Museum Visitor Studies, Evaluation and Audience Research

Randi Korn & Associates, Inc.
118 East Del Ray Avenue
Alexandria, VA
22301

Summative Evaluation: *Disease Detectives* Exhibition

Prepared for the
Science Museum of Minnesota
St. Paul, MN

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EXECUTIVE SUMMARY

INTRODUCTION

The Science Museum of Minnesota (SMM) contracted with Randi Korn & Associates, Inc. (RK&A) to evaluate *Disease Detectives*, a traveling exhibition made possible by a Science Education Partnership Award from the National Center for Research Resources, a component of the National Institutes of Health. *Disease Detectives* is an immersive exhibition that provides visitors with opportunities "to investigate infectious disease mysteries by role-playing various medical professionals." RK&A conducted a summative evaluation to investigate how visitors experienced the exhibition and how effectively the exhibition conveyed information about infectious diseases. Data were collected through standardized questionnaire and in-depth interviews in the winter of 2008-09.

The Executive Summary presents the most salient findings and is followed by the Discussion which places the data in the context of the museum evaluation field. Please read the body of the report for a more comprehensive presentation of findings.

PRINCIPAL FINDINGS: STANDARDIZED QUESTIONNAIRE

A total of 329 visitors completed questionnaires with a participation rate of 46 percent. The questionnaires were administered to adult visitors as they were exiting SMM. About one-half of respondents reported visiting *Disease Detectives* (n = 151) on the day they were surveyed when shown a list and description of current exhibitions. The other one-half of respondents had not visited the exhibition (n =178).

DEMOGRAPHIC CHARACTERISTICS AND BACKGROUND INFORMATION

- More than one-half of respondents were female (58 percent).
- The mean age of respondents was 41 years.
- Respondents were highly educated (67 percent completed a college or post-graduate degree).
- Respondents were very interested in science; the mean rating was 8.4 on a scale from 1 (no interest in science) to 10 (extremely interested in science).

VISIT CHARACTERISTICS

- Most respondents were repeat visitors (84 percent).
- Most often, respondents were visiting the SMM in groups of adults and children (71 percent).
- About one-half visited *Disease* Detectives (46 percent). Age was a factor as younger visitors (<35 years) were most likely to visit the exhibition, while older visitors (55+ years) were least likely.
- Of those who visited *Disease Detectives*, 48 percent visited The Case of the Birthday Surprise, 43 percent visited The Case of the World Traveler Blues, and 37 percent visited The Case of the Unwelcome Visitors.

VISITORS' EXPERIENCES WITH SMM EXHIBITS

- Respondents perceived SMM exhibits to be very informative (mean rating = 6.3 on a scale from 1 "not at all informative" to 7 "very informative").
- Respondents indicated that SMM exhibits successfully raised their awareness of current science issues (mean rating = 5.8 on a scale from 1 "did not raise my awareness of current science issues" to 7 "raised my awareness of current science issues").
- Respondents rated SMM exhibits as relevant to their lives (mean rating = 5.8 on a scale from 1 "not at all relevant to my life" to 7 "very relevant to my life").
- There were no statistically significant relationships between exhibit experience ratings and visitation to *Disease Detectives*.

VISITORS' KNOWLEDGE OF INFECTIOUS DISEASE

- Data collectors asked respondents, "When I say 'infectious diseases,' what specific diseases come to mind?" The top three responses were flu/influenza (55 percent), HIV/AIDS (36 percent), and the common cold (36 percent).
- When asked, "What are some things you could do at home to prevent foodborne disease?," more than one-half of respondents said thoroughly cook food (62 percent) and wash hands (54 percent).
- Data collectors asked respondents, "What are some things you could do to avoid getting or spreading the flu?" Most often, respondents said that you should wash your hands (83 percent).
- When asked, "If you were traveling to a country where malaria is a problem, what might you do to avoid getting malaria?," one-half said that vaccinations can be used (50 percent).
- The two statements that respondents most strongly agreed with are "Infectious diseases are spread in a variety of ways, including infrequent and improper washing hands, sneezing or coughing, insect bites, and contaminated food and water" and "Simple things that you can do in your daily life can prevent you from catching many infectious diseases."
- The two statements that respondents least agreed with are "Influenza is mainly a respiratory disease" and "Antibiotics and vaccines have cured or can prevent most infectious diseases."

PRINCIPAL FINDINGS: IN-DEPTH INTERVIEWS

Trained data collectors conducted in-depth interviews with 40 visitors who had visited *Disease Detectives* during the first week in January 2009. All interviews were conducted via telephone at least two weeks after the visit. More than one-half of interviewees were female, and the median age was 41 years.

RECOLLECTION OF THE EXHIBITION

OVERALL RECOLLECTION

- While many interviewees' recollections were specific, recalling exact names and details of the exhibits, some other interviewees' memories were more general.
- Interviewees with specific recollections, often recalled an interactive component of the exhibition. Most frequently, interviewees talked about swabbing Marcus' nose in The Case of the World Traveler Blues, testing the temperature of hamburger patties in The Case of the Birthday Surprise, and washing their hands in The Case of the Birthday Surprise

RESPONSES TO SPECIFIC CASES

- When prompted to recall which cases they examined in *Disease Detectives*, more than one-half said they did not remember which case they examined or said they had not visited any specific cases. For example, a few explained that their children—not themselves—examined the cases so they could not identify an exact case.
- Almost one-half identified a specific case—either by name or by describing the activities they completed as part of the case. Of these interviewees, about one-quarter talked about The Case of the Birthday Surprise or The Case of the Unwelcome Visitor.

VISITORS' COMPREHENSION

INFORMATION LEARNED ABOUT INFECTIOUS DISEASES

- Most interviewees, when explaining what they had learned about infectious diseases, focused on how diseases are contracted and spread; about one-half of interviewees described communicable diseases—a few using this exact term—and the way they can be contracted from other people.
- About one-quarter of interviewees described detecting diseases, with interviewees describing the symptoms of diseases. Additionally, a few spoke about how to trace the origin of diseases—although not in great detail
- In contrast, a few others said they did not learn anything new about infectious diseases, citing either their age or experience in the medical field.

HOW TO PREVENT GETTING OR SPREADING INFECTIOUS DISEASES

- Preventing and spreading infectious diseases was a topic with which most interviewees were familiar; thus, many interviewees said they did not learn anything new from the exhibition.
- Several acknowledged that the exhibition reinforced their knowledge of disease prevention and effectively reminded visitors to take measures to prevent getting and spreading disease.
- Several emphasized that the exhibition was for kids, so while they did not take away anything new, their children had. The majority of these interviewees did not name specific things that their children had learned although a few talked about the length of time you should wash your hands as well as sneezing into your sleeve.

AFTER EFFECTS OF THE EXHIBITION

THOUGHTS ABOUT THE EXHIBITION/ASPECTS DISCUSSED

- When asked whether they had thought about or discussed aspects of the exhibition since their visit, almost two-thirds had not done so, while one-third said they had thought about or discussed the exhibition since their visit. Most frequently, interviewees said they thought about or discussed foodborne disease as it was most relevant to their life, specifically in light of the peanut butter recall owing to salmonella.

BEHAVIORAL CHANGES

- For most interviewees, information they learned from the exhibition did not impact decisions made in their daily life. Many interviewees explained that most or all of the information in the exhibition was something with which they were already knowledgeable, noting that they already do many of the precautions suggested.
- About one-quarter said that the information they learned in the exhibition impacted decisions made in their daily life. The majority of these interviewees said that the exhibition reminded them of certain precautions to be taken in regard to getting and spreading diseases.

DISCUSSION

INTRODUCTION

Overall, *Disease Detectives* was successful in engaging visitors with interactive exhibits and conveying information about infectious disease prevention and transmission. For most visitors, the exhibition reinforced their existing knowledge about infectious diseases; however, for some, it provided new insights and prompted behavioral changes.

