Programmatic Review for NPS Sponsored Public Surveys (1024-0224)

Response to Terms of Clearance

In response to the terms of clearance posed by OMB in 2008, we asked Dr. Don A. Dillman to conduct comprehensive review of the Visitor Services Program questionnaires. Based on his review, Dr. Dillman raised two concerns related to: double response requests and cognitive testing on long list questions. We asked the researchers at University of Idaho – Visitor Services Project (VSP) to provide the following feedback in response to his concerns.

Concern 1: Some questions used in the NPS Pool of Known Questions use a double column format

The concern was the significant lower response rates for the second column. To examine this issue, the VSP compared the number of answers in the first and second column for questions that have a double column format. The following is an example of one question from the Pool of Known Questions:

a) Prior to this visit, how did you and your personal group obtain information about Black Canyon of the Gunnison National Park (NP)? Please mark (•) all that apply in column (a).

b) If you were to visit Black Canyon of the Gunnison NP in the future, how would you and your personal group prefer to obtain information about the park? Please mark (•) all that apply in column (b).

a) Prior to this visit		b) Prior to future visits
O	Did not obtain information prior to visit	O
O	Black Canyon of the Gunnison NP website: www.nps.gov/blca	O
O	Other websites	O
O	Friends/relatives/word of mouth	O
O	Inquiry to park via phone, mail, or email	O
O	Local businesses (hotels, motels, restaurants, etc.)	O
O	Maps/brochures	O

The table below shows the number of answers for survey questions with a double column format and the difference in the number of answers between the first and second column. The results show that the second column in fact received a lower response rate than the first column in many cases. However, observations show that the difference was most significant in questions that ask about future preference. Whereas, in questions that asked about intention vs. actual action the second column which stated the actual question received higher response rate. From this observation, it is plausible to assume that the lower response rate in the second column may be due to the content rather than the design of the question.

Table 1: Difference in response rate between first and second column

Project/year	Question	# returned	First column	Second column	Difference
YOSE (2008)	Sources of information used/future preference	563 (60%)	484	428	56
BLRI (2008)	Sources of information used/future preference	826 (75%)	979	704	275
HOBE (2008)	Sources of information used/future preference	231 (60%)	188	158	30
	Activity expected/activity conducted		192	207	-15
CARL (2008)	Sources of information used/future preference	259 (77%)	210	153	57
FIIS (2008)	Activities past visit/this visit	636 (56%)	621	560	61
HEHO (2008)	Sources of information used/future preference	287 (72%)	244	216	28
	Activities expected/ activity conducted		251	245	6
CIRO (2008)	Sources of information used/future preference	256 (73%)	234	190	44
	Rock climbing activity this visit/future visits		149	220	-71
	Activities this visit/future visit		245	218	27
CARE (2008)	Sources of information used/future preference	480 (78%)	403	372	31
	Activity expected/activity conducted		456	418	38
GRSM (Fall 2008)	Sources of information used/future preference	781 (68%)	657	554	103
	Activity expected/activity conducted		738	713	25
GRSM (Summer 2008)	Sources of information used/future preference	748 (65%)	645	554	91
	Activity expected/activity conducted		708	665	43
FOLS (2009)	Sources of information used/future preference	261 (77%)	186	188	-2
	Topic learning this visit/future visit		223	190	33
	Activities this visit/future visit		260	202	58
HOME (2009)	Sources of information used/future preference	254 (75%)	206	160	46
	Activities this visit/future visit		230	207	23
MIMI (2009)	Sources of information used/future preference	249 (73%)	184	193	-9
	Activity expected/activity conducted		223	226	-3
	Topic learning this visit/future visit		230	174	56
WORI (2009)	Sources of information used/future preference	243 (72%)	192	171	21
KLSE (2009)	Sources of information used/future preference	220 (65%)	142	153	-11
	Topic learning this visit/future visit		206	101	105
YOSE (2009)	Sources of information used/future preference	689 (57%)	595	543	52
SLBE (2009)	Sources of information used/future preference	696 (60%)	623	478	145
	Activity expected/activity conducted		669	635	34
JAGA (2009)	Sources of information used/future preference	241 (71%)	187	162	25

