



MUSEUM VISITOR STUDIES, EVALUATION & AUDIENCE RESEARCH

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**Audience Research:
Visitor Engagement and Learning Preferences
Survey**

Prepared for the
**The Natural History Museum of Los Angeles County
Los Angeles, CA**

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EXECUTIVE SUMMARY

INTRODUCTION

This report presents the findings from visitor engagement research conducted by Randi Korn & Associates, Inc. (RK&A), for the Natural History Museum of Los Angeles County (NHM). The intent of this research is to deepen the NHM's understanding of its audiences, as the Museum undergoes a large-scale refurbishment of the NHM building, reinstallation of key exhibitions, and the development of a new brand by KBDA. RK&A administered a standardized questionnaire and conducted in-depth interviews. Data were collected from eligible visitors exiting the Museum in March 2009 for the interviews and April to May 2009 for the questionnaire. Eligible visitors were defined as English or Spanish-speaking, adult, drop-in visitors.

**Selected highlights of the study are included in this summary.
Please consult the body of the report for a detailed account of the findings.**

PRINCIPAL FINDINGS: QUESTIONNAIRE

BACKGROUND INFORMATION

- ◆ Sample size: 399 drop-in visitors, ages 18 years and older
- ◆ Questionnaires were verbally administered to visitors as they exited NHM.
- ◆ 97 percent of surveys conducted in English; 3 percent in Spanish

DEMOGRAPHIC CHARACTERISTICS

- ◆ 51 percent male and 49 percent female
- ◆ Respondents' mean age = 35 years
- ◆ 37 percent Caucasian/White, 28 percent Hispanic/Latino, 13 percent multi-ethnic, 12 percent Asian/Pacific Islander, 6 percent African American, and 4 percent American Indian/Other
- ◆ Of respondents 25 years and older, 60 percent are college graduates.
- ◆ 79 percent live in Los Angeles County.
- ◆ 58 percent were visiting NHM with children while 24 percent were visiting as adult pairs.
- ◆ Mean age of accompanying children = 6 years

SCIENCE BACKGROUND AND INTEREST

- ◆ 61 percent last took a science class in college.
- ◆ 14 percent are employed in a science profession.
- ◆ 52 percent report great interest in new scientific discoveries; 43 percent report moderate interest.

- ◆ 88 percent report watching television programs about science-related topics, 68 percent read articles/books, and 45 percent engage in outdoor activities.

VISIT EXPERIENCES

- ◆ 61 percent repeat visitors
- ◆ Of repeat visitors, 48 percent had not visited in the past 12 months and 29 percent had visited one or two times.
- ◆ 20 percent NHM members
- ◆ 53 percent were visiting NHM to see or do something in particular, most often to view a particular exhibition.
- ◆ 85 percent reported visiting African Mammals Hall, 84 percent North American Mammals Hall, 79 percent Birds Hall, 78 percent Thomas the T. Rex Lab, 76 percent Gems and Minerals Hall, 69 percent Ancient Latin American Treasures, 61 percent Discovery Center and Insect Zoo, 53 percent California History Hall, and 41 Pavilion of Wings.
- ◆ 23 percent attended the Dinosaur Encounters program.
- ◆ Respondents characterized NHM as a welcoming place (7 -point scale, mean rating = 6.4).
- ◆ Respondents indicated NHM had met their expectations (7-point scale, mean rating = 5.9).

VISIT EXPERIENCES

- ◆ When asked to rate their preferences for museum experiences at NHM or elsewhere, respondents rated looking at specimens/artifacts/displays highest, followed by having a knowledgeable person in exhibitions/staffed exhibits.
- ◆ Staff-guided tours and listening to audio guides received the lowest ratings.
- ◆ Respondents accompanied by children gave high ratings to a range of family experiences.

PERCEPTIONS OF NHM

- ◆ Respondents indicated that the following two statements best describe NHM: “Scientific research is an important behind-the-scenes activity at the Natural History Museum” and “The Natural History Museum is a source of civic pride for Los Angeles residents.”
- ◆ Conversely, respondents indicated that the statement “The Natural History Museum is a must-see LA destination” was a less accurate description of NHM.

VALUED EXPERIENCES AT NHM

- ◆ Respondents were asked to rate NHM experiences on a scale of 1 (“Not important to me”) to 7 (“Very important to me”). Overall, respondents highly valued all 12 experiences.
- ◆ They most valued “Seeing specimens/artifacts I have never seen before” (mean rating = 6.7), followed by “Looking at exhibits/displays that I find intellectually interesting”; “Discovering something new”; and “Seeing a diverse selection of displays, from dinosaurs, to insects, to Aztec sculptures” (each mean rating = 6.6).
- ◆ They least value “Talking about the exhibits/displays with my companions,” “Connecting with nature/the natural world,” and “Spending time with friends/family”—but these, too, received high ratings (each mean rating = 6.2).

DESCRIPTION OF VISITOR CLUSTERS

- ◆ Using visitors' ratings of NHM experiences, three visitor clusters, or types, emerged from the data: Enthusiasts, Intellectuals, and Socials.
- ◆ Enthusiasts are the largest group of visitors (63 percent) and they expressed very positive opinions about NHM. They had the highest mean ratings for all 12 NHM experience preference statements. Visitors in this cluster most value the unique, authentic, and diverse NHM specimens/artifacts. They value educational, entertaining, and social experiences more than the other two clusters. They also value "Connecting with past cultures/history of people" and "Connecting with nature/the natural world" more than the other two clusters.
- ◆ Intellectuals are the smallest group of visitors (10 percent). They do not value social experiences; otherwise, their ratings are slightly lower but similar to Enthusiasts. Visitors in this cluster value educational and intellectual aspects more than the Socials.
- ◆ Socials comprise about one-quarter of visitors (27 percent). Visitors in this cluster had the lowest mean rating for all statements except "Talking about the exhibits/displays with my companions" and "Spending time with friends/family." They are less enthusiastic about the Museum—compared to the other two clusters—but still value NHM experiences. They most value spending time with family and friends.

DIFFERENCES AMONG VISITOR CLUSTERS

- ◆ Enthusiasts are the youngest and most ethnically diverse group. This cluster also includes the fewest college graduates. Enthusiasts rated NHM the highest for being welcoming, surpassing expectations, and being a source of civic pride. They are open to and enjoy a wide range of museum experiences, including traditional displays as well as staffed and interactive exhibits. They also highly value cultural aspects of NHM.
- ◆ Intellectuals are the oldest, least ethnically diverse, and most educated group. They are most likely to be visiting NHM alone. They do not value technology in the museum and gave the lowest rating for computer-based exhibits.
- ◆ Socials are mostly visitors in their 30s and 40s and are most likely to be visiting NHM with children. This cluster rated NHM lowest for being a must-see destination. Socials least value directed experiences such as staff-guided tours and audio guides. They expressed the lowest interest in science.
- ◆ No differences were found among the clusters for first-time/repeat visitation, number of visits to NHM in the past 12 months, or NHM membership.

PRINCIPAL FINDINGS: INTERVIEWS

BACKGROUND INFORMATION

- ◆ The purpose of the interviews was to give insights into how visitors talk about NHM and to inform the development of the questionnaire.
- ◆ Sample size: 40 visitor groups comprised of 53 drop-in visitors, ages 18 years and older
- ◆ Interviews conducted with visitors as they exited NHM.
- ◆ 88 percent of interviews conducted in English; 12 percent in Spanish

VISIT CHARACTERISTICS

- ◆ Interviewees reported visiting a variety of exhibitions. About one-third of interviewees had visited the California History Hall and another one-third had visited Ancient Latin American Treasures. Those who bypassed these exhibitions cited lack of awareness, time, or interest as their reasons.
- ◆ Two-thirds discussed exhibitions or specific specimens/artifacts as the most memorable aspect of their visit, most frequently the Thomas the T. Rex Lab and the Gems and Mineral Hall. One-quarter mentioned experiencing a program as the highlight of their visit, praising the live insect presentation or Dinosaur Encounters. A few said the museum's family-friendly atmosphere was noteworthy, while a few others said the museum as a whole exceeded their expectations.
- ◆ When asked during their visit what, if anything, had piqued their curiosity, interviewees offered divergent responses. Many struggled to answer the question, stating that they had appreciated the exhibitions but did not leave with any particular questions. In contrast, some expressed questions or wondered about the specimens/artifacts that they had seen, including the acquisition and value of items in the Gems and Minerals Hall, the work taking place in Thomas the T. Rex Lab, the creation of the dioramas, and the discovery of the megamouth shark.

PERCEPTIONS OF NHM

- ◆ Most interviewees said the Museum's exhibitions and collections make it a unique place. Some described NHM as a distinct Los Angeles institution, describing it as a "must-see destination," as a place that families visit from one generation to the next, or as a source of civic pride.
- ◆ Many interviewees said they most value the Museum's educational nature; in particular, they value having the opportunity to see a wide range of specimens/artifacts and to learn something new.
- ◆ Three-quarters of interviewees assumed scientific research played an important role in the Museum, but only those who had visited the Thomas the T. Rex Lab were able to provide concrete examples.

PERCEPTIONS OF NATURAL HISTORY

- ◆ When asked their associations with natural history, interviewees provided a wide range of responses, with many lacking well-formed ideas about natural history. However, when probed, most readily perceived connections between natural history and the history of people or cultures.

EXPERIENCES WITH OTHER MUSEUMS

- ◆ Three-quarters of interviewees reported visiting museums or other similar institutions in the past year, including the Los Angeles Science Center, Page Museum, and Getty Center. These interviewees visited museums for a variety of reasons, including for their children's educational benefit, because of a core belief in the value of museums, or for personal enrichment.