SUCCESSFUL ASPECTS OF THE EXHIBITION

INTERACTIVE COMPONENTS WERE MEMORABLE

As this study looked at the after effects of the exhibition on visitors, RK&A asked visitors about their overall recollection of their experience two to four weeks after their visit, eliciting unprompted, top-of-mind responses. Many recalled and appreciated the interactive components of the exhibition, and further, a few said they were impressed by these components. The Meat Temperature interactive and Hand Washing interactive were most remembered, which corroborates findings in the remedial evaluation (RK&A, 2008a). These interactives also proved to be quite effective as many visitors mentioned either the significance of washing hands or testing the temperature of food when talking about ways to avoid getting and spreading infectious diseases—messages reinforced through the previously mentioned interactives. To a lesser extent, visitors mentioned interactives related to diagnosing diseases.

EXHIBITION REINFORCED KNOWLEDGE ABOUT INFECTIOUS DISEASES

Most evident was that the exhibition reinforced visitors' previous knowledge regarding ways to avoid getting or spreading disease. In interviews, visitors often said that they were familiar with topics presented in the exhibition, but also mentioned the value of reinforcing information about infectious diseases—both for themselves and their children. For example, visitors frequently emphasized hand washing as the best preventive measure and recalled talking about hand washing since visiting the exhibition as a result of their experience. Visitors also frequently mentioned sneezing or coughing into their sleeve, checking the temperature of food, and using mosquito nets.

CHALLENGES FOR THE EXHIBITION

RK&A designed a pre- and post-survey of visitors' knowledge about infectious diseases to investigate the effect of the exhibition on visitors' understanding of this topic. Two statistically significant differences were found between those who had and had not visited the exhibition: visitors who saw *Disease Detectives* were more likely to suggest thoroughly cooking food to prevent foodborne disease at home than were visitors who did not see the exhibition, and visitors who saw *Disease Detectives* were less likely to suggest getting a flu shot to avoid getting or spreading the flu than were visitors who did not see the exhibition. For all other items, the pre- and post-samples responded similarly.

In thinking about these findings, it is important to recognize how difficult it is to convey new information to or promote new behaviors in visitors through a one-time experience of visiting an exhibition. The nature of learning in informal settings, such as museums, is inherently personal and self-directed. While museums often strive to convey content to visitors, the growing body of evaluation studies is demonstrating that teaching new information to visitors is only one aspect of the exhibition

experience. Developing interest in science, engaging in science reasoning and practice, reflecting on science, etc., are equally important (National Research Council, 2009). Furthermore, as RK&A has found in other studies, reinforcing or deepening existing knowledge is also a worthy and appropriate goal for exhibitions (RK&A, 2008b; RK&A, 2009a; RK&A, 2009b)

The other challenge—not unique to this study—is the difficulty visitors have identifying what is new information versus what they already know. Visitors to *Disease Detectives* often talked about the focus of the exhibition as something with which they are already familiar. However, are visitors familiar with the topic, or do they *think* they are familiar with the topic? Museums are often challenged when presenting seemingly familiar topics as it is difficult to engage visitors with new ideas about a "familiar" topic (Borun, 1993; RK&A, 2009c; 2003; Yalowitz, 2004). Consider, for instance, the topic of conservation—a popular and undoubtedly "familiar" topic that both the Monterey Bay Aquarium and the Bronx Zoo address through exhibits. In both cases, research revealed that while visitors said that conservation is an important topic, they did not take away as much information about conservation as the Aquarium and Zoo had hoped; further challenging is that the exhibits did not affect much change in visitors' conservation behavior. (RK&A, 2009c; 2003; Yalowitz, 2004).

The SMM faces similar challenges conveying information about infectious diseases that the Monterey Bay Aquarium and Bronx Zoo face when conveying information about conservation. Given this notion of the "familiar," it is difficult to fully engage visitors in *Disease Detectives* regardless of whether visitors *are actually* familiar with infectious diseases or whether they *believe* they are familiar with infectious disease. Indeed, this trend—not uncommon— may explain the absence of differences between visitors who had and had not visited *Disease Detectives*.

CONCLUSION

RK&A believes that while some findings are challenging, *Disease Detectives* has the potential to become even more successful for two reasons: (1) the "newness" and distinction of the exhibition as a traveling exhibition; and (2) the relevance of the topic to visitors.

"NEWNESS" AND DISTINCTION OF THE EXHIBITION AS A TRAVELING EXHIBITION

At the SMM, *Disease Detectives* blended in with other exhibitions in the Human Body Gallery. Thus, while SMM considers *Disease Detectives* a special exhibition in the Human Body Gallery, many visitors did not distinguish it as so. First, *Disease Detectives* did not look different enough from other exhibitions at the SMM and was not obviously separated from the rest of the Human Body Gallery. For instance, the exhibition is in a railed-off section of open gallery space, rather than residing in its own space. This lack of visual distinction may explain visitors' confusion distinguishing *Disease Detectives* from other exhibits in the Human Body Gallery. Further, the exhibition was competing against other special exhibitions, such as *CSI: The Experience*, and special events, such as the Omni film. These special exhibitions and experiences were more heavily marketed on the SMM Web site and at the Museum. Thus, not surprisingly, these exhibitions and experiences were top-of-mind when visitors recalled their overall experiences at the SMM and some described them as the main purpose of their visit. Research supports this finding as intentionality—planning to do or see something—is one crucial aspect in developing clear, long-term memories (Anderson, 2005).

These challenges at the SMM, however, will become opportunities as the exhibition travels. The exhibition will *become* a unique, special exhibition that may be a destination or the main reason for visitors' attendance. *Disease Detectives* will also be treated as a special exhibition—given a designated

space and marketed, which will help improve its standing among other experiences visitors might have at the museum that day.

RELEVANCE OF INFECTIOUS DISEASES TO VISITORS

Given the recent outbreak of swine flu and its extensive news coverage, RK&A believes this exhibition will become even more successful as infectious diseases are currently a highly relevant topic. Arguably, infectious diseases are always relevant; however, they are sometimes disregarded as a familiar topic or not of immediate concern. In this study, there was some evidence of relevancy. For instance, visitors noted the recent traces of Salmonella found in peanut butter. This finding suggests that if the summative evaluation had been conducted at a different time of year, the results may have been quite different.

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INTRODUCTION

The Science Museum of Minnesota (SMM) contracted with Randi Korn & Associates, Inc. (RK&A) to evaluate *Disease Detectives*, a traveling exhibition made possible by a Science Education Partnership Award from the National Center for Research Resources, a component of the National Institutes of Health. RK&A conducted a summative evaluation to investigate how visitors experienced the exhibition and how effectively the exhibition conveyed information about infectious diseases.

Specifically, the study objectives were to examine:

- The quality of visitor's exhibition experiences;
- Visitors' recollections of the exhibition, including whether visitors thought about the exhibition in the two to four weeks after their visit;
- Visitors' use of the case studies and understanding of the case study messages;
- Whether visitors learned any new information about infectious diseases;
- Whether visitors learned about the transmission and prevention of the three featured infectious diseases; and,
- Whether visitors have changed their behavior (or plan to) regarding infectious diseases as a result of what they learned in the exhibition.

METHODOLOGY

RK&A collected quantitative and qualitative data, using standardized questionnaires administered interview style and in-depth interviews. All data were collected between December 2008 and March 2009.

STANDARDIZED QUESTIONNAIRES

A standardized questionnaire was used to collect data about visitor characteristics, experiences, and understanding because it is the most efficient method for gathering information from a large number of people. Moreover, the resulting data can be analyzed using a variety of statistical procedures. RK&A consulted with SMM staff to develop a three-page standardized questionnaire that includes a variety of question formats (see Appendix A).

Specially-trained data collectors conducted face-to-face interviews with visitors using the questionnaire as the interview framework. Using a continuous random sampling method, data collectors intercepted adult visitors (18 years old or older) in the Museum's lobby, and asked them to participate. If the visitor declined, the data collector logged the visitor's gender, estimated age, and reason for refusal. If the visitor agreed, the data collector conducted a face-to-face interview to administer the questionnaire.

