Natural History Museum of Utah

Whole Museum Stay-Time Study
April 2012

Visitor Research Program: Phase I

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TABLE OF CONTENTS

INTRODUCTION

The new Natural History Museum of Utah opened in November 2011, a spectacular integration of a LEED-certified building anchoring the museum's significant collections and research programs, and a series of exhibitions designed to illuminate the natural world through the lens of Utah's human and natural history. The Museum has a total of 51,270 square feet of public interpretive space.

With the purpose of setting "clear eyes to the future," NHMU is putting "critical eyes on the present" by carrying out a set of evaluations to help them assess the degree to which the Museum is meeting visitor needs and having the desired impacts—contributing to science engagement and learning in the community, and increasing the likelihood that visitors will return and develop long-term relationships with the institution.

As an important step in this process, researchers need to understand the experiences visitors have during their whole visit to the Museum.

The present study isolated the factor of time—how long on average do visitors spend on a visit to the Museum? This study provides relevant data for planning follow-up visitor research.

The goals of the stay-time study were to:
1) Find out how long visitors are staying on average at the Museum on a single visit
2) Explore whether stay-time was influenced by…
   a. Day of week
   b. Number in group
   c. Group make-up (Adult Only Groups, Adults with Kids)
   d. 1st visit or repeat visit
   e. Resident or tourist
   f. Membership status
   g. Where in the Museum they began their visit

The study took place in April 2012. Times of entry and exit were recorded for a total sample of 418 visitors. Demographic and preference data were also collected for each sample.

This report reviews the methods used for the study and then discusses the findings, including what can be learned from time spent, and how the demographics and visitation traits of this sample were related to stay-times. Throughout the discussions, "thought questions" are raised for the Museum to consider. Specific suggestions for future research are made in the conclusion.

The voices of visitors are also heard—the report includes remarks recorded during data collection, which help create a snapshot of how these visitors viewed their time and some of their experiences at the Museum. [1]

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[1] Visitor remarks, gleaned from the database, are not always verbatim, but have been paraphrased for clarity. Sample numbers are indicated in brackets after the quotes.

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<div align="center">RESULTS AT A GLANCE</div>

<div align="center">*See detailed report following below*</div>

- ***Sampled visitors stayed an average of 111 minutes (1:51) at the Museum. The median time was 106 minutes (1:46). The shortest stay-time was 35 minutes (:35) and the longest was 274 (4:34).*** *(page 9)*

- ***Four visitor traits were associated significantly with different average stay-times.*** *(page 11)*
  - ***Members were more likely to have shorter visits than nonmembers.***
  - ***University of Utah students were more likely to have shorter visits than nonstudents.***
  - ***Visitors on Saturdays were more likely to stay longer than visitors during the rest of the week and during late hours.***
  - ***Visitors in larger groups (5+ individuals) were more likely to stay longer than visitors in smaller groups.***

- ***Visitor traits that had <u>no</u> significant association with stay-time included presence of children in the group; whether visitors were tourists or residents; whether they were repeat or first-time guests; and on which level they began their visit.*** *(page 12)*

- ***Total attendance on the day of a visit had no impact on stay-time.*** *(page 13)*

- ***The majority of the sampled visitors began their visit on Level 2.*** *(pages 13, 17)*

- ***Repeat visitors were more likely than first-time visitors to be in groups with children, be members; come on a weekend day; and start their visit in the morning (between 10 and 11:59 AM).*** *(page 18)*

- ***Groups with children made up more than half of the sample.*** *(pages 7, 19)*

- ***Many groups self-reported spending most of their time in "dinosaurs."*** *(page 15)*

The full report of the stay-time study follows, including Methods, Findings, Discussions, and Next Steps.

METHODS OF STUDY

Visitors were recruited upon entry to the Museum, given numbered wristbands for later identification, and the time of their entry was recorded. A continuous random sampling method was used for recruiting. In this method, an eligible visitor group[2] was approached as they entered the Museum foyer and before they went to the cashier desk. Whether the group agreed or refused to participate, when that encounter was completed the next eligible visitor group in the same location was approached. All refusals were recorded. (As noted on page 6, footnote #3, the 6% refusal rate was very low.)

Visitors were asked to check in with data collectors when they had completed their visit. When visitors were ready to leave, data collectors recorded their exit time and gave them a colorfully marked pencil as small gift for their help.

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[2] An eligible group was defined as an informal group or individual; visitors with school or tour groups were excluded.

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At each encounter (both "pre-visit" and "post-visit") data collectors gathered demographic and other data. Pre- visit, data collectors asked whether this was a first-time visit, and recorded the number of adults and children in the group. Post- visit, data collectors recorded whether the visitor was a member or a University of Utah student, what their zip code was and at what floor they started their visit. They also recorded any comments visitors offered. (Pre-visit and Post-visit intercepts and forms are in the Appendix on page 22.)

Visitors on the whole were extremely willing to help with the study and, especially upon exiting, were sometimes talkative about their experiences that day.

> *Everyone seemed happy to help with the study. My only refusals were because they were coming for meetings in the Museum.* [data collector]
> *It was my observation that most visitors were open to participating and excited to be at the museum.* [data collector]

During the final two days of data collection, an additional question was asked of about one-quarter of the respondents. This question—"And where do you think you spent the most time today?"—was a particularly rich source of comments. All of these were written down on the forms and included in the final database.

The researcher trained four data collectors who completed all the data collection. Two worked in tandem on any one day, the first one to recruit visitors in the foyer as they entered, the second to check visitors out. Most visitors were asked to go to a marked table in the Canyon area where the second data collector was positioned. On the first and last days of the study, visitors were asked to return to the same data collector in the foyer.