DISCUSSION

RK&A intends for the NHM visitor engagement research to provide staff with a deep understanding of how visitors think about the Museum, what they value about it, and their preferences for current and potential experiences. We hope staff will use this report for their immediate information needs and for future planning. In thinking about the current reinvention of the Museum, we focus this discussion around two issues that emerged from the study: visitors' perceptions of NHM and opportunities to deepen visitors' engagement with the Museum. Additionally, we would like to suggest defining NHM's public impacts as a natural next step following the visitor engagement research.

PERCEPTIONS OF NHM

Overall, visitors perceive NHM as a unique place and highly value its distinctive aspects. At the core of their esteem for the institution is an appreciation for its diverse and authentic specimens and artifacts. Respondents' overwhelmingly positive responses surprised some NHM staff members, in part, because of the extensive market research the Museum has engaged in over the last few years which have demonstrated visitors' dissatisfaction in a number of areas. While it is difficult to compare studies owing to methodological differences, staff will wonder how to reconcile the two studies and understand what each one can tell us about visitors and the visitor experience. First, it should be noted that visitors in the RK&A engagement study and those in the Morey Group visitor survey (fall 2008) are demographically similar. In other words, both studies are representative of NHM drop-in adult visitors. Second, and most importantly, we need to acknowledge that the two studies were designed to measure different things. The Morey Group visitor survey was designed to query visitors about the operations-driven experience (for instance, front-line staff, amenities, marketing efforts, and admission value); whereas, the RK&A engagement study was designed to examine the programmatic and content-driven experience (such as, perceptions of NHM, preferences for museum experiences, and most valued NHM experiences). By looking at the two studies, we can gain a holistic understanding of visitors. While visitors recognize a need for improvement in NHM visitor services, they still strongly perceive the intrinsic value of the Museum: its collection, scientific scholarship, and public education function. Such findings are heartening; however, they do not exempt the Museum from improving problematic aspects of the visitor experience. In fact, as the Museum undergoes its process of rebirth, it has the great opportunity of creating the highest quality visitor experience in terms of both operations and content.

OPPORTUNITIES TO DEEPEN VISITORS' ENGAGEMENT

While most museums struggle to appeal to a range of visitors, NHM is already attracting a young, diverse audience from the local community. Furthermore, unlike science centers, adult visitors to NHM come to pursue their own interests and enrichment, rather than visiting primarily for the sake of their children.¹ While NHM will need to continue broadening its audience as a long-term goal (e.g., reaching

¹ National Research Council. (2009). *Learning Science in Informal Environments: People, Places, and Pursuits*. Committee on Learning Science in Informal Environments. Phillip Bell, Bruce Lewenstein, Andrew W. Shouse, and Michael A. Feder, Editors. Board on Science Education, Center for Education. Division of Behavioral and Social Sciences and Education. Washington, DC: The National Academies Press.

out to the African American communities), there are also great immediate opportunities for the Museum to deepen current visitors' engagement with the Museum. First, the Museum can encourage visitors to visit more often (an output); second, the Museum can strengthen public understanding of science/history (an impact).

VISITATION

While visitors highly value NHM and the experiences it provides, they tend to visit infrequently. This is true of visitors, as a whole, and the visitor clusters, including the Enthusiasts. How can a person so highly value what an institution has to offer but choose to visit it so rarely? One possible reason is the aforementioned visitor services and as these improve, infrequent visitors may visit more often. Another possible reason is the feeling that, "I've done the Museum." To counter this notion, NHM will need to actively promote the opening of the new galleries and convey the exciting changes taking place at the institution—the rebirth of the Museum. NHM may also want to consider dedicating a small space in the Museum as a "prototyping lab" in which periodic formative evaluation can take place. By having a prototyping space to test upcoming exhibit ideas, visitors will learn about new exhibits and that their input is valued. Dedicating space for prototyping will also promote rapid innovation and testing among exhibit developers and help institutionalize the practice of formative testing. When there are no exhibits to test, the space could feature images and information about current museum research and upcoming exhibit prototypes with an invitation to participate in the testing in a few weeks. Programming and marketing efforts will also need to reinforce the idea that there is always something new to experience at the Museum weekly, monthly, etc.

PUBLIC EDUCATION

In the visitor engagement research and other studies RK&A has conducted for NHM, we have found that visitors are drawn to and interested in authentic specimens and artifacts but need contextualizing information and visual literacy skills to help make sense of what they are seeing. In looking at the relative rankings of the valued NHM experiences as shown in Table A (next page), specimens and the curiosity and discovery experiences they afford are of primary importance to visitors; ideas are ranked lower in importance, likely because visitors may not realize that the ideas directly correspond to the specimens and artifacts they appreciate seeing.

These findings reveal that visitors need help moving from an interest in objects to an understanding of the ideas those objects demonstrate or embody. Future exhibitions should build on visitors' immediate interest in specimens and artifacts—start with what visitors can see—and take them to a new level of understanding about key science and history concepts and ideas. Helping visitors understand what NHM's collection tells us about the history of life on Earth is a worthy goal and, if achieved, would have an important impact on the community by demonstrating the purpose of the Museum and fostering science literacy. The National Academy of Sciences and the American Association for the Advancement of Science have called for more focused efforts to increase scientific literacy in the adult population. NHM, with its diverse, young, and highly interested but less educated visitors is the perfect place for such efforts.

TABLE A
RATINGS OF VALUED NHM EXPERIENCES

7- POINT SCALE: NOT IMPORTANT TO ME (1) / VERY IMPORTANT TO ME (7)		MEAN	+/-
Specimens/ Curiosity/ Discovery	Seeing specimens/artifacts I have never seen before.	6.7	0.7
	Looking at exhibits/displays that I find intellectually interesting.	6.6	0.7
	Discovering something new.	6.6	0.8
	Seeing a diverse selection of displays, from dinosaurs, to insects, to Aztec sculptures.	6.6	0.8
	Seeing beautiful displays, specimens, and artifacts.	6.6	0.8
Experience	Having an entertaining experience for myself.	6.5	0.9
	Having an educational experience for myself.	6.4	0.9
Ideas	Learning about the history of the Earth.	6.4	0.9
	Connecting with past cultures/history of people.	6.3	1.0
	Connecting with nature/the natural world.	6.2	1.1
Social	Talking about the exhibits/displays with my companions.	6.2	1.0
	Spending time with friends/family.	6.2	1.4

DEFINING PUBLIC IMPACT

Over the past two years, NHM has taken great strides to learn about visitors through multiphase evaluations and visitor engagement research. As the Museum moves forward in institutionalizing evaluation and living its brand, we recommend a cross-departmental process in which staff would come together to clarify and define NHM’s desired public impact. While the impact the Museum would like to have on the audiences it serves may be in the minds of staff members, we believe that engaging staff in a process to clarify a unified vision for impact would help all staff work towards achieving that impact. An “impact statement” could be used to help the Museum realign its priorities and daily work, provide messaging for all staff to use when they communicate with the media, help development staff write focused proposals to funders, and most important, a shared language for impact could also help front-line staff and educators talk about the benefits and educational value of the Museum.

INTRODUCTION

This report presents findings from the visitor engagement research conducted by Randi Korn & Associates, Inc. (RK&A), for the Natural History Museum of Los Angeles County (NHM). The intent of this research is to deepen NHM's understanding of its audiences, as the Museum undergoes a large-scale refurbishment of the NHM building, reinstallation of key exhibitions, and the development of a new brand by KBDA. RK&A administered a standardized questionnaire and conducted in-depth interviews. Data were collected from eligible visitors exiting the Museum in March 2009 for the interviews and April to May 2009 for the questionnaire. Eligible visitors were defined as English or Spanish-speaking, adult, drop-in visitors. A total of 399 respondents completed the questionnaire and 40 visitor groups were interviewed.

The study objectives were to:

- ◆ Examine visitors' perceptions, understanding, and connection with natural history topics;
- ◆ Explore visitors' relationship with NHM, including most valued aspects of the Museum;
- ◆ Reveal qualities and characteristics associated with different types of visitors;
- ◆ Identify how such characteristics determine visitors' level of engagement with the NHM;
- ◆ Examine visitors preferences for engaging with NHM; and
- ◆ Experiences can be examined after the NHM renovation.

METHODOLOGY

STANDARDIZED QUESTIONNAIRE

A standardized questionnaire was used to collect visitor characteristics and experiences 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 NHM staff and used the interview data to develop a three-page standardized questionnaire that features a variety of question formats (see survey, 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, survey administrators intercepted adult visitors (18 years and older) exiting the Museum. English-speaking and Spanish-speaking visitors were intercepted, as bilingual data collectors were present during data collection. Data collectors approached the first eligible visitor to enter a designated area at the North and South entrances and asked him/her to participate in the study. If the visitor declined, the data collector logged the visitor's gender, estimated age, and reason for refusal. If the visitor agreed, the survey was administered through a face-to-face interview. When the interview was complete, the interviewer thanked the participant and waited for the next eligible visitor.

IN-DEPTH INTERVIEWS

RK&A conducted open-ended, in-depth interviews with visitors exiting NHM. Open ended interviews produce data rich in information because interviewees are encouraged and motivated to describe their experiences, express their opinions and feelings, and share with the interviewer the meaning they constructed during a visit. This type of interview includes probing questions, which result in detailed responses that may

reveal why a visitor thinks or feels a certain way. All interviews were audio-recorded with participants' permission and transcribed to facilitate analysis. RK&A asked interviewees a series of questions to understand their perceptions of natural history, experiences at NHM, and relationship with NHM (see interview guide, Appendix B).

DATA ANALYSIS

QUANTITATIVE DATA

Questionnaire data were analyzed using SPSS 12.0.1 for Windows, a statistical package for personal computers. Analyses included both descriptive and inferential methods. For all statistical tests, a 0.01 level of significance was used to preclude findings of little practical significance.² Only statistically significant findings are presented in the body of the report. See Appendix C for a listing of all statistical analyses that were run.

