home and did not need to travel to a central location. Additionally, at the 1% level, Hattiesburg respondents were more likely to be college graduates. As discussed by Chang and Krosnick (2004), respondents with greater levels of education tend to be over-represented in RDD telephone samples. Moreover, local graduates of the University of Southern Mississippi may have been more likely to respond positively to a request from their alma mater to return to the campus and participate in a research project.

Results of a comparison of the two surveys indicate that in comparison to the RDD/Hattiesburg Survey #1 respondents, relatively more Internet/KN Survey #2 respondents: (1) failed to answer key questions, (2) took either a very long time or a very short time to complete the survey, (3) indicated that they were unaware of persons who had been afflicted with skin cancer, (4) took perhaps unwarranted short-cuts in estimating skin cancer risk, and (5) provided stated preference values indicating no greater willingness to pay for large risk reductions than for small risk reductions, thus failing an important external scope test. Split-sample regressions and dummy-interactive regressions were used to assess whether observable differences in characteristics of respondents in the two samples could explain the divergence in scope test outcomes. With few exceptions, RDD/Hattiesburg parents seem to have considered the size of risk changes as well as the cost in responding to the contingent valuation question, regardless of their demographic characteristics, knowledge of skin cancer, or initial risk perception. Internet/KN parents in contrast seem to have considered the cost but ignored the risk changes, regardless of their observed characteristics. Thus the difference in results does not appear to be explained by sample differences in education, gender or other demographic characteristics, knowledge about skin cancer or initial perceived risk levels, or in the time taken or the interface used to complete the survey. In any case, the contrasting results of the stated preference experiment imply different conclusions about resource allocation within the family and about the effectiveness of public policies designed to protect children against health risks.

IV. Research Needs/Additional Observations

Obtaining a representative sample of willingness to pay (or other values/behaviors/relationships of interest) depends on more than sampling. If respondents give less than their best effort in completing a survey, data quality will inevitably suffer.

Description of Water Study with Techniques for Addressing Nonresponse

October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: U.S. Environmental Protection Agency. "Assessing the Value of Improvements to Lakes and Rivers," With Kip Viscusi,

2. Sponsor(s): Environmental Protection Agency, Water Division

3. Date work was (is expected to be) finished: August 2006

4. Timeline (if any) for review of this survey by OMB: 2001-2003

5. Team members and affiliations (including survey administrator, e.g. KN):

   Joel Huber—Duke University
   Kip Viscusi—Vanderbilt
   Jason Bell—Duke University
   Knowledge Networks, survey administrator

6. Author of this summary: Joel Huber, Kip Viscusi and Jason Bell

7. Purpose of the study: To use iterative choice to value the benefits of cleaner lakes and rivers

8. Type of stated preference survey (e.g. CV, conjoint): Choice and referendum

9. Where are descriptions/results of the study published/available? Economics of Environmental Improvement

10. Sampling description

   i. Population of interest (e.g. voters, adults, households): US national household survey

   ii. Frame RDD then selection from Knowledge Network's Panel.

   iii. Mode(s) of administration (internet)

   iv. Location of administration: Home.

   v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): 5655 invited to participate, 4257 completed interviews

   vi. Response and Contact Rates:
      -Main KN panel: *4257/5655= 75%*

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

The base and scope versions of the survey were fielded to a representative panel of US adults from KN's internet panel. To examine whether the KN panelists are representative of the general population and to increase the total number of responses, we compared the final sample characteristics with those of the US.

To boost the response rate from the KN panel the survey was open for at least three weeks and at least three reminder emails were sent.

III. Ex Post Analyses of Sample Representativeness and Consequences

A. Demographic match to target population.

The demographic profile corresponded closely to the US population as shown in Table 1.

TABLE 1

Comparison of KN Sample to the National Adult Population[3]

Demographic Variable	Survey Participants (n=4257) Percent	US Adult Population Percent
Employment Status (16 years or older)		
Employed	61.3	62.3
Age		
18 - 24 years old	13.4	13.3
25 - 34 years old	20.1	18.3
35 - 44 years old	19.4	20.4
45 - 54 years old	18.6	18.7
55 - 64 years old	11.9	12.2
64 - 74 years old	11.7	8.4
75 years old or older	4.9	8.1
Educational Attainment		
Less than HS	18.5	15.4
HS Diploma or higher	59.4	57.4
Bachelor or higher	22.2	27.2
Race / Ethnicity		
White	80.3	81.9
Black/African-American	13.3	11.8

[3] *Statistical Abstract of the United States, 2004-5*. 2003 adult population (18 years+), unless otherwise noted.

American Indian or Alaska Native	1.6	0.9
Asian/Pacific Islander/Other	4.8	5.5
Race / Ethnicity of Household		
Hispanic	10.6	12.1
Gender		
Male	51.0	48.5
Female	49.0	51.5
Marital Status		
Married	58.4	58.8
Single (never married)	25.6	24.4
Divorced	10.9	10.2
Widowed	5.1	6.6
Household Income (2002)		
Less than $15,000	15.0	16.1
$15,000 to $24,999	11.6	13.2
$25,000 to $34,999	12.5	12.3
$35,000 to $49,999	18.8	15.1
$50,000 to $74,999	18.2	18.3
$75,000 or more	23.8	25.1

Comparison of those KN panel members compared with those who declined the survey

Table 2 reports the logit regression for whether the individual in the panel chose to participate in the survey after having been invited to do so. The number of observations for this regression is slightly lower than that reported in Table 2 due to missing data for certain explanatory variables. The dprobit results reported are probit regression estimates for which the coefficients have been transformed to equal the marginal effects.

Older panel members were more likely to participate in the survey, as were those who were married.

Less likely to participate were black panel members, Hispanic panel members, panel members from large households, and panel members who owned their residence. Panel members reporting a high level of stress were less likely to participate in the survey, as were those panel members who did not provide an answer to that question. Also, panel members who retired from the KN panel within 5 months of the date their survey round closed were less likely to participate.

Table 2

Did the Invited Panel Member Participate in the Survey

Variable	Logistic Odds Ratio	Logistic Standard Error	DProbit dF / dx	DProbit Standard Error
Log (Income)	1.0172	0.0472	0.0026	0.0070
Years of education	1.0069	0.0167	0.0013	0.0025
Age	1.0083 ***	0.0030	0.0013 ***	0.0005
Race: Black	0.6408 ***	0.0684	-0.0748 ***	0.0184
Race: Non-black, Non-white	0.8162	0.1245	-0.0361	0.0254
Hispanic	0.7302 ***	0.0843	-0.0521 ***	0.0197
Gender: Female	0.9605	0.0751	-0.0073	0.0118
Household Size	0.8688 ***	0.0252	-0.0219 ***	0.0044
Region: Northeast	0.8703	0.1059	-0.0226	0.0192
Region: South	0.9471	0.0985	-0.0102	0.0159
Region: West	0.9697	0.1155	-0.0069	0.0182
Currently Employed	0.8874	0.0780	-0.0173	0.0131
Not living in 150 largest MSA's	0.9506	0.0984	-0.0073	0.0159
Owner of Residence	0.7732 ***	0.0713	-0.0398 ***	0.0135
Marital Status: Married	1.2441 **	0.1129	0.0340 **	0.0138
Dual Income Household	0.9987	0.0863	0.0023	0.0130
Head of Household	0.9044	0.0923	-0.0147	0.0151
Time as Panel Member, in Months	0.9955 *	0.0027	-0.0007 *	0.0004
Stress Level	0.7011 ***	0.0636	-0.0546 ***	0.0138
Stress Data Missing	0.3115 ***	0.0369	-0.2131 ***	0.0238
Respondent Retired from KN Panel	0.0804 ***	0.0064	-0.4774 ***	0.0146

N	Complete= 1	Complete= 0
5639	4246	1393

Notes: * significant at .10 level, ** significant at .05 level, *** significant at .01 level, all two-tailed tests.