BOST (2009)	Sources of information/future preference	603 (58%)	452	426	26
BRCA (2009)	Activity expected/activity conducted	626 (73%)	601	600	1
INDU (2009)	Sources of information used/future preference	499 (55%)	410	353	57
MAVA (2009)	Sources of information used/future preference	267 (79%)	213	181	32

Concern 2: Cognitive testing on long list questions

During the previous review of the Pool of Known Questions, one concern was that respondents may have a tendency to skip the items toward the end of the questions that contain a long list. In response to this concern the Visitor Services Project conducted a pilot study to determine if the respondents have the tendency to skip the items at the end of a long list.

Two versions of the same questionnaire were used. The first version was numbered with an "odd" sequence such as 1, 3, 5 and so on. In the first version, the items were listed in alphabetical order. The second version was numbered with an "even" sequence such as 2, 4, 6 and so on. Questions with a long list of items (10 items or more) such as questions about activities; use of park services and facilities; and learning methods for a future visit were reversed. Items in the "even" questionnaire were in a reverse order with the "odd" questionnaire. For example, in a 14-item question the first item in an odd questionnaire is the 14^{th} item in the corresponding even questionnaire.

The questionnaires were distributed to visitors at the park at random so that the first recipient would have an odd questionnaire and the second would have an even questionnaire and so on. This was an attempt to minimize the respondents' effect. The testing hypothesis was that the order of an item in a long-list question is independent of the response rate to that item. To test this hypothesis we used Wilcoxon Sign Rank test for two related sample to compare the response rate of the same item in an odd vs. even questionnaire. If the order of the items has an effect on the response rate then the response rate should systematically decline as the order of the item increases. For example in a 10-item question, the 1^{st} to 5^{th} items in the odd questionnaire should have higher response rates against the same items in the even questionnaire. Conversely, the 6^{th} to 10^{th} items in an odd questionnaire should have lower response rates against the same items in even questionnaire.

RESULTS

The figures below show an example of a hypothetical scenario when response rate to each item has a perfect correlation to the item order. This shows the dependence of response rate to the item's location with items toward the end of the long list receiving lower response rates compared to those at the beginning of the list. Figure 2 shows a typical scenario in VSP survey questionnaire. The response rate to each item does not follow any particular pattern but rather is content-dependent. For example, the first item in the odd questionnaire received a lower response rate than the corresponding last item in the even questionnaire.

Table 2 shows the results of Wilcoxon Sign Rank test on the response rate of odd questionnaire compare to the same item in even questionnaire with reversed order. Of all tests, only two cases show the significant difference due to item order ($p\text{-value}<0.05$). This is empirical evidence that show in VSP

questionnaire the response rate for question items is more likely to be content-dependent rather than order-dependent.