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 rating scale variables.

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 (χ^2) was used to test the significance of the relationship. For example, “NHM exhibitions visited” was tested against “gender” to determine if the two variables are 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.³ For example, “NHM experience rating scale scores” were compared by “gender” and “age group” to determine if ratings differ based on demographics characteristics.

To better understand different types of NHM visitors and the characteristics associated with each visitor type, a statistical K-Means cluster procedure classified visitors into three cluster groups based on their ratings of valued NMH experiences.

QUALITATIVE DATA

The interview data are qualitative, meaning that results are descriptive, following from the interviews' conversational nature and the evaluator's observations. In analyzing the data, the evaluator studied the responses for meaningful patterns and, as patterns emerged, grouped similar responses.

² When the level of significance is set to $p = 0.01$, any finding that exists at a probability (p -value) = 0.01 is “significant.” When a finding (such as a relationship between two variables or a difference in rating scores) has a p -value of 0.01, there is a 99 percent probability that the finding exists; that is, in 99 out of 100 cases, the finding is correct. Conversely, there is a 1 percent probability that the finding would not exist; in other words, in 1 out of 100 cases, the finding appears by chance.

³ In the case of tri-variate variables, if the F-statistic resulting from an ANOVA was significant, a post-hoc Scheff multiple comparison test was used to determine which group mean(s) differed from which other group mean(s). For example, if the F-statistic indicated that the age groups had different mean ratings of an experience, the Scheff test was used to pinpoint which event groups differed.

REPORTING METHOD

Tables are used to present the quantitative information. Percentages within tables do not always equal 100 owing to rounding.

The interview data are presented in narrative, with the trends and themes presented from most-to least-frequently occurring. Verbatim quotations (edited for clarity) are included to illustrate interviewees' ideas as fully as possible. The interviewer's remarks appear in parentheses, and, for visitors, an asterisk (*) signifies the start of a different speaker's comments. At the end of each quotation, the interviewees' gender and age are indicated in brackets.

FINDINGS IN THIS REPORT ARE PRESENTED IN TWO MAIN SECTIONS:

1. Questionnaire
2. Interview

PRINCIPAL FINDINGS: QUESTIONNAIRE

Interviewers intercepted English- and Spanish-speaking adult visitors as they were exiting NHM and invited them to participate in a study. A total of 399 visitors agreed and 273 declined, for a participation rate of 59 percent. The sample that declined and the obtained sample have statistically similar gender and age profiles, meaning that the obtained sample is representative of the Museum's drop-in, adult visitor population.

DATA COLLECTION CONDITIONS

Data for the baseline family experiences survey were collected in April and May 2009. Nearly all respondents completed the survey in English (97 percent) (see Table 1). About two-thirds of respondents were intercepted at the South exit and one-third at the North exit (63 percent and 37 percent, respectively). Fifty-one percent completed surveys on weekend days, 44 percent on weekdays during regular hours, and 4 percent during the May First Friday.

TABLE 1
DATA COLLECTION CONDITIONS

LANGUAGE (n = 399)	%
English	97
Spanish	3
EXIT (n = 399)	%
South	63
North	37
VISIT DAY (N = 399)	%
Weekend day	51
Weekday regular hours	44
First Friday	4
TIME OF DAY (N = 399)	%
Afternoon (12:00 pm – 5:00 pm)	92
Morning (10:00 am – 11:59 am)	4
Evening (First Friday, 5:30 pm – 9:30 pm)	4

DEMOGRAPHIC CHARACTERISTICS

Slightly more respondents are male (51 percent), and respondent's mean age is 35 years (see Table 2). Respondents are ethnically diverse: 37 percent identified themselves as Caucasian/White, 28 percent as Hispanic/Latino, 13 percent as multi-ethnic, and 12 percent as Asian/Pacific Islander.

TABLE 2
GENDER, AGE, AND ETHNICITY (IN PERCENT)

CHARACTERISTIC	
GENDER (n = 97)	
	%
Male	51
Female	49
AGE GROUP¹ (N = 391)	
	%
18 – 24 years	1
25 – 34 years	27
35 – 44	29
45 – 54	13
55 – 64	8
65 or more year	2
ETHNICITY (N = 98)²	
	%
Caucasian/White	37
Hispanic/Latino	28
Multi-ethnic	13
Asian/Pacific Islander	12
African American/Black	6
Other	3
American Indian	1

¹Median age = 35 years; Mean age = 36 years (\pm) 12.4

EDUCATION

To account for the large percentage of young respondents who may be in the midst of their educational pursuits, only the education level of respondents 25 years and older is reported. More than one-half of respondents are college graduates (60 percent) (see Table 3).

TABLE 3
EDUCATION (IN PERCENT)

HIGHEST LEVEL ATTAINED ¹ (n = 316)	%
Some high school	1
High school graduate	11
Technical school	4
Some college/Associate's degree	25
College graduate/Bachelor's degree	31
Some graduate work	4
Graduate/Professional degree	1

¹Only respondents 25 years and older.

RESIDENCE

More than three-quarters of respondents live in Los Angeles County (79 percent) (see Table 4).

TABLE 4
RESIDENCE (IN PERCENT)

COUNTY (n = 384) ¹	%
Los Angeles	79
Other	21

GROUP COMPOSITION

More than one-half of respondents were visiting the Museum with children (58 percent) (see Table 5). One-quarter were visiting as adult pairs (24 percent).

TABLE 5
GROUP COMPOSITION (IN PERCENT)

GROUP DESCRIPTION (n = 390)	%
Other adults and children	36
One other adult	24
Sole adult with children	22
Several adults	9
Alone	9

Of the children accompanying respondents, one-third were under 4 years old (34 percent) and another one-third were 4 to 6 years old (33 percent) (see Table 6).

TABLE 6
AGES OF ACCOMPANYING CHILDREN (IN PERCENT)

AGE OF CHILDREN (<i>n</i> = 384) ¹	%
Under 4 years	34
4– 6 years	33
7 – 9 years	17
10– 12 years	9
13 – 17 years	7

¹Median age = 5 years; Mean age = 6 years (±) 3.8

MUSEUM BACKGROUND

NHM MEMBERSHIP

Less than one-quarter of respondents are NHM members (20 percent) (see Table 7).

TABLE 7
NHM MEMBERSHIP (IN PERCENT)

MEMBERSHIP STATUS (<i>n</i> = 379) ¹	%
Non-member	80
Member	20

CHILDHOOD MUSEUM VISITS

Nearly all respondents had visited museums with their family as a child (88 percent), and three-quarters had also visited museums with their school (77 percent) (see Table 8).

TABLE 8
CHILDHOOD MUSEUM VISITS (IN PERCENT)

DESCRIPTION	<i>n</i>	%
Visited museums with family as a child	397	88
Visited museums with school as a child	397	77

SCIENCE BACKGROUND AND INTEREST

ACADEMIC AND PROFESSIONAL BACKGROUND

More than one-half of respondents last took a science class as an undergraduate or graduate student (61 percent) (see Table 9).

TABLE 9
LAST SCIENCE CLASS (IN PERCENT)

GRADE LEVEL (n = 397)	%
Elementary or middle school	4
High school	25
Junior college	10
Undergraduate college or university	50
Graduate or professional school	11

Of respondents who are college graduates, more than one-quarter have a degree in a science-related field (28 percent) (see Table 10). Of all respondents, less than one-quarter are employed in a science-related profession or are educators (14 percent and 16 percent, respectively).

TABLE 10
ACADEMIC AND PROFESSIONAL BACKGROUND (IN PERCENT)

DESCRIPTION	n	%
Has a degree in a science	201	28
Is employed in a science	392	14
Is a teacher / educator / professor	396	16

PERSONAL ENGAGEMENT AND INTEREST IN SCIENCE

One-half of respondents report having a great interest in new scientific discoveries (52 percent), while less than one-half report having moderate interest (43 percent) (see Table 11). Few report having little interest in new scientific discoveries or no opinion (5 percent).

TABLE 11
PERSONAL INTEREST IN SCIENCE (IN PERCENT)

DEGREE OF INTEREST IN NEW SCIENTIFIC DISCOVERIES (n = 398)	%
A lot	52
Some	43
Not much	4
Don't know	1
Not at all	0

DATA COLLECTION CONDITIONS DIFFERENCES

Of science activities respondents engage in during their leisure time, watching television programs about science-related topics was cited most often (88 percent), followed by reading articles/books (68 percent), and engaging in outdoor activities (45 percent) (see Table 12).

TABLE 12
PERSONAL ENGAGEMENT IN SCIENCE (IN PERCENT)

SCIENCE ACTIVITIES (n = 399)	% ¹
Watches television programs about science-related topics	88
Reads articles/books about science-related topics	68
Bird watches/collects rocks/hikes/gardens/other nature-related activities	45
Attends lectures/continuing education courses about science-related topics	27
Engages in citizen-science projects (e.g., animal surveys, water quality assessments)	13
Other (e.g., visit other science museums, teach science, volunteer at other	88

¹Percentages total more than 100 percent because respondents could provide more than one response.

VISIT EXPERIENCES

FIRST AND REPEAT VISIT

Nearly two-thirds of respondents were repeat visitors (61 percent), while more than one-third were visiting the Museum for the first time (see Table 13).

TABLE 13
FIRST OR REPEAT VISIT TO NHM (IN PERCENT)

VISIT (n = 391)	%
Repeat	61
First	39

Of repeat visitors, nearly one-half had not visited the Museum in the past 12 months (48 percent) and nearly one-third had visited one or two times in the same time period (29 percent) (see Table 14).