B. Impact of respondent characteristics on valuation estimates.

We consider these effects above predictable. The same kinds of people who are difficult to recruit on to a panel (minorities, unmarried, high stress) will be those who are going to be more likely to not participate. The next section considers whether respondent panel behavior altered our critical variable, the dollar value of a 1% improvement in water quality. These results are shown in Table 3.

The first variable describes whether the respondent stopped the survey and then continued taking the survey at a later time. Conceivably such respondents might be less engaged in the survey task. However, there was no significant effect of this variable on benefit values.

The second variable of interest is the time the person has been a member of the Knowledge Networks panel. Length of time in the panel may affect attentiveness to the surveys, and potentially could be correlated with other personal characteristics that influence water quality valuations. The results fail to indicate any significant effect of this variable as well.

Third, the days the respondent took to complete the survey after first being offered the opportunity to participate could reflect a lack of interest in the survey topic or in taking surveys generally. This variable did have a significant but small negative effect. Given that respondents were told the general subject of the survey before taking it, this result could demonstrate a lower concern or interest in the subject matter exhibited in a delay to complete the survey.

Finally, if the respondent retired from the Knowledge Networks panel within five months of taking the survey (this duration was used so that all rounds could be analyzed for the same amount of time), that might be associated with a diminishing interest in taking surveys. The results did not show any significant effect on our results from this variable.

Overall, this analysis provides evidence that these key aspects of the Knowledge Networks methodology had minimal impact on the survey responses. The number of days a panel member took to complete the survey after being invited had a small but significantly negative effect on regional water quality value, but when demographic characteristics were included, the significance of that effect was lost.

Table 3
Impact of Respondent Characteristics on Water Valuation

Variable	Log (Dollar Value for 1% Better Water Quality) Parameter Estimate	Standard Error	Log (Dollar Value for 1% Better Water Quality) Parameter Estimate	Standard Error
Log (Income)	0.1216 ***	0.0234	-	-
Years of education	0.0394 ***	0.0082	-	-
Age	0.0069 ***	0.0013	-	-
Environmental Organization Membership	0.5298 ***	0.0897	-	-
Visited a Lake or River, last 12 Months	0.1940 ***	0.0440	-	-
Race: Black	-0.1425 **	0.0615	-	-
Race: Non-black, Non-white	0.0102	0.0838	-	-
Hispanic	0.1095	0.0670	-	-
Gender: Female	-0.0498	0.0400	-	-
Household Size	-0.0304 *	0.0156	-	-
Region: Northeast	0.0214	0.0621	-	-
Region: South	-0.0524	0.0566	-	-
Region: West	-0.0315	0.0619	-	-
State Lake Quality	0.0003	0.0008	-	-
Lake Acres per State Square Mile	0.0044 **	0.0022	-	-
Subject Stop and Continue Survey Later	-0.0938	0.0753	-0.0919	0.0772
Time as Panel Member, in Months	-0.0021 *	0.0012	-0.0001	0.0012
Days from Invitation to Completion	-0.0037	0.0025	-0.0067 ***	0.0025
Respondent Retired from KN Panel	-0.0115	0.0595	-0.0887	0.0607
INTERCEPT	0.5210 **	0.2624	2.6951 ***	0.0382
	N	Pseudo R-square	N	Pseudo R-square
	4033 (376 left censored) (403 right censored)	0.0172	4033 (376 left censored) (403 right censored)	0.0010

Notes: * significant at .10 level, ** significant at .05 level, *** significant at .01 level, all two-tailed tests.

IV. Research Needs/Additional Observations

Our research showed that the KN panel matches the desired universe and that within panel selection has a relatively minor part in our estimates. We also performed reweighting giving the weights supplied by KN to adjust for panel biases, but got virtually no differences in our estimates. Additionally, a Heckman adjustment for non-response found minimal impact.

That said, there is no doubt in our mind that the KN panelists are different from other sampled populations. Compared with our studies in malls and with central location the KN panelists are more conscientious, in the sense of being less likely to stop in the middle of the survey; they are more careful, in the sense of being less likely to mistakenly choose a dominated alternative, and they had less difficulty with the survey as measured by how hard or easy they found the survey. They were, in short, more ideal respondents.

In hindsight, it is perhaps not surprising that the KN panelists do not differ substantially from a representative sample with respect to the value of water quality. We find that demographics, such as income, education and age have the greatest impact on that valuation, and for those demographics the panel matches the desired universe.

However for different policy variables one might not expect the same null results. The fact that KN panel members are by self selection more compliant, rule following and computer literate means that for a number of variables projected from the panel may not correspond to the nation. For example, one could reasonably hypothesize KN panelists being different from the nation for the following kind of ways.

- KN respondents are more likely to be honest about their tax returns
- KN respondents are likely to be more knowledgeable about current events
- KN respondents are more likely to be in favor of new electronic versions of communication
- KN respondents are more likely to be ‘balanced’ with respect to highly polarized issues, since they are accustomed to seeing both sides of issues

Notice, however, that these are hypotheses. Research is needed to characterize the kinds of questions for which recruited panel members are consistently different from the population. It would be then possible for KN to sample and recruit to minimize such biases. Further, future research could establish a series of standard ‘distortion indicator’ questions that could be used adjust any survey to the population at large.

Developing and using such distortion indicator questions would be a valuable project for future research. What is needed is an assessment of the biases in panels with respect to a large series of possible questions. This large battery would be factor analyzed to determine relatively small number of distortion indicators that correspond to each factor. Then when one ran a survey, the analyst could ask whether the key variable is correlated with any of these distortion indicators. If the answer is no, then the researcher can be confident that the bias is relatively minor. If yes, then Heckman-like adjustments are available provided one knows the value of the indicator questions. This adjustment is possible for panels because each member's response to the distortion indicator questions could be part of the panel's background information.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: NSF "Popular Support for Climate Change Policy: Regional, Intertemporal, and Sociodemographic Heterogeneity in Risk Perception, Receptiveness to 'Expert' Opinions, and Willingness to Incur Costs of Mitigation"

2. Sponsor(s): NSF (Trudy Ann Cameron, SBR 98-18875, 4/99-3/01, $179,985)

3. Date work was (is expected to be) finished: Some papers complete and published, some still under review/revision

4. Timeline (if any) for review of this survey by OMB: none

5. Team members and affiliations (including survey administrator, e.g. KN): Online survey: Geoffrey R. Gerdes, UCLA Ph.D. student, now at the Federal Reserve Board of Governors in Washington DC (and surveying commercial banks from time to time); Mail survey: Jae-Seung Jason Lee, UCLA Ph.D. student, now with ICF International, in Los Angeles.