IN-DEPTH INTERVIEWS

In-depth interviews are useful in understanding ideas and concepts from a visitor's point of view. The purpose of conducting in-depth interviews is to encourage and motivate visitors to describe their experiences, express their opinions and feelings, and share with the interviewer the meaning they construct from their museum experiences. In-depth interviews produce data rich in information

because interviewees talk about their personal experiences and ideas. They were conducted for this study because they complement the quantitative data collected through the questionnaire.

The interview guide was intentionally open-ended to allow interviewees the freedom to discuss what they felt was meaningful (see Appendix B). All interviews were audio-recorded with participants' awareness and transcribed to facilitate analysis.

DATA ANALYSIS AND REPORTING METHOD

STANDARDIZED QUESTIONNAIRES

The data were analyzed using SPSS 12.0.1 for Windows, a statistical package for personal computers. Analyses included descriptive and inferential methods. See Appendix C for a listing of all statistical analyses that were run. Tables are used to present the information. Percentages within tables do not always equal 100, owing to rounding.

DESCRIPTIVE STATISTICS

Frequency distributions were calculated for all categorical variables. Summary statistics, including the mean (average) and standard deviation (spread of scores: "±" in tables), were calculated for visitor age and all rating scale variables.

INFERENTIAL STATISTICS

To examine the relationship between two categorical variables, cross-tabulation tables were computed to show the joint frequency distribution of the variables, and the chi-square statistic (X^2) was used to test the significance of the relationship. For example, "ways to avoid getting or spreading the flu" were tested against "visit *Disease Detectives*" to determine whether the variables were related.

To test for differences in the means of two or more groups, an analysis of variance (ANOVA) was performed and the F-statistic was used to test the significance of the difference. For example, "rating scale scores" were compared by "visit *Disease Detectives*" to determine whether the variables were related.

For all statistical tests, a 0.05 level of significance was used to preclude findings of little practical significance.[1] Only statistically significant findings are presented in the body of the report.

QUALITATIVE ANALYSIS

Responses to open-ended questions were analyzed using content analysis. Responses were reviewed, and as patterns were detected, categories were developed and similar responses were grouped. Responses within each category were tallied, and frequencies for each category are reported.

IN-DEPTH INTERVIEWS

Visitors' responses to interview questions were analyzed qualitatively, meaning that the evaluator studied the data for meaningful patterns and, as patterns and trends emerged, grouped similar responses or behaviors. Trends and themes within the data are presented in thematic sections, and, within each section, findings are reported in descending order starting with the most frequently occurring. This report uses verbatim quotations from interviews (edited for clarity) to give the reader the flavor of participants' experiences, and to illustrate their ideas as fully as possible. Within quotations, the

[1] When the level of significance is set to $p = 0.05$, any finding that exists at a probability (p-value) ≤ 0.05 is "significant." When a finding (such as a relationship between two variables or a difference in rating scores) has a p-value of 0.05, there is a 95 percent probability that the finding exists; that is, 95 out of 100 times, the finding is correct. Conversely, there is a 5 percent probability that the finding would not exist; in other words, 5 out of 100 times, the finding appears by chance.

interviewer's comments appear in parentheses. Gender and age of interviewees appear in brackets following the quotations.

SECTIONS OF THE REPORT:

1. Principal Findings: Standardized Questionnaires
2. Principal Findings: In-depth Interviews

PRINCIPAL FINDINGS: STANDARDIZED QUESTIONNAIRE

INTRODUCTION

This section of the report presents the findings from a questionnaire administered to visitors at the SMM between December 2008 and March 2009. Data collectors intercepted 611 visitors as they were exiting the SMM and invited them to participate in a visitor survey. A total of 329 visitors agreed and 282 declined, for a participation rate of 46 percent.

Most questionnaires were administered in January and February (82 percent), and approximately one-half were administered on weekdays (54 percent) (see Table 1).

TABLE 1

MONTH AND DAY OF DATA COLLECTION

MONTH (*n* = 329)	**%**
December	14
January	39
February	44
March	4
DAY (*n* = 329)	**%**
Weekday	54
Weekend day	46

DEMOGRAPHIC CHARACTERISTICS AND BACKGROUND INFORMATION

GENDER, AGE, EDUCATION

More than one-half of respondents were female (58 percent), and visitors' mean age was 41 years (see Table 2). In addition, respondents were highly educated, with two-thirds having completed a college or post-graduate degree (67 percent).

TABLE 2

DEMOGRAPHIC CHARACTERISTICS

GENDER (*n* = 328)	%
Female	58
Male	42
AGE[1] (IN YEARS, *n* = 327)	**%**
24 or younger	14
25 – 34	20
35 – 44	31
45 – 54	16
55 – 64	12
65 or older	8
EDUCATION (*n* = 328)	**%**
Some high school	1
High school degree	6
Some college or technical education	27
College degree	44
Post-graduate degree	23

[1]Age: range 18 – 80 years; median age = 39 years; mean age = 41.1 years (± 14.20)

RATINGS OF INTEREST IN SCIENCE

Overall, respondents were very interested in science. On a scale from 1 (no interest in science) to 10 (extremely interested in science) respondents' mean rating was 8.4 (see Table 3).

TABLE 3

RATING OF INTEREST IN SCIENCE[1]

10-POINT SCALE: NO INTEREST (1)/ EXTREMELY INTERESTED (10)	*N*	MEAN	±
Ratings of interest in science	323	8.4	1.44

[1]RK&A phrased this question and responses as requested by SMM to match other studies at the Museum.

When ratings of respondents' interest in science were tested against demographic characteristics, there were two significant findings:

- Males were more likely to be interested in science than were females (see Table 3a).
- Older visitors (55+ years) were more likely to be interested in science than were younger visitors (<35 years) (see Table 3b).

TABLE 3a

RATING OF INTEREST IN SCIENCE BY GENDER

10-POINT SCALE: NO INTEREST (1) / EXTREMELY INTERESTED (10)		GENDER		
		MALE	FEMALE	TOTAL
	n	MEAN	MEAN	MEAN
Ratings of interest in science[1]	323	8.6	8.3	8.4

[1]F = 3.809; p = .052

TABLE 3b

RATING OF INTEREST IN SCIENCE BY AGE

10-POINT SCALE: NO INTEREST (1) / EXTREMELY INTERESTED (10)		AGE (IN YEARS)			
		< 35	35-54	55+	TOTAL
	n	MEAN	MEAN	MEAN	MEAN
Ratings of interest in science[1]	322	8.2	8.4	8.8	8.4

[1]F = 3.089; p = .027

VISIT CHARACTERISTICS

SMM VISIT HISTORY

Respondents were asked how frequently they visit the SMM, and most were repeat visitors (84 percent) (see Table 4). Almost one-half of repeat visitors had visited the SMM more than three times in the past two years (49 percent). Also, One-half of repeat visitors reported that they or a family member are a SMM member (50 percent).

TABLE 4

SMM VISIT HISTORY

FIRST-TIME OR REPEAT VISITOR TO THE SMM (*n* = 325)	%
Repeat visitor	84
First-time visitor	16
IF A REPEAT VISITOR, NOT INCLUDING TODAY, HOW MANY TIMES HAVE YOU VISITED IN THE PAST TWO YEARS? (*n* = 276)	**%**
None	16
1 – 2	35
3 – 5	26
6 or more	23
IF A REPEAT VISITOR, ARE YOU OR A FAMILY MEMBER A MEMBER OF THE SMM? (*n* = 266)	**%**
No	50
Yes	50

GROUP COMPOSITION

Most often, respondents were visiting the SMM in a social group of adults and children (71 percent) (see Table 5). Of those respondents visiting with children, many were visiting with children between 6 and 12 years old (71 percent).