TABLE 14
FREQUENCY OF VISITS AMONG REPEAT VISITORS (IN PERCENT)

OTHER VISITS IN PAST 12 MONTHS (REPEAT VISITORS ONLY) (n = 229)	%
None	48
1 – 2 times	29
3 – 4 times	13
5 or more times	11

VISITING TO SEE OR DO SOMETHING IN PARTICULAR

Slightly more than one-half of respondents were visiting the Museum to see or do something in particular (53 percent) (see Table 15).

TABLE 15
VISIT NHM TO SEE OR DO SOMETHING IN PARTICULAR (IN PERCENT)

SEE OR DO SOMETHING IN PARTICULAR (n = 395)	%
Yes	53
No	47

Of respondents visiting the Museum for a specific reason, nearly three-quarters (71 percent) came to see a particular exhibition and less than one-quarter come to attend a program or event (19 percent) (see Table 16).

TABLE 16
SPECIFIC REASON FOR VISIT (IN PERCENT)

REASON FOR VISIT (ONLY VISITORS WHO ARE VISITING TO SEE OR DO SOMETHING IN PARTICULAR (N = 208)	%¹
See a particular exhibition (see Table 17 for specifics)	71
Attend program/event (see Table 18 for specifics)	19
Other (e.g., school project, family celebration, members loan area, corporate sponsorship, renew membership)	14

¹Percentages total more than 100 percent because respondents could provide more than one response.

For respondents visiting to see a particular exhibition, “dinosaurs” was listed most often (39 percent), followed by Pavilion of Wings/“butterflies” (30 percent) (see Table 17). No statistically significant differences were found in children’s behaviors associated with building.

TABLE 17
VISITED FOR SPECIFIC EXHIBITION (IN PERCENT)

EXHIBITION (n = 148)	%¹
Dinosaurs	39
Butterflies/Pavilion of Wings	30
Gems and Minerals Hall	19
Thomas the T. Rex Lab/T. Rex Lab	7
Treasures of Ancient Latin America/Latin American exhibits	5
African Mammal Hall	3
California History Hall	2
Discovery Center	2
Insect Zoo/insects	2
American History Hall	1
Birds	1
Dioramas/”dead animals”	1
Mammals	1
Marine life	1
Rainforest	1

¹Percentages total more than 100 percent because respondents could provide more than one response.

For respondents visiting to attend a program or event, Dinosaur Encounters/“dinosaur puppets” was cited most often (67 percent) (see Table 18).

TABLE 18
VISITED FOR SPECIFIC PROGRAM (IN PERCENT)

PROGRAM (n = 39)	%
Dinosaur Encounters/dinosaur puppets	67
Donald Johanson lecture	18
First Friday	8
Darwin lecture	8

VISITATION TO EXHIBITIONS

While looking at a Museum map and brief descriptions of nine core exhibitions, respondents were asked to indicate which ones they had visited on the day of their visit. More than one-half of respondents visited all but one of the listed exhibitions (see Table 19). Nearly all reported visiting the African Mammals Hall and North American Mammals Hall (85 percent and 84 percent, respectively). Three-quarters had visited the Birds Hall, Thomas the T. Rex Lab, and the Gems and Mineral Hall (79 percent, 78 percent, and 76 percent, respectively). The fewest respondents visited the Pavilion of Wings (43 percent).

TABLE 19
EXHIBITIONS VISITED (IN PERCENT)

EXHIBITION	n	% ¹
African Mammal Hall	398	85
North American Mammals Hall (Levels 1 and/or 2)	398	84
Birds Hall	397	79
Thomas the T. Rex Lab	398	78
Gems and Minerals Hall	398	76
Ancient Latin America Treasures	397	69
Discovery Center and Insect Zoo	395	61
California History Hall	394	53
Pavilion of Wings	396	41

¹Percentages total more than 100 percent because respondents could provide more than one response.

DINOSAUR ENCOUNTERS PROGRAM ATTENDANCE

One-quarter of respondents attended the Dinosaur Encounters program (23 percent) (see Table 20).

TABLE 20
DINOSAUR ENCOUNTERS PROGRAM ATTENDANCE (IN PERCENT)

ATTENDED PROGRAM (ONLY INCLUDES DAYS ON WHICH THE PROGRAM OCCURRED) (n = 364)	%
No	77
Yes	23

RATINGS OF NHM OVERALL EXPERIENCE

Respondents characterized NHM as a welcoming place to visit. On the scale of 1 (“Uninviting place to visit”) to 7 (“Welcoming place to visit”), respondents’ mean rating is 6.4 (see Table 21).

Respondents indicated that their expectations of NHM had been met. On the scale of 1 (“Did not meet my expectations”) to 7 (“Surpassed my expectations”), respondents’ mean rating is 5.9.

TABLE 21
RATINGS OF OVERALL NHM EXPERIENCE

7-POINT RATING SCALE:	n	MEAN	±
Uninviting place to visit (1) / Welcoming place to visit (7)	398	6.4	0.8
Did not meet my expectations (1) / Surpassed my expectations (7)	398	5.9	1.1

VISITOR PREFERENCES

PREFERENCES FOR MUSEUM EXPERIENCES

Respondents were asked to rate their preferences for a range of museum experiences based on their NHM visit and/or visits to other similar institutions, using a scale of 1 (“I do not like to do”) to 7 (“I like to do”) (see Table 22). Respondents most favor looking at specimens/artifacts/displays (mean rating = 6.5), followed by having a knowledgeable person in exhibitions/staffed exhibits (mean rating = 6.2). They least favor attending a staff-guided tour (mean rating = 4.9) and listening to an audio-guide (mean rating = 4.6).

TABLE 22
RATINGS OF PREFERENCES FOR MUSEUM EXPERIENCES

7-POINT RATING SCALE: I DO NOT LIKE TO DO (1) / I LIKE TO DO (7)	n	MEAN	±
Looking at specimens/artifacts/displays.	398	6.5	0.9
Having a knowledgeable person in exhibitions/staffed exhibits.	396	6.2	1.1
Using hands-on interactive exhibits.	397	6.0	1.4
Reading information.	398	6.0	1.2
Touching specimens/artifacts.	398	5.7	1.6
Using multimedia (audio and video) exhibits.	395	5.5	1.6
Touching live animals.	396	5.2	1.9
Using computer-based exhibits.	397	5.0	1.8
Attending a staff-guided tour.	391	4.9	1.8
Listening to an audio guide	395	4.6	1.8

PREFERENCES FOR EXPERIENCING NHM WITH CHILDREN

(“Not important to me”) to 7 (“Very important to me”). Overall, respondents appreciate a range of experiences for children and parents (see Table 23). Respondents said “Having educational experiences for children” (mean rating = 6.7), followed by “Having a variety of hands-on experiences for children” (mean rating = 6.6) were most important; whereas, “Having opportunities for children to touch live animals” was least important (mean rating = 5.5).

TABLE 23

RATINGS OF PREFERENCES FOR EXPERIENCING NHM WITH CHILDREN

7-POINT RATING SCALE: NOT IMPORTANT TO ME (1) / VERY IMPORTANT TO ME (7) (ONLY INCLUDES RESPONDENTS VISITING WITH CHILDREN)	n	MEAN	±
Having educational experiences for children.	220	6.7	0.7
Having a variety of hands-on experiences for children.	220	6.6	0.7
Having information readily available to help me explain the exhibits to my children.	220	6.5	0.9
Having an experience that is as engaging for me as it is for my children.	220	6.5	0.9
Having opportunities for children to touch live animals.	220	5.5	1.8

PERCEPTIONS OF NHM

Respondents were asked to rate six statements on a scale of 1 (“Does not describe the Museum”) to 7 (“Describes the Museum well”) (see Table 24). Respondents indicated that the following two statements best describe the Museum: “Scientific research is an important behind-the-scenes activity at the Natural History Museum” and “The Natural History Museum is a source of civic pride for Los Angeles residents” (each mean rating = 6.1). Respondents indicated that the statements, “The Natural History Museum features a wide range of specimens covering billions of years of history” and “The Natural History Museum features a variety of artifacts that tell me about cultural history” are also representative of visitors’ perceptions of NHM (each mean rating = 6.0).

Respondents gave the lowest rating to the negative statement, “The Natural History Museum is a good regional museum but isn’t as good as museums in other big cities” (mean rating = 3.6).

TABLE 24
RATINGS OF NHM DESCRIPTIONS

7-POINT RATING SCALE: DOES NOT DESCRIBE THE MUSEUM WELL (1) / DESCRIBES THE MUSEUM WELL (7)	n	MEAN	±
Scientific research is an important behind-the-scenes activity at the Natural History Museum.	392	6.1	1.2
The Natural History Museum is a source of civic pride for Los Angeles residents.	392	6.1	1.2
The Natural History Museum features a wide range of specimens covering billions of years of history.	396	6.0	1.1
The Natural History Museum features a variety of artifacts that tell me about cultural history.	395	6.0	1.2
The Natural History Museum is a must-see LA destination.	396	5.8	1.4
Scientific research is an important behind-the-scenes activity at the Natural History Museum.	392	6.1	1.2

VALUED EXPERIENCES AT NHM

Respondents were asked to rate NHM experiences on a scale of 1 (“Not important to me”) to 7 (“Very important to me”). Overall, respondents highly valued all 12 experiences (see Table 25). They most value “Seeing specimens/artifacts I have never seen before” (mean rating = 6.7). They also highly value “Looking at exhibits/displays that I find intellectually interesting”; “Discovering something new”; and “Seeing a diverse selection of displays, from dinosaurs, to insects, to Aztec sculptures” (each mean rating = 6.6).