6. Author of this summary: Trudy Ann Cameron

7. Purpose of the study: To assess the determinants of heterogeneity in stated preferences towards climate change mitigation policies, given the uncertainty and long time horizons, as well as up-front costs and far future benefits of mitigation.

8. Type of stated preference survey (e.g. CV, conjoint): Format for elicitation was randomized across respondents in the online version of the survey. Generally, this is a conjoint-type survey, but variants that were presented as a binary-choice CV were also used. Each respondent answered only a single choice question. Mail survey used a binary choice question, but listed the attributes of the alternatives (costs and first-round incidence of domestic and international costs) along with respondents' subjective assessments of the consequence of business-as-usual.

9. Where are descriptions/results of the study published/available?
For the preliminary surveys, two papers have been published:

- Trudy Ann Cameron, “Individual option prices for climate change mitigation,” *Journal of Public Economics*, 2005, 89, 283-301.
- Trudy Ann Cameron, “Updating Subjective Risks in the Presence of Conflicting Information: An Application to Climate Change,” *Journal of Risk and Uncertainty*, 2005, 30(1) 63-97.

For the main mail survey:

- J. Jason Lee, “Subjective Benefits from Climate Change Mitigation: Results from a Household Survey,” Ph.D. dissertation, UCLA, Department of Economics, 2002.

A paper on response/non-response bias assessment for this sample is:

- J. Jason Lee and Trudy Ann Cameron, “Thorough Non-response Modeling as an Alternative to Minimum Survey Response Rate Requirements: Popular Support for Climate Change Mitigation,” undergoing final line edits as of 09/08/06.

For the online survey:

- Trudy Ann Cameron and Geoffrey R. Gerdes, “Individual Subjective Discounting: Form, Context, Format, and Noise” (revise-and-resubmit at JRU)
- Daniel Burghart, Trudy Ann Cameron, and Geoffrey R. Gerdes, “Questioning some maintained hypotheses in stated preference estimation: allowing for failure, substitutes, adjustments, and inattention” (submitted to JEEM)

More papers are in the pipeline.

10. Sampling description

i. Population of interest (e.g. voters, adults, households):
For the preliminary surveys: a convenience sample of students at one university;
For the online survey: a convenience sample of students at over around 100 universities
For the mail survey: the general population

ii. Frame(s) (e.g. RDD): best we could do for the very limited budget available. Drawn as a stratified random sample, in proportion to populations of individual states (or groups of small states) from the universe of households offered by Households USA this inventory of households is a product of InfoUSA Inc., 5711 S. 86th Circle, Omaha, NE 68127. (888)999-0580. The database is used extensive for direct mail marketing.

iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves)**:**

Mail survey: surveys went out in waves every week (Tuesdays) for a full year (started on Tuesday, February 20, 2001 and ended on February 17, 2002, in order to permit current weather conditions to affect survey topic salience and concern about climate change).

Online survey: individual faculty at a wide range of colleges and universities were recruited to introduce the survey to their students. Survey remains online at http://globalpolicysurvey.ucla.edu (but no longer collects data)

iv. Location of administration (central facility, home):
Mail survey: completed by household recipients (adult in dwelling with most recent birthday) at the location of their choice

Online survey: completed wherever student had internet access

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey):
Mail survey: Survey mailed to 8576 U.S. addresses; there was also a Canadian sample, but targeted households could not be geocoded and comparable geocoded Census data was not readily available.

vi. Response and Contact Rates[4]:
Mail survey: 1651 sufficiently complete responses for thorough analysis (19.25% response rate if absolutely no adjustments are made to the denominator)

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

In one or two paragraphs describe any steps you took before the survey was completed to boost response rates or otherwise try to make the sample more representative of the population of interest (e.g., paying incentives, non-response conversion techniques such as follow-up phone calls). Also indicate any steps taken to prepare for later tests of sample representativeness, such as asking basic questions of non-responders.

Mail survey: We used a $1 bill as an incentive in each mail survey, except for the Canadian sample, where only dollar coins remain in circulation. We followed Dillman's method by sending an advance notification first, then a cover letter with survey on the second week, and then a reminder postcard on the third week. For the first 1000 survey recipients, we also sent replacement survey packets, one month after sending the original surveys, to households who did not respond. We subsequently decided to cancel this step due to the extremely low response rate (only about 5%.) and high cost for these replacement surveys. We elected instead to send out a larger number of original surveys and rely upon our formal response/non-response correction process.

III. Ex Post Analyses of Sample Representativeness and Consequences

Describe any techniques you used to adjust for potential observable bias from non-response (or coverage bias) such as weighting. Further, describe any tests believed to *suggest* the presence or absence of non-observable non-response bias in the sample, such as comparing respondents who answered the survey quickly to those that answered it later or testing for convergent validity across different modes/frames. Finally, report any attempts to correct for selection on unobservables, such as a Heckman selection correction. For any of these analyses, report any results that suggest the consequences of non-response on the outcome of interest (e.g., willingness to pay). This section should be several paragraphs long.

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[4] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

Mail survey: We geocoded each survey recipient's address to a precision of six decimal degrees of latitude and longitude, and mapped these to the census tract and county containing the dwelling. Using these geo-data, we merged the recipient sample with data from a wide variety of sources to construct variables in several categories: The explanatory variables we use can be classified into several categories: features of the survey instrument and its implementation, current versus historical temperatures, potential climate change vulnerability, seasonality, major discrete events, the county-level political mix, attributes of the address or addressee, and census tract sociodemographic characteristics. In all, our response/non-response specification considers 67 potential explanatory variables, finding nineteen of them to be statistically significant determinants of response propensities.

IV. Research Needs/Additional Observations

Briefly describe any research needs for analyzing sample representativeness.

Further, please briefly provide any additional observations you believe are salient to the question of sample representativeness in these surveys. For example, you might to comment on the relative importance of addressing concerns of sample bias versus other concerns associated with stated preference surveys.