TABLE 5

GROUP COMPOSITION

WITH WHOM DID YOU VISIT TODAY? (*n* = 327)	%
Social group of adults and children	71
Social group of adults only	26
Alone	2
Professional group of adults only	1
IF VISITING WITH CHILDREN, THEIR AGES (IN YEARS, *n* = 214)	**%[1,2]**
Under 6	45
6 – 12	71
13 – 17	22

[1]Because some respondents were visiting with several children in more than one of three age ranges, percentages total more than 100 percent.
[2]Number of children in visit group: range 1 – 5 children; median = 2 children; mean = 2.0 children (± .93)

REASONS FOR VISITING THE MUSEUM

Respondents were asked about their reasons for visiting the SMM that day. One-third reported they were attending as a social outing with family and/or friends (33 percent) (see Table 6). Other popular reasons for visiting the SMM were to see a specific exhibit (25 percent), to see the Omni film (22 percent), and because it is a convenient activity (21 percent).

TABLE 6

REASONS FOR VISITING THE SMM[1]

REASONS FOR VISITING THE SMM (*n* = 329)	%[2]
Social outing with family/friends	33
To see a specific exhibit[3]	25
To see the Omni film	22
It's a convenient activity	21
No school today	9
To see the Museum	9
Miscellaneous response[4]	6
To attend a program/event	4
No reason in particular	3
General interest in science	2
Science project/assignment	1

[1]RK&A phrased this question and responses as requested by SMM to match other studies at the Museum.
[2]Because respondents could provide more than one reason, percentages total more than 100 percent.
[3]Exhibits: *CSI: The Experience*, *n* = 51; *Water*, *n* = 13; Dinosaurs Gallery, *n* = 9; *Goose Bumps! The Science of Fear*, *n* = 3; no response, *n* = 2; Experiment Gallery, *n* = 1.
[4]Miscellaneous response: free tickets, *n* = 7; membership, *n* = 7; recommendation from friends, *n* = 4; homeschooling field trip, *n* = 1;

HOW DID YOU HEAR ABOUT THE MUSEUM?

Respondents were also asked about how they heard about the SMM. Most frequently, respondents said they had always known about the Museum or live nearby (63 percent) (see Table 7).

TABLE 7

HOW DID YOU HEAR ABOUT THE SMM?[1]

HOW DID YOU HEAR ABOUT THE SMM? (*n* = 329)	%[2]
Always known about it or live nearby	63
Someone told me (not including classmates or coworkers)	16
Advertisements (e.g., TV, newspaper, radio, internet, billboards)	12
Heard about it at school or work	8
Through my SMM membership	3
Miscellaneous response	3
Walked by/drove past it	2

[1]RK&A phrased this question and responses as requested by SMM to match other studies at the Museum.
[2]Because respondents could provide more than one response, percentages total more than 100.

SELECT GALLERIES AND EXHIBITIONS VISITED

Respondents were asked whether they visited five select galleries/exhibitions during their visit to the SMM. About two-thirds visited the Human Body Gallery (70 percent), Dinosaurs and Fossil Gallery (67 percent), and Experiment Gallery (62 percent) (see Table 8). Almost one-half of respondents visited *Disease Detectives* (46 percent).

TABLE 8

SELECT GALLERIES AND EXHIBITIONS VISITED

GALLERIES AND EXHIBITIONS (*n* = 329)[1]	%[2]
Human Body Gallery	70
Dinosaurs and Fossil Gallery	67
Experiment Gallery	62
Disease Detectives	46
CSI: The Experience[3]	15

[1] Number of select galleries and exhibits visited: Range 0-5 galleries and exhibits; median = 3 galleries and exhibits; mean = 2.6 galleries and exhibits (± 1.36 galleries and exhibits)
[2] Because respondents could provide more than one response, percentages total more than 100 percent.
[3] *CSI: The Experience* was closed during more than two-thirds of the data collection period.

Whether respondents visited *Disease Detectives* was tested against respondents' demographic characteristics. There was one significant finding:

- Younger visitors (<35 years) were most likely to visit *Disease Detectives,* while older visitors (55+ years) were least likely to visit *Disease Detectives* (see Table 8a).

TABLE 8a

VISIT *DISEASE DETECTIVES* BY AGE

	AGE (IN YEARS)			
	< 35	35-54	55+	TOTAL
VISIT *DISEASE DETECTIVES* (*n* = 327)	%	%	%	%
Visit *Disease Detectives*[1]	56	43	36	46

[1] $\chi^2 = 7.073$; $df = 2$; $p = .029$

DISEASE DETECTIVES CASES EXAMINED

Of those respondents who visited *Disease Detectives*, almost one-half examined Birthday Surprise (48 percent), and World Traveler Blues (43 percent), while just over one-third examined Unwelcome Visitor (37 percent) (see Table 9).

TABLE 9

CASES EXAMINED IN *DISEASE DETECTIVES*

CASES EXAMINED IN *DISEASE DETECTIVES* (*n* = 150) [1]	%[2]
Birthday Surprise	48
World Traveler Blues	43
Unwelcome Visitor	37
Not sure	29
Did not examine any cases	3

[1]Number of cases examined: Range 0-3 cases; median = 1 case; mean = 1.3 cases (± 1.14 cases)
[2]Because respondents could provide more than one response, percentages total more than 100 percent.

Whether respondents visited *Disease Detectives* was tested against respondents' demographic characteristics. There was one significant findings:

- Females were more likely to examine the Birthday Surprise case than were males (see Table 9a).

TABLE 9a

CASES EXAMINED BY GENDER

	GENDER		
	MALE	FEMALE	TOTAL
CASES EXAMINED (*n* = 149)	%	%	%
Birthday Surprise[1]	37	56	48

[1]$\chi^2 = 5.465$; $df = 1$; $p = .019$

VISITORS' EXPERIENCES WITH SMM EXHIBITS

Respondents rated SMM exhibits using three criteria: how effectively exhibits raised awareness of current science issues, how informative were exhibits, and how relevant were exhibits to visitors' lives.

RATING OF HOW EFFECTIVELY SMM EXHIBITS RAISED AWARENESS OF CURRENT SCIENCE ISSUES

Respondents rated SMM exhibits on a scale from 1 (did not raise my awareness of current science issues) to 7 (raised my awareness of current science issues). The mean rating was 5.8, indicating that respondents thought SMM exhibits successfully raised their awareness of current science issues (see Table 10).

TABLE 10

RATING OF HOW EFFECTIVELY SMM EXHIBITS RAISED AWARENESS OF CURRENT SCIENCE ISSUES

7-POINT SCALE: DID NOT RAISE MY AWARENESS OF CURRENT SCIENCE ISSUES (1)/ RAISED MY AWARENESS OF CURRENT SCIENCE ISSUES (7)	*n*	MEAN	±
Ratings of SMM exhibits	329	5.8	1.23

Ratings of whether SMM exhibits raised visitors' awareness of current science issues were tested against respondents' demographic and visit characteristics. There was one significant finding:

- Older visitors (55+ years) and middle-aged visitors (35-54 years) were more likely to indicate that SMM exhibits successfully raised awareness of current science issues than were younger visitors (<35 years) (see Table 10a).

TABLE 10a

RATING OF HOW EFFECTIVELY SMM EXHIBITS RAISED AWARENESS OF CURRENT SCIENCE ISSUES BY AGE

7- POINT SCALE: DID NOT RAISE MY AWARENESS OF CURRENT SCIENCE ISSUES (1)/RAISED MY AWARENESS OF CURRENT SCIENCE ISSUES (7)		AGE (IN YEARS)			
		< 35	35-54	55+	TOTAL
	n	MEAN	MEAN	MEAN	MEAN
Ratings of SMM exhibits[1]	326	5.5	5.9	6.0	5.8

[1] $F = 4.564$; $p = .011$

RATING OF HOW RELEVANT WERE SMM EXHIBITS TO VISITORS' LIVES

Respondents rated SMM exhibits on a scale from 1 (not at all relevant to my life) to 7 (very relevant to my life). The mean rating was 5.8, indicating that respondents thought SMM exhibits were relevant to their lives (see Table 11).

TABLE 11

RATING OF HOW RELEVANT WERE SMM EXHIBITS TO VISITORS' LIVES

7-POINT SCALE: NOT AT ALL RELEVANT TO MY LIFE (1)/ VERY RELEVANT TO MY LIFE (7)	*n*	MEAN	±
Ratings of SMM exhibits	329	5.8	1.14

Ratings of whether SMM exhibits were relevant to visitors' lives were tested against respondents' demographic and visit characteristics. There was one significant finding:

- Older visitors (55+ years) were more likely to indicate that SMM exhibits were relevant to their lives than were middle-aged visitors (35-54 years) and younger visitors (<35 years) (see Table 11a).