TABLE 25
RATINGS OF VALUED NHM EXPERIENCES

7-POINT RATING SCALE: NOT IMPORTANT TO ME (1) / IMPORTANT TO ME (7)	n	MEAN	±
Seeing specimens/artifacts I have never seen before.	399	6.7	0.7
Looking at exhibits/displays that I find intellectually interesting.	399	6.6	0.7
Discovering something new.	399	6.6	0.7
Seeing a diverse selection of displays, from dinosaurs, to insects, to Aztec sculptures.	399	6.6	0.8
Seeing beautiful displays, specimens, and artifacts.	398	6.6	0.8
Having an entertaining experience for myself.	399	6.5	0.9
Having an educational experience for myself.	399	6.4	0.9
Learning about the history of the Earth.	399	6.4	0.9
Connecting with past cultures/history of people.	399	6.3	1.0
Connecting with nature/the natural world.	399	6.2	1.1
Talking about the exhibits/displays with my companions.	399	6.2	1.0
Spending time with family and friends.	399	6.2	1.4

VISITOR CLUSTERS

The previous section of the report describes visitors' ratings of 12 statements regarding how they prefer to experience NHM using a scale of 1 ("Not important to me") to 7 ("Very important to me."). This section identifies three visitor clusters, or visitor types, derived from the ratings of the 12 statements.⁴ The descriptive names for the clusters emerged from the ratings (i.e., which experiences respondents most valued) (see Table 26). The largest cluster is Enthusiasts ($n = 249$, 63 percent), followed by Socials ($n = 107$, 27 percent). The smallest cluster is Intellectuals ($n = 41$, 10 percent).

TABLE 26
VISITOR CLUSTERS (IN PERCENT)

2009 VISITOR CLUSTERS (n = 397)	<i>n</i>	%
Cluster 1 (Enthusiasts)	249	63
Cluster 3 (Socials)	107	27
Cluster 2 (Intellectuals)	41	10

⁴ A K-Means cluster analysis was used to statistically group all survey respondents who rated all 12 items about their preferences for . In a K-Means cluster analysis, the statistical program is instructed to divide the cases or respondents into a particular number of clusters based on how respondents rated specific statements. In this case a three-way cluster analysis was used.

DESCRIPTION OF CLUSTERS

Table 27 shows the three clusters' mean ratings of the 12 statements about preferences for experiencing NHM on the scale of 1 (“Not important to me”) to 7 (“Very important to me”). The clusters are described below.

Enthusiasts (63 percent) have the highest mean ratings for all 12 statements. They most value the unique, authentic, and diverse NHM specimens/artifacts as well as the discovery and aesthetic experience afforded by the displays. For example, each of the following statements received a mean rating of 6.9 on the 7-point scale: “Seeing specimens/artifacts I have never seen before;” “Looking at exhibits/displays that I find intellectually interesting;” “Discovering something new;” “Seeing a diverse selection of displays, from dinosaurs, to insects, to Aztec sculptures;” and “Seeing beautiful displays, specimens, and artifacts.” They value having educational, entertaining, and social experiences more than the other two clusters. They also value “Connecting with past cultures/history of people” and “Connecting with nature/the natural world” more than the other two clusters.

Intellectuals (10 percent) do not value social experiences (e.g. “Spending time with friends/family” received a mean rating of 2.8); otherwise, their ratings are slightly lower but similar to Enthusiasts. They value educational and intellectual aspects of NHM more than the Socials.

Socials (27 percent) have the lowest mean ratings for all statements except “Talking about the exhibits/displays with my companions” and “Spending time with friends/family.” In fact, they most value spending time with family and friends (mean rating = 6.4). They are less enthusiastic about NHM—compared to the other two clusters—but still value NHM experiences.

TABLE 27
RATINGS OF VALUED NHM EXPERIENCES BY VISITOR CLUSTER

7-POINT RATING SCALE: NOT IMPORTANT TO ME (1) / VERY IMPORTANT TO ME (7)	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
	MEAN	MEAN	MEAN	MEAN
Seeing Specimens/artifacts I've never seen before. ¹	6.9	6.6	6.2	6.7
Looking at exhibits/displays I find intellectually interesting. ²	6.9	6.5	6.1	6.6
Discovering something new. ³	6.9	6.6	6.0	6.6
Seeing a diverse selection of displays from dinosaurs, to insects, to Aztec sculptures. ⁴	6.9	6.3	6.1	6.6
Seeing beautiful displays, specimens, and artifacts. ⁵	6.9	6.3	6.0	6.6
Having an entertaining experience for myself. ⁶	6.8	6.3	5.8	6.5
Having an educational experience for myself. ⁷	6.8	6.0	5.7	6.4
Learning about the history of the Earth. ⁸	6.8	6.1	5.6	6.4
Connecting with past cultures/history of people. ⁹	6.8	5.9	5.6	6.3
Talking about the exhibits/displays with my companions. ¹⁰	6.6	5.9	5.6	6.2
Connecting with nature/the natural world. ¹¹	6.7	5.2	5.4	6.2
Spending time with friends/family. ¹²	6.7	2.8	6.4	6.2

¹F= 47.867; p = .000 ²F= 63.688; p = .000 ³F= 94.808; p = .000 ⁴F= 54.456; p = .000

⁵F= 63.077; p = .000 ⁶F= 67.096; p = .000 ⁷F= 104.394; p = .000 ⁸F= 105.830; p = .000

⁹F= 87.067; p = .000 ¹⁰F= 72.541; p = .000 ¹¹F= 75.284; p = .000 ¹²F= 450.432; p = .000

2009 VISITOR CLUSTERS: DIFFERENCES IN DEMOGRAPHIC CHARACTERISTICS

The three visitor clusters differ in age, ethnicity, education, and group composition.

AGE GROUP BY CLUSTER

Table 28 shows age group differences according to cluster. Significant findings are listed below. Compared among the clusters:

- ◆ More young respondents (under 35 years) are Enthusiasts.
- ◆ More middle-ages respondents (35 to 54 years) are Socials.
- ◆ More older respondents (55 years and older) are Intellectuals

TABLE 28
AGE GROUP BY VISITOR CLUSTER (IN PERCENT)

AGE GROUP ¹	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
	%	%	%	%
17 – 24 years	50	42	43	47
35 – 54 years	41	32	51	43
55 or more years	9	27	7	10

¹ $\chi^2 = 17.382$; $df = 4$; $p = .002$

ETHNICITY BY CLUSTER

Table 29 shows ethnicity (collapsed into two categories: Caucasian/White and all ethnicities other than Caucasian/White) by cluster. Significant findings are as follows:

- ◆ Enthusiasts are the most ethnically diverse
- ◆ Intellectuals are the least ethnically diverse

TABLE 29
ETHNICITY BY VISITOR CLUSTER (IN PERCENT)

ETHNICITY ¹	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
	%	%	%	%
White/Caucasian	29	58	48	38
Ethnicity other than White/Caucasian	71	43	52	63

¹ $\chi^2 = 18.061$; $df = 2$; $p = .000$

EDUCATION BY CLUSTER

Table 30 shows education level (collapsed into two categories: non-college graduate and college graduate) by cluster. Significant findings are as follows:

- ◆ Intellectuals are the most educated.
- ◆ Enthusiasts are the least educated.

TABLE 30
EDUCATION BY VISITOR CLUSTER (IN PERCENT)

	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
HIGHEST LEVEL ATTAINED ¹	%	%	%	%
College graduate	52	79	69	59
Non-college graduate	49	21	31	41

¹ $\chi^2 = 13.448$; $df = 2$; $p = .001$

GROUP COMPOSITION BY CLUSTER

Table 31 shows group composition by cluster. Significant findings are as follows:

- ◆ Intellectuals are more likely to visit alone than the other two clusters.
- ◆ Socials are slightly more likely to visit NHM with children compared to Enthusiasts and much more likely than Intellectuals.

TABLE 31
GROUP COMPOSITION BY VISITOR CLUSTER (IN PERCENT)

	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
GROUP DESCRIPTION ¹	%	%	%	%
Adults and children	60	21	68	58
Adult only group	36	33	26	33
Alone	4	46	7	9

¹ $\chi^2 = 80.814$; $df = 4$; $p = .000$

2009 VISITOR CLUSTERS: DIFFERENCES IN SCIENCE BACKGROUND

The three visitor clusters differ in interest in science. Table 32 shows interest in new scientific discoveries by cluster. Significant findings are as follows:

- ◆ Socials are least interested in new scientific discoveries.
- ◆ Enthusiasts and Intellectuals express similar interest.

TABLE 32
PERSONAL INTEREST IN SCIENCE BY VISITOR CLUSTER (IN PERCENT)

DEGREE OF INTEREST IN NEW SCIENTIFIC DISCOVERIES ¹	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
	%	%	%	%
High interest	60	56	31	51
Moderate to low interest	40	44	69	49

¹ $\chi^2 = 25.949$; $df = 2$; $p = .000$

2009 VISITOR CLUSTERS: DIFFERENCES IN NHM VISIT EXPERIENCES

The three visitor clusters differ in the ratings of their overall NHM experience. Table 33 shows the experience ratings by cluster. Significant findings are as follows:

- ◆ Enthusiasts rated NHM as being more welcoming than the other two clusters.
- ◆ Enthusiasts also rate NHM higher for surpassing their expectations; whereas, Intellectuals and Socials indicated that NHM had met their expectations.

TABLE 33
RATINGS OF OVERALL NHM EXPERIENCE BY VISITOR CLUSTER (IN PERCENT)

7-POINT SCALE ²	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
	%	%	%	%
Uninviting place to visit (1) / Welcoming place to visit (7) ¹	6.5	6.2	6.1	6.4
Did not meet my expectations (1) / Surpassed my expectations (7) ²	6.1	5.6	5.6	5.9

¹F = 12.296; $p = .000$

²F = 7.281; $p = .001$

2009 VISITOR CLUSTERS: DIFFERENCES IN VISITOR PREFERENCES

The three visitor clusters differ in preferences for museum experiences. Table 34 shows preferences by cluster. Significant findings are as follows:

- ◆ Intellectuals were less likely than Enthusiasts but more likely than Socials to prefer looking at specimens/artifacts/displays.
- ◆ Enthusiasts were more likely than the other two clusters to prefer staffed exhibits, hands on-exhibits, information to read, touchable specimens/artifacts, multimedia exhibits, live animals to touch, computer-based exhibits, staff-guided tours, and audio-guides.