Mail survey: We feel we have done just about everything we could have done to capture heterogeneity in response propensities among the targeted households for the mail survey. It was a relief to find that despite the heterogeneity in response propensities, a Heckman selectivity correction makes only negligible differences to the parameter estimates.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: The Economics of Environmental Vulnerability: Epidemiology, Household Status, and Air Pollution

2. Sponsor(s): Environmental Protection Agency, STAR

3. Date work was (is expected to be) finished: November 2006

4. Timeline (if any) for review of this survey by OMB: not relevant

5. Team members and affiliations (including survey administrator, e.g. KN): V. Kerry Smith, Arizona State University; Mary F. Evans, University of Tennessee; Christine Poulos, RTI International

6. Author of this summary: Mary F. Evans and V. Kerry Smith

7. Purpose of the study: Use pilot data collection effort to illustrate a strategy for examining the potential importance of dependency relationships and altruism using stated choice questions. This strategy offers a method for using pilot questions to help frame preference restrictions that subsequently condition the structure used for choice questions intended to recover valuation-related tradeoffs. This approach offers an alternative to focus groups and cognitive interviews, both of which are often used to inform the development of surveys.

8. Type of stated preference survey (e.g. CV, conjoint): CV

9. Where are descriptions/results of the study published/available? Work in progress

10. Sampling description

  i. Population of interest (e.g. voters, adults, households): Adults

  ii. Frame(s) (e.g. RDD): internet panel composed from RDD initial contacts

  iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves)**:** Internet

  iv. Location of administration (central facility, home): Home as far as we know; since internet survey could in principle be answered anywhere

  v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): 2670 based on information provided by KN

vi. Response and Contact Rates[5]: 2110/2670 = 79%

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

This was a pilot to evaluate a set of hypotheses that could not be addressed within focus groups. As a result we did not we did not include incentives beyond those provided by KN for participation. We did negotiate to obtain information on demographic attributes of those KN panelists who were invited to participate and did not. We also acquired geographic information to allow a link to census demographics. Finally we included questions that have been asked on other non-internet surveys that could be used with a sample from those surveys that was matched based on demographic attributes. The responses to these common questions could then be compared to gauge whether the KN sample had different behavioral responses in a related area.

III. Ex Post Analyses of Sample Representativeness and Consequences

We have not estimated selection models with this survey. In another survey conducted with Carol Mansfield using KN we did undertake such an analysis; introducing inverse Mills ratios into behavioral choice models. We also compared responses to common questions with other surveys.

IV. Research Needs/Additional Observations

Judgments about how representative a sample may be depend on the objectives of the research. As a result they should be based on comparing response to related behaviors in matched random samples taken from existing surveys to confirm that the features of any new survey do not diminish its ability to detect behaviors consistent with its primary objective.

[5] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: Valuation of Natural Resource Improvements in the Adirondacks

2. Sponsor(s): Environmental Protection Agency, Clean Air Markets Division

3. Date work was (is expected to be) finished: August 2004

4. Timeline (if any) for review of this survey by OMB: NR

5. Team members and affiliations (including survey administrator, e.g. KN):

   Dallas Burtraw, RFF
   Alan Krupnick, RFF
   Spencer Banzhaf, RFF
   David Evans, RFF/University of Maryland
   Knowledge Networks, survey administrator

6. Author of this summary: Spencer Banzhaf and David Evans

7. Purpose of the study: To estimate WTP of New York State residents for ecological improvements in the Adirondacks State Park, such as would be expected to result from reductions in acid deposition associated with likely national air quality policies (e.g. CAIR).

8. Type of stated preference survey (e.g. CV, conjoint): Contingent valuation

9. Where are descriptions/results of the study published/available? Report to EPA, Resources for the Future report (available at www.rff.org) in forthcoming *Land Economics* article.

10. Sampling description

    i. Population of interest (e.g. voters, adults, households): New York State adults (one per household)

    ii. Frame(s) (e.g. RDD): RDD. Three waves, one of the Knowledge Networks (KN) panel, one of former panel members, and the other of a fresh RDD sample.

    iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves)**:** Three waves. First two waves internet/web TV. Third wave mail.

    iv. Location of administration (central facility, home): Home.

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): 8868 (Panel: 1,351 individuals/1,284 households, Former Panel: 3,612 individuals/2,120 households, Mail: 3,905)

vi. Response and Contact Rates[6]:
-Main KN panel: 951/1,284 = 74%
-Former KN panel: 293/2,120 = 14%
-Mail: 570/2,372 = 24%
I: 570, R: 1533, NC: 117, UO: 152

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

The base and scope versions of the survey were fielded to residents of New York in KN's internet panel. To examine whether the KN panelists are representative of the general population and to increase the total number of responses, the base and scope surveys were also fielded by internet to former panel members and the base survey in paper form to an RDD mail sample.

To boost the response rate from the KN panel the survey was open for at least three weeks and at least three reminder emails were sent. Furthermore, reminder phone calls were made to those who did not complete the survey. Where possible, the former panel members received reminder emails and about half of them received reminder phone calls. The former panel members received $10 for completing the survey.

For the mail survey there was an initial contact letter prior to delivery of the survey and two reminder letters. The final reminder letter allowed respondents to take the survey on the internet; few of the respondents took this option. Furthermore, $10 was paid to each respondent to the mail survey. The mail survey required two administrations to achieve the targeted number of responses. Up to five call attempts were made to remind mail recipients to take the survey. Little process data was collected from the mail administration and none was used in our statistical analysis.

III. Ex Post Analyses of Sample Representativeness and Consequences

First, we weighted all respondents by their observable characteristics, including location of residence, so that the sample would reflect NY State's demographic distribution.

Second, as noted above, we surveyed KN's panel as well as a new RDD sample (via mail). Ignoring the possibility of an effect introduced by the mail (vs. internet) mode, the latter survey provides a check on the selectivity of KN's panel. After weighting the data to account for the differing demographics of the sample, we could not reject the hypothesis of equal WTP from the differing survey modes. Thus the internet mode/panel administration and the mail mode/RDD administration were either both unbiased or else identically so.

[6] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

Third, we used process data to analyze whether more responsive or experienced KN panel members responded differently. We analyzed whether WTP was correlated with the lag between when the invitation to take the survey was sent and when it was completed and found the lag to be insignificant. Similarly, we found that the tenure of the respondent on the panel and the number of surveys they had taken previously were not significant in explaining WTP.

Fourth, we employed a Heckman selection equation to test and correct for bias resulting from selection on unobservables. We can do this because KN elicited initial background demographic and attitudinal questions for all its panel members. Thus, we have individual-level details about nonrespondents. This information provides a unique opportunity to identify factors leading to non-response and, more importantly, to test whether non-response biases our WTP estimates.

We found that whites, middle-aged people, members of smaller households, and environmentalists were all more likely to respond to the survey, as were households in certain regions of the state. Households who were not given or did not answer questions about political and environmental attitudes in previously administered panel profile surveys were more likely to be non-responders. Importantly, we could not reject the hypothesis that the correlation between the unobserved components of the selection and WTP equations is zero. This suggests that there is no selection bias. Moreover, mean WTP estimates from models with and without the Heckman correction for bias differ only by about 5 percent, and are not significantly different.

IV. Research Needs/Additional Observations

First, further research into the differential effects of mode and administration is warranted. Our comparison of the KN panel using their internet mode with a new RDD sample using a mail mode conflated these two effects. A research design that differentiated mode and administration would be useful.