TABLE 11a

RATING OF HOW RELEVANT WERE SMM EXHIBITS TO VISITORS' LIVES BY AGE

7- POINT SCALE: NOT AT ALL RELEVANT TO MY LIFE (1)/ VERY RELEVANT TO MY LIFE (7)		AGE (IN YEARS)			
		< 35	35-54	55+	TOTAL
	n	MEAN	MEAN	MEAN	MEAN
Ratings of SMM exhibits[1]	327	5.6	5.8	6.2	5.8

[1] $F = 6.243$; $p = .002$

RATING OF HOW INFORMATIVE WERE SMM EXHIBITS

Respondents rated SMM exhibits on a scale from 1 (not at all informative) to 7 (very informative). Overall, respondents thought SMM exhibits were very informative, as indicated by respondents' mean rating of 6.3—the highest of all mean ratings with the smallest spread of scores (± =.79) (see Table 12).

TABLE 12

RATING OF HOW INFORMATIVE WERE SMM EXHIBITS

7-POINT SCALE: NOT AT ALL INFORMATIVE (1) / VERY INFORMATIVE (7)	*n*	MEAN	±
Ratings of SMM exhibits	329	6.3	.79

Ratings of how informative were SMM exhibits were tested against respondents' demographic and visit characteristics. There was one significant finding:

- Visitors who had not graduated from college were more likely to indicate that SMM exhibits were informative than were visitors who had graduated from college (see Table 12a).

TABLE 12a

RATING OF HOW INFORMATIVE WERE SMM EXHIBITS BY EDUCATION

7- POINT SCALE: NOT AT ALL INFORMATIVE (1) / VERYINFORMATIVE(7)		EDUCATION		
		DID NOT GRADUATE FROM COLLEGE	GRADUATED FROM COLLEGE	TOTAL
	n	MEAN	MEAN	MEAN
Ratings of SMM exhibits[1]	328	6.4	6.2	6.3

[1] $F = 4.188$; $p = .042$

VISITORS' KNOWLEDGE OF INFECTIOUS DISEASES

SPECIFIC DISEASES PROMPTED BY THE TERM "INFECTIOUS DISEASES"

Data collectors asked respondents, "When I say 'infectious diseases,' what specific diseases come to mind?" The top three responses were flu/influenza (55 percent), HIV/AIDS (36 percent), and the common cold (36 percent) (see Table 13, next page). Other responses made by more than 10 percent of respondents include: tuberculosis (16 percent), chicken pox/measles/mumps/rubella (15 percent), food- and waterborne disease (12 percent), malaria (11 percent), hepatitis (10 percent), STDs (10 percent), and bird flu/Influenza A/super flu (10 percent).

TABLE 13

SPECIFIC DISEASES PROMPTED BY THE TERM "INFECTIOUS DISEASES"

SPECIFIC DISEASES PROMPTED BY THE TERM "INFECTIOUS DISEASES" (*n* = 322)	%[1]
Flu/influenza	55
HIV/AIDS	36
Common cold (including rhinovirus)	36
Tuberculosis	16
Other specific disease[2]	15
Chicken pox/measles/mumps/rubella	15
Food- and waterborne disease, "food poisoning" (e.g., E. coli, *Salmonella,* giardiasis)	12
Malaria	11
Hepatitis	10
Any other STDs	10
Bird flu/Influenza A/Super flu	10
Miscellaneous response[3]	8
Pneumonia	7
Strep (including scarlet fever)	7
Staph (including impetigo)	6
Cancer	3
Ebola or Marburg	3
Meningitis	3
Plague	3
Small pox	3
Lyme disease	3
Cholera	3
Mono (infectious mononucleosis)	3
Whooping cough (pertussis)	3

[1]Because respondents could provide more than one response, percentages total more than 100.
[2]Other specific diseases: West Nile virus, *n* = 9; diphtheria, *n* = 7; polio (poliomyelitis), *n* = 7; typhoid fever, *n* = 6; flesh eating virus (necrotizing fasciitis), *n* = 5; conjunctivitis, *n* = 5; RSV (respiratory syncytial virus), *n* = 3; SARS (severe acute respiratory syndrome), *n* = 3; bronchitis, *n* = 2; chronic wasting disease, *n* = 2; diabetes, *n* = 2; skin disease, *n* = 2; viral infection, *n* = 2; bursitis, *n* = 1; athlete's foot, *n* = 1; bacterial infection, *n* = 1; childhood diseases, *n* = 1; clostridium, *n* = 1; cryptosporidiosis, *n* = 1; echovirus, *n* = 1; emphysema, *n* = 1; encephalitis, *n* = 1; gingivitis, *n* = 1; heart disease, *n* = 1; Legionnaires' disease, *n* = 1; leprosy, *n* = 1; kidney disease, *n* = 1; lung disease, *n* = 1; lupus, *n* = 1; Norwalk virus, *n* = 1; poison ivy, *n* = 1; rabies, *n* = 1; retrovirus, *n* = 1; rotavirus, *n* = 1; scabies, *n* = 1; sepsis, *n* = 1; VRE (vancomycin-resistant enterococcus, *n* = 1; yellow fever, *n* = 1.
[3]Miscellaneous response: virus, *n* = 6; bacteria, *n* = 3; communicable, *n* = 3; fever, *n* = 2; prion, *n* = 2; hospitals, *n* = 2; blood contact, *n* = 1; chemical weapons and warfare, *n* = 1; coughing, *n* = 1; cuts, *n* = 1; fear, *n* = 1; mosquitoes, *n* = 1; new diseases we don't understand, *n* = 1; non-potable water, *n* = 1; open sores, *n* = 1; resistant organisms, *n* = 1; parasite, *n* = 1; respiratory bug, *n* = 1; shared by needle, *n* = 1; smoking-related illness, *n* = 1; vaccination, *n* = 1.

Responses cited by more than 100 respondents were tested against respondents' demographic and visit characteristics. There were two significant findings:

- Older visitors (55+ years) and younger visitors (< 35 years) were more likely to name the common cold than were middle-aged visitors (35-54 years) (see Table 13a).
- Visitors who had graduated from college were more likely to name flu/influenza than were visitors who did not graduate from college (see Table 13b).

TABLE 13a

SPECIFIC DISEASES PROMPTED BY THE TERM "INFECTIOUS DISEASES" BY AGE

SPECIFIC DISEASES PROMPTED BY THE TERM "INFECTIOUS DISEASES" (*n* = 327)	AGE (IN YEARS)			
	< 35	35-54	55+	TOTAL
	%	%	%	%
Common cold[1]	42	28	44	36

[1] $\chi^2 = 8.152$; $df = 2$; $p = .017$

TABLE 13b

SPECIFIC DISEASES PROMPTED BY THE TERM "INFECTIOUS DISEASES" BY EDUCATION

SPECIFIC DISEASES PROMPTED BY THE TERM "INFECTIOUS DISEASES" (*n* = 328)	EDUCATION		
	DID NOT GRADUATE FROM COLLEGE	GRADUATED FROM COLLEGE	TOTAL
	%	%	%
Flu/influenza[1]	45	60	55

[1] $\chi^2 = 6.551$; $df = 1$; $p = .010$

WAYS TO PREVENT FOODBORNE DISEASE AT HOME

Data collectors asked respondents, "What are some things you could do at home to prevent foodborne disease?" More than one-half of respondents said thoroughly cook food (62 percent) and wash hands (54 percent) (see Table 14). Approximately one-third of respondents said to clean/sanitize the cooking area and utensils (41 percent), wash food well (34 percent), and store food properly (33 percent).