TABLE 34
RATINGS OF PREFERENCES FOR MUSEUM EXPERIENCES BY VISITOR CLUSTER

7-POINT RATING SCALE: I DO NOT LIKE TO DO (1) / I LIKE TO DO (7)	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
	MEAN	MEAN	MEAN	MEAN
Looking at specimens/artifacts/displays. ¹	6.7	6.4	6.1	6.5
Having a knowledgeable person in exhibitions/ staffed exhibits. ²	6.3	6.0	6.0	6.2
Using hands-on interactive exhibits. ³	6.3	5.5	5.3	6.0
Reading information. ⁴	6.2	5.6	5.6	6.0
Touching specimens/ artifacts. ⁵	6.1	5.3	5.1	5.7
Using multi-media (audio and video) exhibits. ⁶	5.8	4.0	4.8	5.5
Touching live animals. ⁷	5.4	4.9	4.7	5.2
Using computer-based exhibits. ⁸	5.5	4.0	4.3	5.0
Attending a staff-guided tour. ⁹	5.4	4.5	4.2	4.9
Listening to an audio-guide. ¹⁰	5.1	4.1	3.8	4.6

¹F= 17.729; p = .000 ²F= 5.845; p = .003 ³F= 26.829; p = .000 ⁴F= 12.571; p = .000 ⁵F= 14.798; p = .000
⁶F= 16.692; p = .000 ⁷F= 6.083; p = .003 ⁸F= 25.423; p = .000 ⁹F= 20.127; p = .000 ¹⁰F= 21.592; p = .000

2009 VISITOR CLUSTERS: DIFFERENCES IN MUSEUM PERCEPTIONS

The three visitor clusters differ in perceptions of NHM. Table 35 shows perceptions by cluster. Significant findings are as follows:

- ◆ Intellectuals were less likely than Enthusiasts but more likely than Socials to perceive “Scientific research is an important behind-the-scenes activity at the NHM” and “The NHM features a variety of artifacts that tell me about cultural history.”
- ◆ Enthusiasts were more likely than the other two clusters to perceive: “The NHM is a source of civic pride for Los Angeles residents,” “The NHM features a wide range of specimens covering billions of years of history,” and “The NHM is a must-see LA destination.”

TABLE 35
RATINGS OF MUSEUM DESCRIPTIONS BY VISITOR CLUSTER

7-POINT RATING SCALE: DOES NOT DESCRIBE THE MUSEUM (1) / DESCRIBES THE MUSEUM WELL (7)	CLUSTER			
	ENTHUSIASTS (N = 249) (63%)	INTELLECTUALS (N = 41) (10%)	SOCIALS (N = 107) (27%)	TOTAL (n = 399)
	MEAN	MEAN	MEAN	MEAN
Scientific research is an important behind-the-scenes activity at the Natural History Museum. ¹	6.2	5.9	5.7	6.1
The Natural History Museum is a source of civic pride for Los Angeles residents. ²	6.5	5.8	5.5	6.1
The Natural History Museum features a wide range of specimens covering billions of years of history. ³	6.2	5.8	5.7	6.0
The Natural History Museum features a variety of artifacts that tell me about cultural history. ⁴	6.3	5.7	5.3	6.0
The Natural History Museum is a must-see LA destination. ⁵	6.2	5.3	5.0	5.8

¹F= 8.521; p = .000 ²F= 36.609; p = .000 ³F= 9.525; p = .000
⁴F= 25.232; p = .000 ⁵F= 41.471; p = .000

DIFFERENCES BY AGE GROUP AND GROUP COMPOSITION

In addition to examining differences in the responses of the three clusters and owing to interesting relationships that emerged from the clusters, RK&A also examined the survey responses by age group and group composition.

AGE GROUP

RK&A collapsed respondents' ages into three groups (under 35 years, 35 to 54 years, and 55 years and older). The three age groups differed in group composition, NHM membership, personal engagement in science, museum experiences preferred, and NHM experiences valued.

AGE GROUP: DIFFERENCE IN GROUP COMPOSITION

Table 36 shows group composition by age group. There was one significant finding:

- ◆ Respondents 35 to 45 years old were more likely to be visiting the Museum with children than those younger or older.

TABLE 36
GROUP COMPOSITION BY AGE GROUP (IN PERCENT)

GROUP DESCRIPTION ¹	AGE GROUP			TOTAL (n = 382)
	< 34 YEARS (n=180)	35 - 54 YEARS (n=163)	55 YEARS + (n=39)	
	%	%	%	%
With children	46	74	41	57

¹ $\chi^2 = 33.477$; $df = 2$; $p = .000$

AGE GROUP: DIFFERENCES IN NHM MEMBERSHIP

Table 37 shows NHM membership by age group. Significant findings are as follows:

- ◆ Respondents 35 to 45 years old were more likely to be NHM members than those younger or older.
- ◆ Young respondents (under 35 years old) were least likely to be NHM members.

TABLE 37
NHM MEMBERSHIP BY AGE GROUP (IN PERCENT)

MEMBERSHIP STATUS	AGE GROUP			TOTAL (n = 372)
	< 34 YEARS (n=173)	35 - 54 YEARS (n=160)	55 YEARS + (n=39)	
	%	%	%	%
Member	10	30	21	20

¹ $\chi^2 = 21.469$; $df = 2$; $p = .000$

AGE GROUP: DIFFERENCES IN PERSONAL ENGAGEMENT IN SCIENCE

Table 38 shows personal engagement in science by age group. Significant findings are as follows:

- ◆ Respondents 55 years and older were most likely to attend lectures/continuing education courses about science-related topics than younger respondents.
- ◆ Respondents 35 to 54 years old were least likely to attend such programs.

TABLE 38

PERSONAL ENGAGEMENT IN SCIENCE BY AGE GROUP (IN PERCENT)

SCIENCE ACTIVITIES ¹	AGE GROUP			
	< 34 YEARS (n=173)	35 - 54 YEARS (n=160)	55 YEARS + (n=39)	TOTAL (n = 372)
	%	%	%	%
Attends lectures/continuing education courses about science-related topics.	30	20	41	27

¹ $\chi^2 = 9.086$; $df = 2$; $p = .011$

AGE GROUP: DIFFERENCES IN PREFERENCES FOR MUSEUM EXPERIENCES

Table 39 shows museum experience preferences by age group. Significant findings are as follows:

- ◆ Respondents under 35 years were most likely to prefer using hands-on interactive exhibits, using touchable specimens/artifacts, and having the opportunity to touch live animals than were older respondents.
- ◆ Respondents 55 years and older were least likely to prefer those experiences.

TABLE 39

RATINGS OF PREFERENCES FOR MUSEUM EXPERIENCES BY AGE GROUP (IN PERCENT)

7-POINT RATING SCALE: I DO NOT LIKE TO DO (1) / I LIKE TO DO (7)	AGE GROUP			
	< 34 YEARS (n=173)	35 - 54 YEARS (n=160)	55 YEARS + (n=39)	TOTAL (n = 372)
	MEAN	MEAN	MEAN	MEAN
Using hands-on interactive exhibits. ¹	6.3	5.8	5.2	6.0
Touching specimens/artifacts. ²	6.1	5.4	5.1	5.7
Touching live animals. ³	5.6	4.9	4.1	5.2

¹ $F = 12.839$; $p = .000$ ² $F = 9.396$; $p = .000$ ³ $F = 13.235$; $p = .000$

AGE GROUP: DIFFERENCES IN VALUED NHM EXPERIENCES

Table 40 shows NHM experiences valued by age group. Significant findings are as follows:

- ◆ Respondents under 35 years most value having an entertaining experience.
- ◆ Respondents 55 years and older least value having an entertaining experience.

TABLE 40
RATINGS OF PREFERENCES FOR MUSEUM EXPERIENCES BY AGE GROUP (IN PERCENT)

7-POINT RATING SCALE: I DO NOT LIKE TO DO (1) / I LIKE TO DO (7)	AGE GROUP			
	< 34 YEARS (n=173)	35 - 54 YEARS (n=160)	55 YEARS + (n=39)	TOTAL (n = 372)
	MEAN	MEAN	MEAN	MEAN
Have an entertaining experience. ¹	6.7	6.4	6.2	6.4

¹F= 7.217; p = .001

GROUP COMPOSITION

RK&A examined group composition and create two groups: respondents accompanied by children and those visiting the Museum without children. The two groups differed in visit experiences and valued NHM experiences.

GROUP COMPOSITION: DIFFERENCES IN VISIT EXPERIENCE

Table 41 shows exhibitions visited by group composition. One significant finding was found:

- ◆ Respondents with children were more likely to visit the Discovery Center and Insect Zoo and the Pavilion of Wings than were those without children.

TABLE 41
EXHIBITIONS VISITED BY GROUP COMPOSITION

EXHIBITION	GROUP COMPOSITION		
	WITH CHILDREN (n=223)	WITHOUT CHILDREN (n=164)	TOTAL (n = 877)
	%	%	%
Discovery Center and Insect Zoo. ¹	68	50	61
Pavilion of Wings ²	54	24	42

¹χ² = 13.039; df = 1; p = .000 ²χ² = 35.737; df = 1; p = .000

Table 42 shows attendance of Dinosaur Encounters by group composition. One significant finding was found:

- ◆ Respondents with children were more likely to have attended the Dinosaur Encounters program than were those without children.