Second, additional research into the selection effects of KN's (or other panel's) recruitment and retention would be helpful. Aggressive non-response conversion could be used on a sample of people who did not join the panel or who left the panel early. Their responses could be compared to those on the panel.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: **Improved Valuation of Ecological Benefits Associated with Aquatic Living Resources: Development and Testing of Indicator-Based Stated Preference Valuation and Transfer**

2. Sponsor(s): **EPA/STAR**

3. Date work was (is expected to be) finished: **September 30, 2008**

4. Timeline (if any) for review of this survey by OMB: **Not required.**

5. Team members and affiliations (including survey administrator, e.g. KN):
Robert J. Johnston, Agricultural and Resource Economics, University of Connecticut
Eric Schultz, Department of Ecology and Evolutionary Biology, University of Connecticut
Kathleen Segerson, Department of Economics, University of Connecticut
Elena Besedin, Abt Associates.

6. Author of this summary: **Robert J. Johnston**

7. Purpose of the study: **This project will develop and test Indicator-Based Stated Preference Valuation for aquatic living resources and assess implications for benefits transfer. As a case study, we will estimate preferences and WTP for multi-attribute diadromous fish restoration projects in New England states. Among areas of focus are the use of established and tested ecological indicators in choice experiment surveys to characterize ecosystem changes, and to isolate the specific aspects of restoration that are valued by the public.**

8. Type of stated preference survey (e.g. CV, conjoint): **choice experiment (conjoint)**

9. Where are descriptions/results of the study published/available? **None currently published.**

10. Sampling description

    i. Population of interest (e.g. voters, adults, households): **Households (most likely Rhode Island households).**

    ii. Frame(s) (e.g. RDD): **Expected RDD telephone solicitation with Rhode Island households for initial contact, followed by mail survey for households that agree to participate. Phone contact will ask for agreement to participate in mail survey, collect minimal demographic and attitudinal data for sample selectivity testing, and screen for households with a DVD player required to play DVD containing information and**

instructions. Subsequent mail survey will be sent to those agreeing to participate and who pass screening criteria (DVD player in household).

iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves)**: Anticipated dual mode phone-mail. Initial contact via phone to obtain agreement to participate in survey and to screen for households with CD or DVD equipment (see above). Second contact is a mail survey to households agreeing to participate. Mail survey will incorporate multiple mailings (likely 3-4) to increase response rates (e.g., following Dillman 2000). We may also consider dual phone-internet survey following similar mechanisms.**

iv. Location of administration (central facility, home): **Home**

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): **We hope to obtain a final usable sample of at least 1,500 completed mail surveys.**

vi. Response and Contact Rates[7]: **Not yet known.**

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

In one or two paragraphs describe any steps you took before the survey was completed to boost response rates or otherwise try to make the sample more representative of the population of interest (e.g., paying incentives, non-response conversion techniques such as follow-up phone calls). Also indicate any steps taken to prepare for later tests of sample representativeness, such as asking basic questions of non-responders.

These are currently being developed. We hope that the workshop will provide insights into particularly effective techniques. See discussion of concerns and challenges below in part IV. Anticipated methods include follow-up mailings following Dillman (2000) and perhaps follow-up telephone contacts. Small incentives will be paid ($1) if the budget allows. The initial phone solicitation will attempt to collect very basic demographic information (and perhaps responses for very simple attitudinal questions) from non-responders (those who do not agree to participate in the mail survey) to allow simple tests of differences between mail survey responders and non-responders. The mail survey will include questions requesting more complete demographic and other data to characterize respondents and allow comparisons to average RI households (e.g., using census data).

III. Ex Post Analyses of Sample Representativeness and Consequences

[7] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

Describe any techniques you used to adjust for potential observable bias from non-response (or coverage bias) such as weighting. Further, describe any tests believed to *suggest* the presence or absence of non-observable non-response bias in the sample, such as comparing respondents who answered the survey quickly to those that answered it later or testing for convergent validity across different modes/frames. Finally, report any attempts to correct for selection on unobservables, such as a Heckman selection correction. For any of these analyses, report any results that suggest the consequences of non-response on the outcome of interest (e.g., willingness to pay). This section should be several paragraphs long.

The survey has not yet been conducted. However, anticipated methods include the comparison of the surveyed sample to the RI population using demographic indicators, with weighting used to adjust estimation results. These will be compared to unweighted results to assess potential implications of sampling bias for model results and WTP estimates. We will also contrast the basic demographic (and perhaps attitudinal) information collected from the initial phone contact with that from the final mail survey sample—similarly allowing a comparison of responders and non-responders. Heckman-type selection correction models are currently not well developed for conditional logit (choice experiment) estimation models—and particularly mixed logit models—so it is not anticipated that these will be used. However, if these models have been sufficiently developed by the time the survey data have been collected, the use of such models will be considered.

IV. Research Needs/Additional Observations

Briefly describe any research needs for analyzing sample representativeness.

Further, please briefly provide any additional observations you believe are salient to the question of sample representativeness in these surveys. For example, you might to comment on the relative importance of addressing concerns of sample bias versus other concerns associated with stated preference surveys.

We are one year in to the research effort and are currently designing our survey and implementation methods. Our primary sampling concern is the desire to obtain a representative sample of Rhode Island households. A second concern is the need to obtain a sufficiently large sample to conduct required statistical tests. The primary difficulties are related to the need to present substantial information in the survey instrument. Focus groups have indicated that this will likely require the inclusion of the DVD or similar media to present information (i.e., during an 8-12 minute video presentation), given respondents typical unwillingness to read long text passages in stated preference surveys. This will require an additional screening during the initial RDD telephone contact, and may further depress response rates due to the additional requirement of watching the DVD. (The survey will include a “test” question (e.g., a unique code number) that can only be answered after watching the DVD, to ensure that respondents watch the material and to identify those who do not.) Our desire is to ensure that these survey design elements do not contribute to a biased and/or overly small usable sample of responses. We currently

anticipate a phone-mail survey but are also considering the possibility of a phone-internet survey of similar format. We are also interested in researcher's comparative experiences with mail versus internet implementation of choice experiment surveys in terms of response rates and non-response bias. We also want to ensure that survey response rates are not correlated with environmental attitudes (e.g., that those with greater concern for environmental issues respond at higher rates than others).

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: **Willingness to Pay Survey for §316(B) Regulations**

2. Sponsor(s): **EPA/OW/EAD**

3. Date work was (is expected to be) finished: **To be determined. The survey was planned to support benefits analysis of the §316(B) regulations for Phase III facilities. However, EPA decided to withdraw its ICR for the 316b rule due to time constraints and to finish this study as a research project.**

4. Timeline (if any) for review of this survey by OMB: **January – March 2007 (tentative)**

5. Team members and affiliations (including survey administrator, e.g.):
Elena Besedin, Abt Associates Inc.,
Robert J. Johnston, Agricultural and Resource Economics, University of Connecticut
Knowledge Networks, Survey Administrator
.