TABLE 14

WAYS TO PREVENT FOODBORNE DISEASE AT HOME

WAYS TO PREVENT FOODBORNE DISEASE AT HOME (*n* = 329)	%[1]
Thoroughly cook food	62
Wash hands	54
Clean/sanitize the cooking area and utensils (including wash dishes in hot water, microwave sponges, disinfect trash cans)	41
Wash food well	34
Store food properly	33
Avoid cross-contamination	27
Throw out old food/check expiration dates	11
Miscellaneous response[2]	7
Buy food at a reputable store or restaurant	5
Purify or boil water	3

[1]Because respondents could provide more than one response, percentages total more than 100.
[2]Miscellaneous response: don't eat peanuts, *n* = 3; pay attention to contamination reports, *n* = 3; buy organic food, *n* = 2; don't share food, *n* = 2; air purifier, *n* = 1; avoid processed food, *n* = 1; build resistance to disease, *n* = 1; cover mouth, *n* = 1; don't make food when sick, *n* = 1; don't eat meat, *n* = 1; don't play with food, *n* = 1; keep children away from cooking area, *n* = 1; keep pets away from food, *n* = 1; no double dipping, *n* = 1; don't put feet on the counter, *n* = 1; take out garbage, *n* = 1; vitamins, *n* = 1; vaccination, *n* = 1.

Responses made by more than 100 respondents were tested against respondents' demographic and visit characteristics. There were several significant findings:

- Female visitors were more likely to suggest washing hands than were males (see Table 14a).
- Younger visitors (< 35 years) and middle-aged visitors (35-54 years) were more likely to suggest thoroughly cooking food than were older visitors (55+ years) (see Table 14b).
- Visitors who saw *Disease Detectives* were more likely to suggest thoroughly cooking food than were visitors that did not see the exhibition (see Table 14c)

TABLE 14a

WAYS TO PREVENT FOODBORNE DISEASE AT HOME BY GENDER

WAYS TO PREVENT FOODBORNE DISEASE AT HOME (*n* = 328)	GENDER		
	MALE	FEMALE	TOTAL
	%	%	%
Wash hands[1]	47	59	54

[1] $\chi^2 = 4.613$; $df = 1$; $p = .032$

TABLE 14b

WAYS TO PREVENT FOODBORNE DISEASE AT HOME BY AGE

WAYS TO PREVENT FOODBORNE DISEASE AT HOME (*n* = 329)	AGE (IN YEARS)			
	< 35	35-54	55+	TOTAL
	%	%	%	%
Thoroughly cook food[1]	70	61	50	62

[1] $\chi^2 = 6.973$; $df = 1$; $p = .031$

TABLE 14c

WAYS TO PREVENT FOODBORNE DISEASE AT HOME BY VISIT *DISEASE DETECTIVES*

WAYS TO PREVENT FOODBORNE DISEASE AT HOME (*n* = 329)	VISIT *DISEASE DETECTIVES*		
	NO	YES	TOTAL
	%	%	%
Thoroughly cook food[1]	56	69	62

[1] $\chi^2 = 5.192$; $df = 1$; $p = .023$

THINGS YOU COULD DO TO AVOID GETTING OR SPREADING THE FLU

Data collectors asked respondents, "What are some things you could do to avoid getting or spreading the flu?" Most frequently, respondents said that you should wash your hands (83 percent) (see Table 15). Other responses mentioned by more than 10 percent of respondents include: sneeze into your sleeve (43 percent), get a flu shot (38 percent), avoid sick people (22 percent), stay home when sick (21 percent), proper nutrition (13 percent), and clean/sanitize your home and work space (10 percent).

TABLE 15

THINGS YOU COULD DO TO AVOID GETTING OR SPREADING THE FLU

THINGS YOU COULD DO TO AVOID GETTING OR SPREADING THE FLU (*n* = 329)	%[1]
Wash hands	83
Sneeze into your sleeve	43
Get a flu shot	38
Avoid sick people	22
Stay home when sick	21
Proper nutrition	13
Clean/sanitize your home and work space	10
Miscellaneous response[2]	9
Proper rest	8
Vitamins/medications	6
Avoid crowds/public places	6
Don't share food and drinks	4
Keep hands away from your face	3

[1]Because respondents could provide more than one response, percentages total more than 100.
[2]Miscellaneous responses: wear a mask, *n* = 7; unavoidable especially when you have children, *n* = 6; exercise, *n* = 6; good hygiene, *n* = 4; dispose of tissues and napkins, *n* = 3; get fresh air, *n* = 2; see a doctor, *n* = 1; learn about the flu, *n* = 1.

Responses made by more than 100 respondents were tested against respondents' demographic and visit characteristics. There were several significant findings:

- Female visitors were more likely to suggest sneezing into your sleeve than were males (see Table 15a).
- Younger visitors (< 35 years) and middle-aged visitors (35-54 years) were more likely to suggest washing your hands than were older visitors (55+ years) (see Table 15b).
- Visitors who saw *Disease Detectives* were less likely to suggest getting a flu shot than were visitors that did not see the exhibition (see Table 15c)

TABLE 15a

THINGS YOU COULD DO TO AVOID GETTING OR SPREADING THE FLU BY GENDER

	GENDER		
	MALE	FEMALE	TOTAL
THINGS YOU COULD DO TO AVOID GETTING OR SPEADING THE FLU (*n* = 328)	%	%	%
Sneeze into your sleeve[1]	32	50	43

[1] $\chi^2 = 10.479$; $df = 1$; $p = .001$

TABLE 15b

THINGS YOU COULD DO TO AVOID GETTING OR SPREADING THE FLU BY AGE

	AGE (IN YEARS)			
	< 35	35-54	55+	TOTAL
THINGS YOU COULD DO TO AVOID GETTING OR SPREADING THE FLU (*n* = 327)	%	%	%	%
Wash hands[1]	86	88	66	83

[1] $\chi^2 = 16.750$; $df = 2$; $p = .000$

TABLE 15c

THINGS YOU COULD DO TO AVOID GETTING OR SPREADING THE FLU BY VISIT *DISEASE DETECTIVES*

	VISIT *DISEASE DETECTIVES*		
	NO	YES	TOTAL
THINGS YOU COULD DO TO AVOID GETTING OR SPREADING THE FLU (*n* =329)	%	%	%
Get a flu shot[1]	44	31	38

[1] $\chi^2 = 6.283$; $df = 1$; $p = .012$

WAYS TO AVOID GETTING MALARIA

Data collectors asked respondents, "If you were traveling to a country where malaria is a problem, what might you do to avoid getting malaria?" One-half of respondents said that vaccinations can be used to avoid getting malaria (50 percent) (see Table 16). Other popular responses include using mosquito nets (32 percent) and insect repellent (31 percent).

TABLE 16

WAYS TO AVOID GETTING MALARIA

WAYS TO AVOID GETTING MALARIA (*n* = 329)	%[1]
Vaccination	50
Mosquito nets	32
Insect repellent	31
Don't drink the water/sanitize water	18
Medication	18
Protective clothing	16
Miscellaneous response[2]	13
Learn more about malaria	10
Avoid going outside during times of day when mosquitoes are out (i.e., don't go out at dawn and dusk)	8
Quinine/malaria pills	5
Don't visit those countries	4
Good hygiene	4
Uncertain	4

[1]Because respondents could provide more than one response, percentages total more than 100.

[2]Miscellaneous responses: take precautions when preparing and storing food, *n* = 8; talk with a doctor, *n* = 6; use pesticides, *n* = 4; avoid close contact with people, *n* = 3; uncertain, *n* = 3; iodine tablets, *n* = 1; eradicate or control mosquito populations, *n* = 1; isolate yourself, *n* = 1; take blood test, *n* = 1; travel only at certain times of year, *n* = 1.

Responses made by more than 100 respondents were tested against respondents' demographic and visit characteristics. There were two significant findings:

- Male visitors were more likely to suggest insect repellent and mosquito nets than were female visitors (see Table 16a).
- Visitors who did not examine the case of the Unwelcome Visitor in *Disease Detectives* were more likely to suggest vaccinations than were visitors who did not examine the case (see Table 16b).