TABLE 42
DINOSAUR ENCOUNTERS PROGRAM ATTENDANCE BY GROUP COMPOSITION (IN PERCENT)

	GROUP COMPOSITION		
	WITH CHILDREN (n=223)	WITHOUT CHILDREN (n=164)	TOTAL (n = 877)
ATTENDED PROGRAM	%	%	%
Yes ¹	31	10	22

¹ $\chi^2 = 28.052; df = 2; p = .000$

GROUP COMPOSITION: DIFFERENCES IN VALUED NHM EXPERIENCES

Table 43 shows NHM experiences valued by group composition. Significant findings are as follows:

- ◆ Respondents without children place greater value on “Seeing specimens/artifacts I have never seen before” and “Looking at exhibits/displays that I find intellectually interesting” than do respondents with children.
- ◆ Respondents with children place greater value on “Spending time with friends/family” and “Connecting with nature/the natural world” than do respondents without children.

TABLE 43
RATINGS OF VALUED NHM EXPERIENCES BY GROUP COMPOSITION

7-POINT RATING SCALE: I DO NOT LIKE TO DO (1) / I LIKE TO DO (7)	GROUP COMPOSITION		
	WITH CHILDREN (n=183)	WITHOUT CHILDREN (n=127)	TOTAL (n = 310)
	MEAN	MEAN	MEAN
Seeing specimens/artifacts I have never seen before. ¹	6.6	6.8	6.7
Looking at exhibits/displays that I find intellectually interesting. ²	6.5	6.8	6.6
Spending time with friends/family. ³	6.6	5.7	6.2
Connecting with nature/the natural world. ⁴	6.3	6.0	6.2

¹F= 7.219; $p = .008$ ²F= 10.832; $p = .001$ ³F= 37.789; $p = .000$ ⁴F= 6.521; $p = .011$

PRINCIPAL FINDINGS: IN-DEPTH CHILD INTERVIEWS

RK&A conducted 50 onsite interviews in July and August 2008 with visitors 5 to 10 years old visiting with family groups as they completed their building experience in the *Skyline* exhibition. Of interviewees, 26 were female (52 percent) and 24 were male (48 percent); interviewees' median age was 7 years. A total of 52 children were invited to participate in the evaluation but two declined, for a participation rate of 96 percent.

OVERALL EXPERIENCE

Overall, most interviewees spoke positively about their exhibition experience. About one-half used words like “fun,” “great,” or “cool” when describing their overall experience. Several interviewees said they thought the exhibition was fun because they could build and be creative (see the first quotation below). A few said the exhibition was fun because they could build with someone else (see the second quotation).

I think it is fun to build houses because kids can learn to build and build [using] their imaginations and you can experiment. [female, 7 years]

I think it was really fun that I got to build with my dad. [female, 6 years]

MOTIVATION FOR *SKYLINE* PARTICIPATION

About one-half of interviewees said they participated in the *Skyline* exhibition because they wanted to build something (see the first quotation below). Several interviewees said they participated because children in the exhibition looked like they were having fun (see the second quotation). A few said they participated because someone in their family wanted to do the activity (see the third quotation) and a few said they participated because they had used the exhibition before and had had fun (see the fourth quotation).

Actually, I wanted to build. I saw this part earlier and knew I wanted to come here. [male, 8 years]

I thought it [looked] like a fun exhibit because I saw kids having a great time and wanted to do it. [female, 6 years]

My brother wanted to do it and I thought I would give it a chance. [female, 10 years]

Last time I [came] here we had a lot of fun building the house and it falls down sometimes, but I wanted to come back and try it again. [male, 9 years]

FAVORITE ASPECTS

Slightly more than one-third of interviewees said they most liked building something, especially using tools and large-scale building materials (see the first two quotations). About one-third said they most enjoyed creating and having the chance to pretend play in the structure they built (see the third quotation). A few said they most liked successfully finishing their structure (see the fourth quotation), a few most liked building with someone (see the fifth quotation), and few did not know what they liked most.

[I liked] building [something] and taking it down. [male, 6 years]

I [am] usually creative with Legos in my house, but [I like that] these [parts] are so much bigger. [male, 9 years]

You got to build a house and go in it and act like it is your own house. [male, 10 years]

[I liked] when [I] finished because you can see what it looks like. [male, 10 years]

[I liked that] there were two smaller boys who helped us build a house. [female, 10 years]

LEAST FAVORITE ASPECTS

About one-half of interviewees said there was nothing they did not like about the exhibition activity. About one-third said physically putting together materials, or knowing how to do so, was challenging (see the first quotation below). A few interviewees said they did not like running out of materials, and a few said working with others was challenging (e.g., disagreement among group members or sharing with other visitors) (see the second quotation).

Putting on those braces is hard. I did not like the part where you had to screw them in. [female, 8 years]

[I did not like] that people take things that other people [worked] so hard on. I would really hate it if someone tore [my structure] down. [female, 8 years]

GROUP COLLABORATION

Nearly all visitors collaborated with someone within or outside their visiting group to build their structure. Slightly less than one-half of interviewees said the best part about working with others to build was having input and help from other people to make their structure better in some way (e.g., taller) (see the first two quotations below). About one-quarter of interviewees said the best part about working with others was to share a fun experience (see the third quotation).

[I worked with] lots of people, people I asked to help. (What was the best part of working with them?) Probably that I get this thing I want to build done faster. [female, 8 years]

[I worked] with my two friends. We figured out what to do together and we worked together without screaming at each other. [female, 10 years]

We could do [the activity] with our family. It is fun doing it with our family. [female, 8 years]

When asked what was difficult about working with others to build their structure, about one-half of interviewees said there was nothing or they did not know whether there was anything difficult about working with others. Several said the most difficult thing was disagreeing over what to build and how to build it (see the first quotation below). A few said the most difficult aspect of working with others to build was sharing materials or communication (see the second quotation below).

[I worked with] my sister and dad. (What was the hardest part of working with them?) I could not do everything I wanted to do. I could not always decide what to make. [male, 10 years]

There are a lot of things going on with the house. If you tell someone on the other side [to do] something [and] they are holding [the structure], it might break. [male, 9 years]

USE OF STEM-BASED LANGUAGE AND CONCEPTS

When asked what they did to make their structure stand up, slightly more than one-half of interviewees used STEM-based language and concepts (see Appendix H) when describing their structure. For example, interviewees said they used diagonals, triangles, or a frame to brace their structure (see the first two quotations below). On the other hand, about one-quarter did not use STEM-based language or concepts, and instead said they used nuts and bolts to tighten their structure and help it stand up (see the third quotation) or used triangles, but not for support (see the fourth quotation).

We put on these diagonals and it seemed to make it not topple. (How did you figure that out?) My mom told me but actually I could [have] figured it out. [male, 8 years]

Well, the first time I used nothing. I thought it would stand up on its own, but it started tipping so I decided to use triangles. (How did you figure that out?) My grandpa brought the [triangles] over and it worked out [well]. [male, 10 years]

(What did you do to make your structure stand up without falling over?) We used the nuts and screwdrivers to screw [them] on tightly. [female, 8 years]

[We used triangles] for the roof. [They] looked like they could be a roof. [male, 5 years]

When asked how they knew how to make their structure stand without falling over, about one-third of interviewees said a parent or other adult told them what to use or they copied the ideas they observed in other structures (see the quotations above). Several interviewees said they used trial and error to make their building stand (e.g., added extra pieces to see if it would stop wobbling) (see the first two quotations below). A few said they knew something about how buildings stand and used that knowledge to build a stable structure (see the third quotation below).

I put two [struts] at the bottom. (How did you figure that out?) I did not know how it would stand up so we just put them there. [male, 5 years]

We put [some] of those [diagonal] bars right there to make it stand up. (How did you figure that out?) Well, at first it was kind of wobbly, so we thought to straighten it out a bit. [male, 6 years]

We used the braces. (How did you figure that out?) We just knew [the braces] would make it stronger because [they] give it support. [male, 10 years]

PRINCIPAL FINDINGS: IN-DEPTH ADULT INTERVIEWS

RK&A conducted 50 onsite adult interviews in July and August 2008 with visitors 18 years and older visiting with family groups and at least one child aged 5 to 10 as they completed their building experience in the *Skyline* exhibition. Of interviewees, 31 were female (62 percent) and 19 were male (38 percent); interviewees' ages ranged from 22 to 62, with a median of 38. A total of 53 adults were invited to participate in the evaluation but three declined, for a refusal rate of 6 percent.

OVERALL EXPERIENCE

All but a couple of interviewees spoke positively about their exhibition experience. In fact, nearly three-quarters of interviewees described their experience with extreme enthusiasm and excitement—a few saying it was one of the best children's exhibitions they had ever used and a few others saying they repeatedly visit the exhibition. When asked to explain what they liked so much about the exhibition, most of these described their affinity for the exhibition in terms of how it promotes creativity, independence, free play, and imagination (see the first two quotations below). Some said what they liked best is the way the exhibition is designed—specifically that it is well organized, simple, and uses real tools (see the third and fourth quotations below). Some added that they also enjoyed the opportunity for a shared experience (see the last quotation below).