6. Author of this summary: **Elena Besedin**

7. Purpose of the study: **This study will estimate WTP for reductions in fish losses at cooling water intake structures (CWIS) due to the 316(b) regulations. The study would focus on a broad range of aquatic species, including forage fish and a variety of fish species harvested by commercial and recreational fishermen.**

8. Type of stated preference survey (e.g. CV, conjoint): **choice experiment (conjoint)**

9. Where are descriptions/results of the study published/available? **None currently published.**

10. Sampling description

   i. Population of interest (e.g. voters, adults, households): **U.S. Households**

   ii. Frame(s) (e.g. RDD): **RDD. Three waves. (1) Survey subjects will be randomly selected from a representative national panel of respondents maintained by Knowledge Networks. (2) To assess non-response bias subjects will be randomly selected from former KN panel members. (3) A fresh RDD sample will be selected.**

   iii. Mode(s) of administration (e.g. Internet, mail, in-person; please indicate if multiple waves)**: (1) Internet/web TV; (2)/(3) phone**

   iv. Location of administration (central facility, home): **Home**

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): **The target number of completed interviews is 3,900 for the main web survey and 600 for the non-response study.**

vi. Response and Contact Rates[8]: **Not yet known.**

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

In one or two paragraphs describe any steps you took before the survey was completed to boost response rates or otherwise try to make the sample more representative of the population of interest (e.g., paying incentives, non-response conversion techniques such as follow-up phone calls). Also indicate any steps taken to prepare for later tests of sample representativeness, such as asking basic questions of non-responders.

The survey administrator, KN will use its standard procedures to boost the response rates: (1) reminder emails will be sent to KN panel members who participate in the survey and reminder phone calls will be made to those who did not complete the survey within a specified time period; and (2) survey participants will receive incentives for completing the survey.

To avoid potential sampling biases associated with the web-based survey methodology, the survey sample will be stratified by demographic variables including age, education, Hispanic ethnicity, race, gender, and household income. The number of respondents in each demographic stratification group will be inversely proportional to the historical response rates of individuals in that group for similar types of surveys. By over-sampling groups that tend to have lower response and consistency rates, the demographic characteristics of respondents who provide valid completed surveys will mirror U.S. Census Bureau demographic benchmarks more closely.

We will assess the extent of nonresponse bias in key outcome measures in the Knowledge Networks sample of 3,900 respondents by obtaining national estimates for the key attitudinal and socio-demographic variables from a high quality random-digit-dialing survey of approximately 500 adults.

III. Ex Post Analyses of Sample Representativeness and Consequences

Describe any techniques you used to adjust for potential observable bias from non-response (or coverage bias) such as weighting. Further, describe any tests believed to *suggest* the presence or absence of non-observable non-response bias in the sample, such as comparing respondents who

[8] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

answered the survey quickly to those that answered it later or testing for convergent validity across different modes/frames. Finally, report any attempts to correct for selection on unobservables, such as a Heckman selection correction. For any of these analyses, report any results that suggest the consequences of non-response on the outcome of interest (e.g., willingness to pay). This section should be several paragraphs long.

The survey has not yet been conducted. However, anticipated methods include the comparison of the surveyed sample to the U.S. population using demographic indicators, with weighting used to adjust estimation results. These will be compared to unweighted results to assess potential implications of sampling bias for model results and WTP estimates. We will also contrast the basic demographic and attitudinal information collected from the phone survey with the former KN panel members and a new sample of respondents (waves 2 & 3) with that from the main survey sample—similarly allowing a comparison of responders and non-responders.

Heckman-type selection correction models are currently not well developed for conditional logit (choice experiment) estimation models—and particularly mixed logit models—so it is not anticipated that these will be used.

IV. Research Needs/Additional Observations

Briefly describe any research needs for analyzing sample representativeness.

Further, please briefly provide any additional observations you believe are salient to the question of sample representativeness in these surveys. For example, you might to comment on the relative importance of addressing concerns of sample bias versus other concerns associated with stated preference surveys.

First, comprehensive selectivity assessment for the Knowledge Networks panel at different stages would be useful, including: 1) RDD panel recruitment, 2) connection of web-survey equipment, 3) completion of initial profile survey, 4) panel retention, and 5) survey completion.

Second, development of statistical methodology (Heckman-type procedure) for selection correction models for conditional logit (choice experiment) estimation models—and particularly mixed logit models would be helpful.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: The Nonconsumptive Value of Steller Sea Lion Protection Measures

2. Sponsor(s): NOAA Fisheries

3. Date work was (is expected to be) finished: December 2007

4. Timeline (if any) for review of this survey by OMB: Expected review beginning Fall 2006

5. Team members and affiliations (including survey administrator, e.g. KN):

   Robert D. Rowe, Stratus Consulting
   David F. Layton, University of Washington
   Daniel K. Lew, NOAA Fisheries
   PA Consulting, survey administrator

6. Author of this summary: Dan Lew

7. Purpose of the study: To measure the public's preferences and willingness to pay (WTP) for various levels of protection being considered for the endangered Western stock and the threatened Eastern stock of Steller sea lions.

8. Type of stated preference survey (e.g. CV, conjoint): Stated preference choice experiment (attribute-based stated choice method)

9. Where are descriptions/results of the study published/available? Brief description of the study is available at http://www.afsc.noaa.gov/REFM/Socioeconomics/Projects/NCVSSLPM.htm. No publications or results are currently available.

10. Sampling description

   i. Population of interest (e.g. voters, adults, households): U.S. adult residents (one per household)

   ii. Frame(s) (e.g. RDD): Purchased sample from Survey Sampling, Intl.

   iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves): Modified Dillman mail-telephone survey w/ five contacts (advanced letter, initial mailing with monetary incentive, postcard reminder, telephone follow-up and nudge, and second full-mailing).

iv. Location of administration (central facility, home): home

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): 424 in pretest, 4000 (expected) in full survey. Alaska will be oversampled.

vi. Response and Contact Rates[9]:

Pretest response rates for a Spring/Summer 2006 formal pretest are the following:

	Total sample		Alaska subsample		Rest of U.S. subsample	
	$2.00	**$5.00**	**$2.00**	**$5.00**	**$2.00**	**$5.00**
Total mailed	212	212	47	24	165	188
Undeliverable (Mail 1)	18	8	3	1	15	7
Undeliverable (Priority)	1	1	1	0	0	1
Refused						
- Refused entire survey	1	6	0	0	1	6
- Partial survey	0	0	0	0	0	0
Deceased	1	3	1	0	0	3
Language barrier/R incapable	0	1	0	0	0	1
Total successfully delivered (eligible)	192	200	42	23	150	177
Completed before calls	55	81	17	15	38	66
Completed after calls	12	6	4	1	8	5
Completed after 2nd mailing	0	11	0	0	0	11
Total completes	67	98	21	16	46	82
Response Rate (total completes/eligible)	**34.9%**	**49.0%**	**50.0%**	**69.6%**	**30.7%**	**46.3%**

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

Monetary incentives: To encourage participation in the mail survey, an honorarium of $5 was given to half the participants in the initial mailing, while the other half received $2.