TABLE 16a

WAYS TO AVOID GETTING MALARIA BY GENDER

	GENDER		
	MALE	FEMALE	TOTAL
WAYS TO AVOID GETTING MALARIA (*n* = 328)	%	%	%
Insect repellent[1]	38	25	31
Mosquito nets[2]	39	28	32

[1] $\chi^2 = 6.093$; $df = 1$; $p = .014$
[2] $\chi^2 = 4.705$; $df = 1$; $p = .030$

TABLE 16b

WAYS TO AVOID GETTING MALARIA BY CASES EXAMINED

	VISIT UNWELCOME VISITOR		
	NO	YES	TOTAL
WAYS TO AVOID GETTING MALARIA (*n* = 150)	%	%	%
Vaccination[1]	54	34	46

[1] $\chi^2 = 5.242$; $df = 1$; $p = .022$

RATINGS OF STATEMENTS ABOUT INFECTIOUS DISEASES

Respondents rated eight statements about infectious diseases on a scale from 1 (strongly disagree) to (strongly agree). The two statements that respondents most strongly agreed with are "Infectious diseases are spread in a variety of ways, including infrequent and improper washing hands, sneezing or coughing, insect bites, and contaminated food and water" (mean rating = 6.7) and "Simple things that you can do in your daily life can prevent you from catching many infectious diseases" (mean rating = 6.4) (see Table 17). Additionally, the spread of scores for both statements was low compared with the spread of scores for other statements (± = .66 and ± = .87, respectively).

The two statements that respondents least agreed with are "Influenza is mainly a respiratory disease" (mean rating = 4.9) and "Antibiotics and vaccines have cured or can prevent most infectious diseases" (mean rating = 4.7).

TABLE 17

RATINGS OF STATEMENTS ABOUT INFECTIOUS DISEASES

7- POINT SCALE: STRONGLY DISAGREE (1)/ STRONGLY AGREE (7)	*n*	MEAN	±
Infectious diseases are spread in a variety of ways, including infrequent and improper washing hands, sneezing or coughing, insect bites, and contaminated food and water.	329	6.7	.66
Simple things that you can do in your daily life can prevent you from catching many infectious diseases.	329	6.4	.87
Malaria poses serious health and economic problems in many parts of the world.	329	6.0	1.18
Re-emerging strains of infectious diseases are often resistant to current treatments.	328	5.8	1.23
Infectious diseases are an important health threat in the U.S.	329	5.8	1.15
Infectious diseases continue to be the leading cause of death around the world.	329	5.1	1.46
Influenza is mainly a respiratory disease.	329	4.9	1.79
Antibiotics and vaccines have cured or can prevent most infectious diseases.	329	4.7	1.47

Ratings were tested against respondents' demographic and visit characteristics. There were several significant findings:

- Older visitors (55+ years) and middle-aged visitors (35-43 years) more strongly agreed with the statements, "Infectious diseases continue to be the leading cause of death around the world" and "Re-emerging strains of infectious diseases are often resistant to current treatments," than did younger visitors (<35 years) (see Table 17a). Additionally, older visitors (55+ years) more strongly agreed with the statement, "Infectious diseases are an important health threat in the U.S.," than did younger visitors (<35 years).
- Visitors who graduated from college more strongly agreed with the statements, "Infectious diseases continue to be the leading cause of death around the world" and "Malaria poses serious health and economic problems in many parts of the world," than did visitors who did not complete college (see Table 17b).

TABLE 17a

RATINGS OF STATEMENTS ABOUT INFECTIOUS DISEASES BY AGE

7- POINT SCALE: STRONGLY DISAGREE (1)/ STRONGLY AGREE (7)	AGE (IN YEARS)				
		< 35	35-54	55+	TOTAL
	n	MEAN	MEAN	MEAN	MEAN
Infectious diseases continue to be the leading cause of death around the world[1]	327	4.7	5.2	5.4	5.1
Re-emerging strains of infectious diseases are often resistant to current treatments.[2]	326	5.3	5.8	6.3	5.8
Infectious diseases are an important health threat in the U.S.[3]	327	5.6	5.8	6.0	5.8

[1]F = 7.320; p = .001
[2]F = 14.717; p = .000
[3]F = 3.301; p = .038

TABLE 17b

RATINGS OF STATEMENTS ABOUT INFECTIOUS DISEASES BY EDUCATION

7- POINT SCALE: STRONGLY DISAGREE (1)/ STRONGLY AGREE (7)	EDUCATION			
		DID NOT GRADUATE FROM COLLEGE	GRADUATED FROM COLLEGE	TOTAL
	n	MEAN	MEAN	MEAN
Infectious diseases continue to be the leading cause of death around the world[1]	328	4.8	5.2	5.1
Malaria poses serious health and economic problems in many parts of the world.[2]	327	5.8	6.2	6.0

[1]F = 5.135; p = .024
[2]F = 7.089; p = .008

PRINCIPAL FINDINGS: IN-DEPTH INTERVIEWS

INTRODUCTION

RK&A conducted interviews with 40 visitors who had visited the SMM during the first week in January. More than one-half of interviewees were female, and interviewees' median age was 41. About three-quarters of interviewees were repeat visitors, and of those, one-half reported visiting the SMM at least four times in the past two years.

OVERALL EXPERIENCE

All interviewees had positive experiences at the SMM, often describing their visits as "good," "fun," "excellent," and "cool." Several described particular activities or exhibits such as *CSI: The Experience*, the Omni film, IMAX, the Human Body Gallery, and *Disease Detectives*.

However, one-quarter of interviewees said the Museum was very crowded, noting that they had not considered how the proximity of their visit to the holidays affected visitation at the SMM. While most of these interviewees still described their overall experiences at the SMM as positive, several mentioned waiting in lines for tickets and skipping crowded exhibits.

RECOLLECTION OF THE EXHIBITION

OVERALL RECOLLECTION

RK&A asked interviewees about their recollection of the *Disease Detectives* exhibition to elicit unprompted, top-of-mind responses. While many interviewees' recollections were lucid, recalling exact names and details of the exhibits, some other interviewees' memories were less clear (see the quotations below).

> I thought it [the exhibition] was really well done. I was with my daughter and her two friends, and she's a sophomore in college. They were like, "Wow!" They felt Marcus' forehead and it was warm. There were just a lot of little things like that, which I think were very well done. [female, 54]

> There was one [exhibit] that my son was doing where you had to diagnosis whether the lady—what was it? She was there, and . . . different things like a stethoscope and some other things [were] there, I believe. [male, 35]

Many interviewees recalled an interactive component of the exhibition. Most frequently, interviewees talked about swabbing Marcus' nose in The Case of the World Traveler Blues, testing the temperature of hamburger patties in The Case of the Birthday Surprise, and washing their hands in The Case of the Birthday Surprise.[2] Interviewees also mentioned Microbe models, Microbe dance, the diner scene in The Case of the Birthday Surprise, and checking Marcus' heartbeat and feeling his forehead in The Case of the World Traveler Blues. Of the interviewees who talked about interactive components of the exhibition, one-half mentioned—to varying degrees—the exhibits related to diagnosing patients and understanding how they got sick.

[2] Most interviewees did not use the patient's name (e.g., Marcus) nor did they name the case (e.g., Case of the World Traveler Blues)

A few other interviewees did not mention specific components of the exhibit. Rather, these interviewees spoke vaguely about the exhibition, saying things like it was "enjoyable" and "interactive" or that the exhibition was about "germs" and "preventing disease."

RESPONSES TO SPECIFIC CASES

When prompted to recall which cases they examined in *Disease Detectives* (The Case of the Birthday Surprise, The Case of the World Traveler Blues, and The Case of the Unwelcome Visitor), more than one-half of interviewees said they did not remember which case they examined or said they had not visited any specific cases. For example, a few explained that their children—not themselves—examined the cases so they could not identify an exact case. These interviewees described their role as passive visitors, focusing on chaperoning children or tending to the youngest children rather than engaging with the exhibits themselves (see the quotation below). A few others said they just visited individual exhibits of interest.