I think it is more [about] her being able to think on her own to figure out exactly what she wants to make and making sure that she has her own creative mind. . . . So, it is great to see that she wants to do something [different]. [Male, 44 years]

I thought [the exhibition] was really great. It gave the kids a chance to walk around and be creative and [to] work independently. That was really great. I was thinking it would make them use their imaginations. . . . She did this whole thing by herself. [Female, 22 years]

[I like that] it is simple. There are a lot of different variations, but, there is only one size bolt and only one size nut that goes on it so they are not searching for which one goes with which. They all go together . . . no matter how long the bolt is. It is easier for them to just concentrate on their building than to be looking for the proper pieces. [Male, 37 years]

[I like that the exhibition applies] to more than the 5-to-10-year-old age group. The best thing is for [the kids] to learn [how to use] the tools in a simplified manner. [They learn] what tools [to use], how they screw [and] which way, and [gain] confidence in building something that could actually look like something [real]. [Female, 42 years]

[I liked] the team building that [the exhibition promotes]. When they are working with each other, it helps them to know that they cannot yell at each other to get things done. [Female, 22 years]

The other one-quarter of interviewees enjoyed the exhibition, but were less enthusiastic than the group described above. Notably, some of the less enthusiastic interviewees did not participate in the activity with their children. These interviewees were not as verbose in their explanations of why they liked the exhibition, with some expressing slight ambivalence, and others referring to it as educational or a good opportunity to spend time together. A few said they liked that the exhibition teaches real-world skills, such as using a screwdriver. Only two interviewees were generally negative about their experience, one

describing it as stressful and frustrating, and another saying she has little interest in building activities (nevertheless, both these parents said their children seemed to enjoy the experience).

All interviewees, regardless of their enthusiasm for the exhibition, were asked what they least liked about the experience. One-half said there was nothing they liked least. Of the other one-half, many said their only complaint was looking for, and sometimes not finding, the materials and resources they needed to build their structure. Other complaints were idiosyncratic and included having to watch small children, needing more instructions, and that the materials were too big.

GROUP COLLABORATION

More than three-quarters of adult interviewees said they had worked with their children to build a structure. Of these, nearly all found the experience extremely satisfying. About one-half of these said the most rewarding aspect of working together was watching their child accomplish a difficult task and produce a product s/he could be proud of (see the first two quotations below). These interviewees repeatedly mentioned “the smiles” on their children’s faces as they finished their structures. Some of these explained that the accomplishment instilled confidence. The other approximately one-half said the most rewarding aspect of working together was spending quality time with their children (see the third and fourth quotations below). A few interviewees said they enjoyed watching their child have fun.

I love to see the glow in [my son’s] eyes when [he says,] ‘I did it. Look at this. Mom, take my picture!’ The self-earned success. [He] did it. It is [his]. [Female, 39 years]

[I liked] being able to see [the children’s] faces light up when we were done building and seeing their excitement [building] something that [started out as] just wood and [seeing] what we did [with it]. [Female, 37 years]

Every minute that I spend with [my daughter] is rewarding for me. I get a lot of joy out of working with her. [Male, 44 years]

[I liked] spending the time with [my son], knowing he is having a good time. I was honestly a bit worried about coming here today because he is ten years old and I had never been [to CCM] myself. I like this activity the best because it truly has kept him entertained the longest and he just seems genuinely happy to be here. [Female, 29 years]

Interviewees who worked with their child were asked to identify the most difficult aspect of group work; most said it was teamwork. Notably, none of these interviewees complained about teamwork, but rather described its challenges. More specifically, they said it was sometimes difficult to communicate with their young child, they sometimes had to negotiate roles or material use between children, they had difficulty relinquishing control when building the structure, and they had to adjust their work style to their child’s particular pace (see the quotations below). Several parents said there was nothing difficult about working with their child.

The adult has a certain picture in [his/her] mind of what they want to do so it is hard [to get] the kids to build exactly what you had in mind. You [have to] prod them along properly. [Male, 29 years]

[It was challenging] when the boys had different ideas about what they wanted to do, and neither one of them wanted to compromise, [but] they eventually figured it out. [Male, 49 years]

[It was challenging] for me to lay back and let the [kids] actually [build]. I can see them trying to do something, and I could think of four other ways they could do it better, but. . . They should learn how to do it themselves. [Female, 38 years]

We did not really run into any problems with the ‘doing’ [part] but, explaining things in simple enough terms for them to understand can be a challenge sometimes. [Male, 39 years]

BUILDING THE STRUCTURE

When asked to describe their structure, nearly one-half said they built a house, and nearly one-quarter said they built a tent. Some others described their structure generically without identifying it in any way (e.g., a “square structure”). Four interviewees said they built a skyscraper. Other structure descriptions were idiosyncratic and included “a cat mobile,” “a castle,” “a swing set,” and “a ladder.”

When asked how they decided to build what they built, one-quarter said they had no plan, but rather “just started putting pieces together.” About one-quarter of interviewees said they had some kind of “vision” for their final product. Of these, some said the adult in the group decided what to build (usually owing to some previous or expert knowledge of building), and others said the child(ren) had decided. Several said they did not know how they decided what to build. A few said they watched other groups in the exhibition and copied what they were doing.

When asked how they figured out *how* to build their structure, one-third said they used trial and error (see the first two quotations below). Another one-third said they used previous knowledge, including some parents who identified themselves as an architect, engineer, or simply “handy” and experienced in putting things together (see the third and fourth quotations below). Of the remaining interviewees, some said they copied the structures of other visitors and some said they did not know how they figured out how to build.

(How did you or your child decide to build it this way?) It was really just trial and error. There were a few things that did not go together right, and [my son] changed his design in the end because he wanted to add some things to it. Because he wanted to add a heavier top to [the structure], we actually had to disassemble [the structure] a little bit and put it [back] together. The second layer had to be a little bit stronger. [Female, 53 years]

[Our structure] just kind of evolved. I knew that the bolts had to be tighter rather than looser obviously, and that there has to be a certain amount of support. I would say that is how [we decided to build], with [a] little background knowledge and then just trial and error. I see some things that I probably would not have done had I just been doing it myself, but that is what he did. So that would be one of those teaching moments [where] I [would] say ‘Maybe it will be sturdier if we use this instead of this.’ [Female, 29 years]

I thought [it] would be best [to build] through trial and error. [Male, 44 years]

I just had an inkling [our idea] would work. I have got more of an engineering background, so I put the reinforcing parts in. So, that was more dad’s [idea] instead of the kids. [Male, 49 years]

When asked what they liked best about the way their structures turned out, interviewees provided a wide variety of answers. Some said they liked that their structure was “unique” or had “good form.” Some

said they liked that their structure was sturdy and strong. A few said they liked finishing their project, a few said that their child had fun, and few said that they used teamwork. Several interviewees said they did not know what they liked best.

When asked what was most difficult about building the structure, one-quarter said nothing was difficult. Another one-quarter said stabilizing the structure was most difficult. Several each said aligning the parts so they would fit or finding the necessary materials and resources was most difficult. Some responses were idiosyncratic and included teamwork, having no plan, and the fact that the activity was too time-consuming.

Notably, adults who said they had not worked with their child to build the structure were the ones most likely to respond to the questions above by saying they did not know or by commenting generally.

APPENDICES

APPENDICES A AND B REMOVED FOR PROPRIETARY PURPOSES

APPENDIX C: STATISTICS

DESCRIPTIVE STATISTICS

CATEGORICAL VARIABLES: FREQUENCIES

Visit day
Time
Entrance
Q1 First or repeat visit to NHM
Q1a Number of visits in last 12 months
Q2 Member of NHM
Q3 Visiting to do something in particular
Q3a Specific reason for visiting
Q6 Exhibitions visited
Q7 Attendance of Dinosaur Encounters program
Q8 Group composition
Children's age group: <4, 4-6, 7-9, 10-12, 13-17
q1 Engagement in science activities
q2 Personal interest in science
q3 Last science class taken
q4 Science background
q5 Gender
Age group: <24, 25-34, 35-44, 45-54, 55-64, 65+
Age group: <34, 35-54, 55+
q7 Education
q8 College degree in science
q9 zip code (recoded by LA County and other)
q10 Ethnicity

DESCRIPTIVE STATISTICS

INTERVAL-RATIO VARIABLES: SUMMARY STATISTICS (MEAN ± STANDARD DEVIATION)

Q4 Ratings of NHM visit experiences
Q5 Rating of NHM descriptions
Q9 Children's ages
Q10 Rating of experience preferences when visiting NHM with children
Q11 Ratings of adult experiences preferences when visiting museums
Q12 Ratings of NHM experiences valued q6 Age-in-years

DESCRIPTIVE STATISTICS

CLUSTER ANALYSIS (THREE GROUPS)

Q12 Ratings of NHM experiences valued

DESCRIPTIVE STATISTICS

CATEGORICAL VARIABLES: CROSS TABS

Visiting to do something in particular Q3a Specific reason for visiting Q6 Exhibitions visited Q7 Attendance of Dinosaur Encounters program Q8 Group composition Visiting with and without children q1 Engagement in science activities q2 Personal interest in science q3 Last science class taken q4 Science background	X	Visit Day Time Entrance Q1 First or repeat visit to NHM Q2 Member of NHM q5 Gender Age group: <34, 35-54, 55+ College graduate vs. non-college graduate q8 College degree in science LA resident or non-resident White vs. non-white Cluster
Q1 First or repeat visit to NHM Q1a Number of visits in last 12 months Q2 Member of NHM	X	Visit Day Time Entrance Q1 First or repeat visit to NHM Q2 Member of NHM q5 Gender Age group: <34, 35-54, 55+ College graduate vs. non-college graduate q8 College degree in science LA resident or non-resident White vs. non-white Cluster

STATISTICAL ANALYSES

INTERVAL-RATIO VARIABLES: ANOVAS

Q4 Ratings of NHM visit experiences Q5 Rating of NHM descriptions Q10 Rating of experience preferences when visiting NHM with children Q11 Ratings of adult experiences preferences when visiting museums Q12 Ratings of NHM experiences valued	X	Visit Day Time Entrance Q1 First or repeat visit to NHM Q2 Member of NHM q5 Gender Age group: <34, 35-54, 55+ College graduate vs. non-college graduate q8 College degree in science LA resident or non-resident White vs. non-white Cluster
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