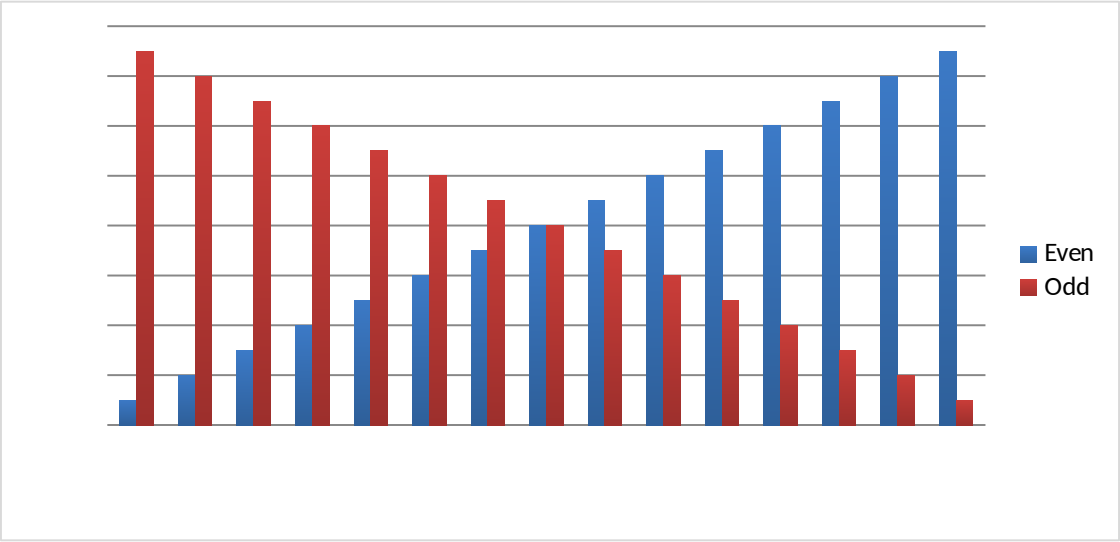

Figure 1: Scenario when response rate to each item has a perfect correlation with item order.