Follow-up phone calls: To better understand why non-respondents did not return the survey and to determine if there are systematic differences between respondents and non-respondents, those contacted in follow-up phone call and identified as non-respondents were asked a few questions to gauge their reasons for not responding to the mail survey. These included select socioeconomic and demographic classification questions and a few attitudinal questions. Although not used for the analysis of the pretest data, the information collected from non-

[9] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

respondents will be used to correct for non-response bias where necessary in the full survey (e.g., Heckman method).

Priority Mail mailing: For our second full mailing, we used Priority Mail to emphasize the importance of the materials to the respondent.

III. Ex Post Analyses of Sample Representativeness and Consequences

No ex post analysis of sample representativeness was conducted for the pretest.

IV. Research Needs/Additional Observations

The outside Alaska response rates for this pretest were lower-than-expected, particularly given the amount of qualitative testing done to develop the instrument. We are currently investigating whether higher incentives will improve response rates, but would benefit from research that identifies other cost-effective approaches to boosting response rates in these types of surveys.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: Valuing Visibility in National Parks

2. Sponsor(s): National Park Service

3. Date work was (is expected to be) finished: Unknown

4. Timeline (if any) for review of this survey by OMB: Focus group materials to be reviewed this fall.

5. Team members and affiliations (including survey administrator, e.g. KN):

   Kevin Boyle, Virginia Tech
   Richard Carson, UCSD
   Susan Johnson, NPS
   Robert Paterson, Industrial Economics, Inc.
   Robert Unsworth, Industrial Economics, Inc.
   John Molenar, Air Resource Specialists
   Robert Mitchell, Clark University
   PA Consulting (Pam Rathbun and Robert Baumgartner), survey administrator

6. Author of this summary: Kevin Boyle and Robert Paterson

7. Purpose of the study: To estimate the benefits of visibility improvements in national parks and Class I wilderness areas. The study will focus in particular on the visibility improvements expected to result from the implementation of the Regional Haze Rule.

8. Type of stated preference survey (e.g. CV, conjoint): Attribute-based choice questions.

9. Where are descriptions/results of the study published/available? Not completed.

10. Sampling description

    i. Population of interest (e.g. voters, adults, households): All households within the continental U.S.

    ii. Frame(s) (e.g. RDD): All households with listed phone numbers.

    iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves): Mail with telephone follow-up.

iv. Location of administration (central facility, home): Self-administered at home.

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): Four to five.

vi. Response and Contact Rates: Not implemented yet.

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

Generally following Dillman's Total Design Method, the main survey will be designed and implemented to maximize response rates. This will include a respondent-friendly questionnaire, high quality initial contact, personalization of correspondence and branding of survey materials. Implementation will involve up to five separate mailings, with the fourth and fifth mailings described below sent only to non-respondents. The mailings will consist of: (1) a pre-survey notification, (2) the initial mailing of the survey instrument with a $5 incentive, (3) a thank you/reminder postcard, (4) a replacement survey and reminder letter for non-respondents, and (5) a second replacement survey (via Priority Mail) and reminder letter for non-respondents. In addition to the mailings, nonrespondents will receive a telephone call urging them to complete the survey. This call will also be used to collect data on some key items in the survey in order to determine the characteristics of nonresponders. This call will commence one week after the first replacement survey is mailed to non-respondents and continue until one week after the second replacement survey is mailed to non-respondents.

III. Ex Post Analyses of Sample Representativeness and Consequences

A Response Rate Pilot Study will be conducted involving a split-sample comparison of the data obtained from self-administered questionnaires collected through mail and in-person survey modes. The study will be designed to develop a calibration equation that would be used to adjust responses to the nationwide mail survey data for potential non-response bias.

The Response Rate Pilot Study would be conducted by selecting a number of neighborhoods in each of two metropolitan areas, enumerating all owner-occupied households in each neighborhood, taking a simple random sample of owner-occupied households from each neighborhood, then randomly assigning one-half of each neighborhood sample to a group of mail survey households and a group of in-person survey households.

The mail pilot survey would be implemented using a methodology identical to the methodology used in the nationwide mail survey. The in-person pilot survey would be conducted in a manner that would minimize the differences between the two modes. That is, rather than administering the survey through a personal interview, the interviewer would hand the questionnaire to the respondent and ask the respondent to fill out the questionnaire. The questionnaire would be identical to the one mailed to respondents. The respondent would place the completed survey in a "ballot box" carried by the interviewer, thus minimizing the potential for social desirability bias and mimicking the "self-administered" nature of the mail survey, as much as possible.

Collected data (e.g., valuation information and various response rates from sampled neighborhoods) would be used to estimate the parameters of a calibration relationship such as:

$MeanWTP = f(Response\ Rate_i, Survey\ Mode)$

where *i* indicates neighborhood.

Mean WTP from the nationwide mail survey could then be calibrated using the response rate actually obtained and the estimated parameters of the above relationship.

IV. Research Needs/Additional Observations

Awaiting funding for full implementation.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: **Hawaiian Coral Reef Valuation Study**

2. Sponsor(s): NOAA / National Ocean Service

3. Date work was (is expected to be) finished: 2007

4. Timeline (if any) for review of this survey by OMB: Fall 2006 / Winter 2007

5. Team members and affiliations (including survey administrator, e.g. KN):
   a. Richard Bishop, University of Wisconsin, Madison
   b. Robert Rowe, Stratus Consulting Inc.
   c. David Chapman, Stratus Consulting Inc.
   d. Norman Meade, NOAA
   e. Steve Thur, NOAA
   f. Bob Leeworthy, NOAA
   g. Tony Penn, NOAA
   h. Roger Tourangeau, University of Maryland, College Park

6. Author of this summary: David Chapman

7. Purpose of the study: Develop benefit estimates of protection of Hawaiian coral reef ecosystems. Develop estimates for the relative benefits of protecting the Northwestern Hawaiian Islands over the main Hawaiian islands.

8. Type of stated preference survey (e.g. CV, conjoint): Conjoint (Stated Choice)

9. Where are descriptions/results of the study published/available? Study is not complete, no results available at this time.

10. Sampling description

    i. Population of interest (e.g. voters, adults, households): Civilian Non-institutionalized population of the United States over the age of 18, as defined by the universe of U.S. households

    ii. Frame(s) (e.g. RDD): KN panel

    iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves)**:** Internet - KN panel

iv. Location of administration (central facility, home): Home

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): Pilot – 216 completes out of 312 attempts ; Main – 1500 complete expected

vi. Response and Contact Rates[10]: 69% Response rate 216 completes out of 312 attempts

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

We will employ the following practices for the survey:

- field period of 3 to 4 weeks
- respondent incentives of $10 for participation
- use of the federal agency name in the e-mail invitation
- e-mail reminders
- telephone reminder calls to nonresponders.