> I had my little one [with me] so I didn't get to see everything, but my son did almost everything. [female, 39]

Almost one-half of interviewees identified a specific case—either by name or by describing the activities they completed as part of the case. Of these interviewees, about one-quarter talked about The Case of the Birthday Surprise or The Case of the Unwelcome Visitor. A few talked about The Case of the World Traveler Blues, and a few mentioned all three cases.

THE CASE OF THE BIRTHDAY SURPRISE

Interviewees who recalled examining The Case of the Birthday Surprise gave the most descriptive responses in comparison to responses regarding the other two cases. The majority of interviewees spoke about "food poisoning," "salmonella," and "E. coli," focusing on how foodborne diseases are contracted (see the quotation below). A couple interviewees recalled checking the temperature of meats, and one interviewee correctly identified the lettuce as the source of Marcus' ailments.

> The little boy—if I remember right—he had food poisoning. He ate something, and his digestive system was extra active. That's how they could tell it was food poisoning—one of the signs. [female, 37]

THE CASE OF THE UNWELCOME VISITOR

Most interviewees who spoke about The Case of the Unwelcome Visitor recalled that the case was about malaria. A few mentioned "mosquitoes," "Lyme disease," and "ticks." Additionally, a couple interviewees recalled Yolanda's symptoms—a fever and yellow eyes (see the quotation below).

> She had malaria. She got bit by a mosquito and it was on her toe. My kids were fascinated by the red spot on her toe. And she had a fever and yellow eyes. . . so it was that one that stuck out the most to the kids and me. [female, 30]

THE CASE OF THE WORLD TRAVELER BLUES

Interviewees who spoke about The Case of the World Traveler Blues had the vaguest recollection of this case in comparison to interviewees' recollections of the other cases; this is surprising as visitors described interacting with Marcus more vividly—checking his temperature by feeling his forehead and checking his heartbeat—than with Yolanda and Adam. Often, interviewees referred to Marcus as the "man with a cold" or "man with the flu" and did not describe any details of the exhibit.

VISITORS' COMPREHENSION

INFORMATION LEARNED ABOUT INFECTIOUS DISEASES

Most interviewees, when explaining what they had learned about infectious diseases, focused on how diseases are contracted and spread (see the quotation below). For example, about one-half of interviewees described communicable diseases—a few using this exact term—and the way they can be contracted from other people; these interviewees emphasized the importance of washing their hands and being aware of the threat of communicable diseases in public places. About one-quarter of interviewees described foodborne diseases, focusing on the need to check the temperature of meat; a couple of these also mentioned the importance of avoiding cross-contamination , sanitizing the cooking area, and washing hands and food well. A few talked about malaria, and a couple spoke more generally about contracting diseases from insects, such as mosquitoes and ticks; of interviewees who mentioned malaria, all mentioned mosquito nets and acknowledged that malaria is not an issue in their area.

> (What, if anything, did you find out about infectious diseases from the exhibition?) Well, I don't know. I mean, they're infectious in different ways. Some things, like the malaria, she couldn't give to anybody. The Salmonella, he gets from something he ate, but I suppose he could pass that somehow. And certainly the sneezes you can pass. [female, 54]

About one-quarter of interviewees described detecting diseases, with interviewees describing the symptoms of diseases. Additionally, a few spoke about how to trace the origin of diseases—although not in great detail (see the quotation below).

> (And what, if anything, did you find out about infectious diseases from the exhibition?) It is interesting how you can pinpoint where it [an infectious disease] originated and about how quickly it can spread. [male, 47]

In contrast, a few others said they did not learn anything new about infectious diseases, citing either their age or experience in the medical field (see the quotation below). Still, a few others gave miscellaneous responses, such as, "We just liked that it was interactive."

> Well, at my age you've been around a little bit and know some of those things, so it wasn't new to me, but it was especially helpful to others. [male, 65]

HOW TO PREVENT GETTING OR SPREADING INFECTIOUS DISEASES

Preventing and spreading infectious diseases was a topic with which most interviewees were familiar; thus, many interviewees said they did not learn anything new from the exhibition. However, several interviewees acknowledged that the exhibition reinforced their knowledge of disease prevention and effectively reminded visitors to take measures to prevent getting and spreading disease (see the first quotation below). These interviewees often spoke about the importance of washing their hands, checking the temperature of meat when cooking, using mosquito nets, sneezing into your sleeve, and sanitizing cooking utensils and the cooking area (see the second quotation, next page).

> (What, if anything, did you find out about preventing getting or spreading infectious diseases from the exhibition?) Well, the connection of how different diseases are spread. Although some of this is material I previously knew before going through the exhibit—the rhinovirus is spread through contact and sneezing, and other viruses, like AIDS, are not transmittable except through direct contact to the blood and things like that. [female, 40]

> Well, controlling disease—whether it's something like mosquitoes or ticks with Lyme disease and malaria, taking care of your water at campsites so you're not getting Giardia or anything else—was discussed. [The exhibition] mentioned hand washing and sterilization of water [in regard to controlling disease]. We talked about maintaining your kitchen when you cook, whether it's separating your meat and your vegetables and things like that. [male, 25]

Additionally, several visitors emphasized that the exhibition was for kids, so while they did not take away anything new, their kids had. The majority of these interviewees did not name specific things that their kids had learned although a few talked about the length of time you should wash your hands as well as sneezing into your sleeve.

LONG-TERM EFFECT OF THE EXHIBITION

THOUGHTS ABOUT THE EXHIBITION/ASPECTS DISCUSSED

When asked whether they had thought about or discussed aspects of the exhibition since their visit, almost two-thirds either had not done so, made general recommendations regarding the Museum, or recommended other exhibitions, such as *CSI: The Experience*.

One-third of interviewees said they had thought about or discussed the exhibition since their visit. Most frequently, interviewees said they thought about or discussed foodborne disease as it was most relevant to their life, specifically in light of the peanut butter recall owing to salmonella (see the first quotation below). Additionally, a few said that they had discussed with their children the appropriate length of time for washing hands (see the second quotation).

> (And in the weeks since you visited, what if anything, in addition to what you just mentioned about salmonella, have you maybe thought about or talked about with other people?) I think that [salmonella] was the main thing that I've thought about that I can recall. The other things, I don't think were quite as applicable to my current life—malaria is not as applicable to my current life right now. [female, 23]

> (And in the weeks since your visit, what if anything from the exhibition have you thought about or maybe discussed with your family or other people?) Definitely the hand washing. . . (What did you guys talk about in reference to those?) The importance of [hand washing]. And then, in fact, not too long ago, we [talked] about how long you're supposed to wash your hands. [I told m children], "Well, remember at the Science Museum, how long you're supposed to wash your hands for?" And my kids are like, "Yeah!" [female, 37]

BEHAVIORAL CHANGES

For most interviewees, information they learned from the exhibition did not impact decisions made in their daily life. Many interviewees explained that most or all of the information in the exhibition was something with which they were already knowledgeable, noting that they already do many of the precautions suggested (see the quotation, next page). Additionally, a few interviewees said the information was not applicable to their daily life, and data reveals that some of these interviewees examined the malaria case.

> A lot of things, I knew. . . .There wasn't a lot that was directly applicable to day-to-day activities, I would say. [male, 25]

About one-quarter of interviewees said that the information they learned in the exhibition impacted decisions made in their daily life. The majority of these interviewees said that the exhibition reminded them of certain precautions to be taken in regard to getting and spreading disease (see the first quotation below). In addition, interviewees frequently said that the exhibition had greater impact on their children than on themselves. For example, a couple interviewees talked with their children about experiences in the exhibition to remind their children to take preventive measures such as washing their hands (see the second quotation).

> (And what about any changes in your daily life or your kids' life as a result of what you learned?) Not so much. I mean my kids will talk about those big germs or that big scabby toe. [I say], "You don't want to get sick or you'll get one of those big germs in your blood." [female, 30]

> Well, I think I carried away a little bit of personal responsibility from it—just reminding myself to be more conscious of what my own personal habits are. [female, 67]

APPENDICES

REMOVED FOR PROPRIETARY PURPOSES