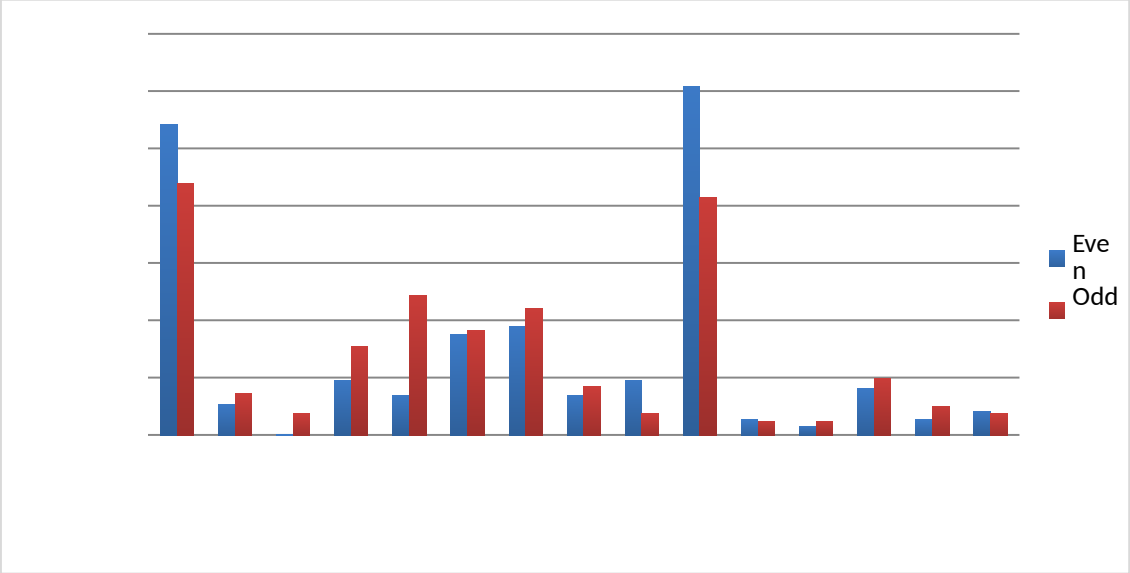

Figure 2: Visitor awareness from George Washington Carver NM data

Table 2: Wilcoxon Sign Rank rest results

Project	Year	Question	Number of items	p-value
Everglades NP	April 2008	Activity-self guided	14	0.041
Everglades NP	April 2008	Activity- guided	14	0.187
Everglades NP	February 2008	Activity- self guided	14	0.65
Everglades NP	February 2008	Activity- guided	14	0.071
Everglades NP	April 2008	Visitor services and facilities used	14	0.124
Everglades NP	February 2008	Visitor services and facilities used	14	0.022
Everglades NP	April 2008	Methods of learning about park	12	0.06
Everglades NP	February 2008	Methods of learning about park	12	0.30
Horseshoe Bend NMP	2008	Sources of information used	14	0.131
Horseshoe Bend NMP	2008	Activities expected	14	0.064
Horseshoe Bend NMP	2008	Activities participated	14	0.079
Horseshoe Bend NMP	2008	Visitor services and facilities used	13	0.249
Horseshoe Bend NMP	2008	Interpretive methods	12	0.480
Little River Canyon NPres	2010	Sources of information	15	0.173
Little River Canyon NPres	2010	Activities	14	0.133
Little River Canyon NPres	2010	Visitor services and facilities used	11	0.131
Chattahoochee River NRA	2010	Information used	14	0.875
Chattahoochee River NRA	2010	Activities	16	0.426
Chattahoochee River NRA	2010	Site visited	19	0.888
Chattahoochee River NRA	2010	Services used	11	0.062
George Washington Carver NM	2010	Information sources used	14	0.683
George Washington Carver NM	2010	Activities this visit	14	0.221
George Washington Carver NM	2010	Visitor awareness	14	0.925

Concern #3 - item nonresponse analysis to help determine specific problematic questions,

The VSP did a review of a sample of non-response items to determine if there were any specific problematic questions or concerns. After the review it was determined that many questions in VSP surveys were tailored to the park's situation and thus are varied greatly across questionnaires. In addition, some of the questions only target certain audiences. For example, questions about type of accommodations used only applied to visitors who stayed overnight in the area surrounding the park. Those questions are not comparable across the board. We identified some questions that are somewhat similar in content to determine the nonresponse effect due to question type and the level of complexity and sensitivity

Table 1: Question attributes

Question	Complexity	Sensitivity	Location in the questionnaire
Information used to plan visit	Low (check all that applied)	Low (no personal information)	Beginning
Activity conducted at the park	Low (check all that applied)	Low (no personal information)	Middle (first half)
Awareness of park management	Low (Yes/No)	Medium (visitor's knowledge)	Beginning
Primary reason for visiting the area/park	Low (check one)	Low	Middle (first half)
Length of visit	Medium (require some memory recall)	Low	Middle (first half)
Evaluation of park services and facilities	High (the question in matrix format and require memory recall)	Medium (evaluation of public services)	Middle
Group type	Low	Low	Second half
Group size	Low	Low	Second half
Age/zip code/ number of time visit	High (the question in matrix format and require memory recall)	High (personal information)	One of the last 5 questions
Race/ ethnicity	Medium (the question in matrix format)	High (personal information)	One of the last 5 questions
Expenditure	High (require substantial memory recall)	High (personal information)	One of the last 5 questions
Overall quality rating	Low	Medium (evaluation of public service)	One of the last 5 questions

Table 2 shows the percentage of respondents who responded to each question. On average, there wasn't any significant difference in response rate of each question due to length, complexity or sensitivity with an exception of the expenditure question.

Table 2: Response rate for each question

	Number of questionnaires	Min	Max	Mean	Std. Dev
Information	45	94%	100%	99%	1%
Activity	46	77%	100%	93%	6%
Awareness	30	72%	100%	97%	5%
Primary reason for visiting	38	76%	100%	93%	6%
Length of visit	46	86%	100%	97%	3%
Evaluation of park services and facilities	44	68%	98%	90%	5%
Group type	47	95%	100%	98%	1%
Group size	47	85%	100%	98%	2%
Age/zip code/number of time visit	47	93%	100%	99%	1%
Race/ethnicity	29	86%	99%	93%	3%
Expenditure	20	69%	95%	84%	6%
Overall quality	46	90%	100%	98%	1%

The question asking about visitors' expenditures while visiting an area is often complicated (requiring visitors to remember how much they spent on a particular category) and somewhat sensitive as it is related to personal spending habits. These questions were designed by the authors of MGM2 model and have been used in other questionnaires outside the scope of VSP surveys. However, we observed that some visitors (especially day-users), did not spend any money on any category, chose to skip the question instead of writing a "0" number in every category. To improve this question, we added in an option of "no money spent" as a screening to distinguish between skipping and a true response. We will revisit this question after the survey season to determine if the nonresponse issue has been improved.