Two types of respondent incentives are provided: survey-specific and nonsurvey-specific incentives:

Non-survey-specific incentives are used to maintain a high degree of panel loyalty and to prevent attrition from the panel. For the households provided Internet appliances and an Internet connection, their incentive is the hardware and Internet service. For households using their own personal computers and Internet service, Knowledge Networks enrolls the panelists into a points program that is analogous to a “frequent flyer” card in that respondents are credited with points in proportion to their regular participation in surveys. Panelists receive cash-equivalent checks approximately every four to six months in amounts reflecting their level of participation in the panel, which commonly results in distributions of $4 to $6 per month.

The survey-specific incentives are provided to respondents as a result of one of two conditions: 1) the survey is expected to require more than 20 minutes of time to complete, or 2) there is an unusual request being made of the respondent, such as specimen collection, the viewing of a specific television program, or completion of a daily diary. In these kinds of circumstances, panelists are being asked to participate in ways that are more burdensome than initially described to respondents during the panel recruitment stage. For the Coral Reef Protection Survey, an incentive will be provided because the survey is expected to require 20 or more minutes to complete. Extra encouragement will be required because the survey will require participants to read and digest more information than is the case in other types of surveys and because the topic of the survey will be of limited salience for significant numbers of people. Respondents who participate in the survey will be credited with 10,000 points, which equates to $10, which will be mailed to them at a later date.

In one or two paragraphs describe any steps you took before the survey was completed to boost response rates or otherwise try to make the sample more representative of the population of

[10] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

interest (e.g., paying incentives, non-response conversion techniques such as follow-up phone calls). Also indicate any steps taken to prepare for later tests of sample representativeness, such as asking basic questions of non-responders.

One option for consideration is a nonresponse followup study (NRFUS) for the Coral Reef project. KN has experience conducting nonresponse followup surveys for measuring nonresponse bias and for improving the cumulative response rate. The method is to subsample randomly research subjects from defined groups of nonresponders, and then expend substantial resources to gain their cooperation. This is sometimes called a “double sampling” method. Persons, for instance, who were sampled to join the panel but did not join the panel would be eligible for sampling for this project. The same survey is used for these cases.

III. Ex Post Analyses of Sample Representativeness and Consequences

Describe any techniques you used to adjust for potential observable bias from non-response (or coverage bias) such as weighting. Further, describe any tests believed to *suggest* the presence or absence of non-observable non-response bias in the sample, such as comparing respondents who answered the survey quickly to those that answered it later or testing for convergent validity across different modes/frames. Finally, report any attempts to correct for selection on unobservables, such as a Heckman selection correction. For any of these analyses, report any results that suggest the consequences of non-response on the outcome of interest (e.g., willingness to pay). This section should be several paragraphs long.

Since the sampling has not been completed yet, we do not yet have any ex post analysis of sample representativness.

IV. Research Needs/Additional Observations

Briefly describe any research needs for analyzing sample representativeness.

Further, please briefly provide any additional observations you believe are salient to the question of sample representativeness in these surveys. For example, you might to comment on the relative importance of addressing concerns of sample bias versus other concerns associated with stated preference surveys.

Template for Description of Study and Techniques for Addressing Nonresponse

For October 2, 2006 Sample Representativeness Workshop

I. Basic Information

1. Title of project: **North Atlantic Right Whale Economic Benefit Study**

2. Sponsor(s): NOAA Northeast Fisheries Science Center

3. Date work was (is expected to be) finished: 2008

4. Timeline (if any) for review of this survey by OMB: Fall 2006 / Winter 2007

6. Team members and affiliations (including survey administrator, e.g. KN):
   a. Richard Bishop, University of Wisconsin, Madison
   b. David Chapman, Stratus Consulting Inc.
   c. Roger Tourangeau, University of Maryland, College Park
   d. Kathryn Bisack, NOAA

6. Author of this summary: David Chapman

7. Purpose of the study: Develop benefit estimates of protection of north Atlantic right whale for policy analysis.

8. Type of stated preference survey (e.g. CV, conjoint): Conjoint (Stated Choice)

9. Where are descriptions/results of the study published/available? Study is not complete, no results available at this time.

10. Sampling description

i. Population of interest (e.g. voters, adults, households): Civilian Non-institutionalized population of the United States over the age of 18, as defined by the universe of U.S. households

ii. Frame(s) (e.g. RDD): TBD – most likely either KN panel or Survey Sampling Inc. matched list.

iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves)**:** Either Mail or KN panel (Internet)

iv. Location of administration (central facility, home): Home

v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey): Approximately 1200-1500

vi. Response and Contact Rates[11]:

II. Ex Ante Strategies for Reducing and Testing for Sampling Biases

Anticipated efforts to increase response rates include:
For all modes:
Survey materials will prominently display NOAA sponsorship.
Incentive (5$ - $10) will be paid to increase response rates.

Mode dependent:
Mail:
Introductory letter on NOAA letterhead
Dillman mail design efforts – follow-up postcard, resending of instrument (phone calls if phone/address matched list used)
Internet:
Reminder emails

In one or two paragraphs describe any steps you took before the survey was completed to boost response rates or otherwise try to make the sample more representative of the population of interest (e.g., paying incentives, non-response conversion techniques such as follow-up phone calls). Also indicate any steps taken to prepare for later tests of sample representativeness, such as asking basic questions of non-responders.

III. Ex Post Analyses of Sample Representativeness and Consequences

Describe any techniques you used to adjust for potential observable bias from non-response (or coverage bias) such as weighting. Further, describe any tests believed to *suggest* the presence or absence of non-observable non-response bias in the sample, such as comparing respondents who answered the survey quickly to those that answered it later or testing for convergent validity across different modes/frames. Finally, report any attempts to correct for selection on unobservables, such as a Heckman selection correction. For any of these analyses, report any results that suggest the consequences of non-response on the outcome of interest (e.g., willingness to pay). This section should be several paragraphs long.

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Better understanding of the overall method for calculating response rates from matched (address/phone) survey sample lists.
Methods for non-response tests when using matched mail sample lists.

Further, please briefly provide any additional observations you believe are salient to the question of sample representativeness in these surveys. For example, you might to comment on the relative importance of addressing concerns of sample bias versus other concerns associated with stated preference surveys.

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3. Date work was (is expected to be) finished:

4. Timeline (if any) for review of this survey by OMB:

5. Team members and affiliations (including survey administrator, e.g. KN):

6. Author of this summary:

7. Purpose of the study:

8. Type of stated preference survey (e.g. CV, conjoint):

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    i. Population of interest (e.g. voters, adults, households):

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    iii. Mode(s) of administration (e.g. internet, mail, in-person; please indicate if multiple waves)**:**

    iv. Location of administration (central facility, home):

    v. Total number of unique cases fielded (i.e. the total number of unique contacts attempted to survey):

    vi. Response and Contact Rates[12]:

[12] Please use APPOR Response Rate 1. If available, please provide Response Rate 3 and Contact Rate 1. Please provide all variables used in the calculation (sample size, contacts, complete interviews, etc.). The APPOR standard response rate and contact rate definitions can be found here http://www.aapor.org/pdfs/newstandarddefinitions.pdf . If you do not use the AAPOR standard definitions, please describe how you calculated a response rate.

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