As they interacted with visitors, the data collectors recorded information initially in pencil on the interview forms. Before the end of each shift, data collectors used an iPad to enter the data into an electronic database via Survey Monkey (a Web-based survey tool *w*ww.**surveymonkey**.com/*)*.

Because the two data collectors were generally in two different locations, they collected two sets of data for each visitor group—one for the pre-visit interview and one for the post-visit. At the end of the study, both sets of data were downloaded into an Excel spreadsheet and integrated using the unique wristband numbers.

The researcher reviewed the data where it was being collected on the web and later, to assure accuracy, worked with the data collectors and data analyst to "clean up" and verify the integrated database with the handwritten sheets.

These study data are primarily quantitative, and data were analyzed and reported using Excel and SPSS (a specialized statistics software). Qualitative (or narrative) data consisted of notes written down by data collectors during their interactions with visitors. The researcher analyzed the notes by looking for trends; the results are reported as examples or impressions.

STAY-TIME AND DEMOGRAPHICS: QUANTITATIVE FINDINGS
SAMPLING: HOW MANY AND WHEN?

A total of 526 visitors were approached to participate in the study. Of the 526 visitors approached, 497 visitors (94%) accepted and 29 visitors (6%) refused to participate.[3] Of the 497 visitors eligible for the study, 418 (84%) were included in the final sample and 79 (16%) were not; the most common reason for exclusion from the final sample was when visitors did not return at their end of their visit (14%). Other reasons for being excluded were visitors who were not randomly selected or those who provided incomplete post-visit data. Researchers also excluded one outlier from the sample who stayed five and one-half hours—a full hour longer than the next closest time.

Data were collected over ten separate days between April 11 and April 29, 2012 (See Table 1). A mix of weekdays and weekend days was included, as well as two Wednesdays when the Museum is open late. On days with normal hours, data collectors were present the entire day (from the Museum's opening to closing at 5 pm) in order not to truncate the results. On Wednesdays, data were collected between 2 pm and closing (at 9 pm).[4]

Table 1: Days, dates, and times of data collection

Day of week	Hours collected	Dates
1 Tuesday	10-5	Aril 24
1 Thursday	10-5	April 26
1 Friday	10-5	April 13
2 Saturdays	10-5	April 21, 28
2 Sundays	10-5	April 15, 29
1 Wednesday	2-5:30	April 11
2 Wednesdays	2-9	April 18, 25

The sample included the following distribution:

Weekend visitors	46%
Weekday visitors	34%
Late day visitors	20%

DEMOGRAPHICS: WHO WAS REPRESENTED IN THE SAMPLE?

Demographic and visitation data were collected from each visitor who was timed. The sample taken during this period in April represented the characteristics in Table 2.

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[3] This is a low rate of refusal. Even though we were asking very little of visitors and prefaced it with "All you have to do is…", researchers were pleasantly surprised by the willingness to help. In a similar study, the Monterey Bay Aquarium had a refusal rate of 15%; the refusal rate on a 2005 study of Past Worlds in the old building (Korn 2005) was 18%.

[4] Staff at the cashier's desk described a spike in visitor arrivals at about 2 pm, so we started our Wednesday collection at that time. This 2 pm spike was borne out during piloting and subsequent data collection.

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Table 2: Visitor characteristics of the NHMU stay-time sample (*n*=418)

Visitor demographic	Proportion		Visitor Demographic	Proportion
First-time visitors	63%		Group with children under 18	57%
Repeat visitors	21%		Adult-only group	43%
Visitor in group with both	17%		Groups of 1	6%
Non-members	80%		Groups of 2	34%
NHMU members	19%		Groups of 3	19.9%
Joined today	1%		Groups of 4	19.9%
Not affiliated with U of Utah	81%		Groups of 5+	20%
University of Utah students	17%		Started on Level 2	62%
University of Utah staff	2%		Started on Level 3	3%
Residents[5]	74%		Started on Level 4	1%
Utah tourists	6%		Started on Level 5	34%
Other US State	18%		Started visit in the morning (between 10-11:59 AM)	49%
International	2%		Started visit in the afternoon (between 12 and 3 PM)	51%

Discussion about Sample Demographics

Repeat Visitors

The study sample included proportionally fewer repeat visitors (38%, including mixed groups) than were represented in a 2005 study in the old museum, where 50% were repeat visitors (Korn 2005). A later study (Korn 2007) had more comparable proportions of first-time (65%) and repeat visitors (35%). An increase in first-time visitors is perhaps an expected (and hoped for) result, as a broader range of Utah residents comes to see the new Museum.

Group Makeup

The percentage of adults with children in this sample (57%) was slightly higher than the 50% adults with children noted in a previous study at the old Museum (Korn 2005). The current figure is comparable with other natural history museums and aquariums for which the researchers have data.[6] A 1995 study reported

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[5] As defined by the Museum, Residents are those with zip codes less than 50 miles from the Museum; Utah tourists are those with zip codes within Utah, but greater than 50 miles from the Museum.

[6] Chicago's Shedd Aquarium, 58% adults with children under 13 years old; Monterey Bay Aquarium, 51-58% adults with children under 18; Chicago's Field Museum, 60% adults with children under 18.

that natural history museums tend to appeal more to adults than do science centers, citing an average of 53% adults with children for the two natural history museums reviewed (Korn 1995.) It seems that NHMU has had some notable success in appealing to this demographic.

Group size
Most of the sampled visitors (80%) came in groups of one to four people, while 20% were in groups of five or more. See Figure 1.

Visitors with smaller group sizes (one to two individuals) were more likely than groups with more individuals to visit during Wednesday's late hours (29% vs. 14%).

Figure 1: Group size distribution (*n*=418)
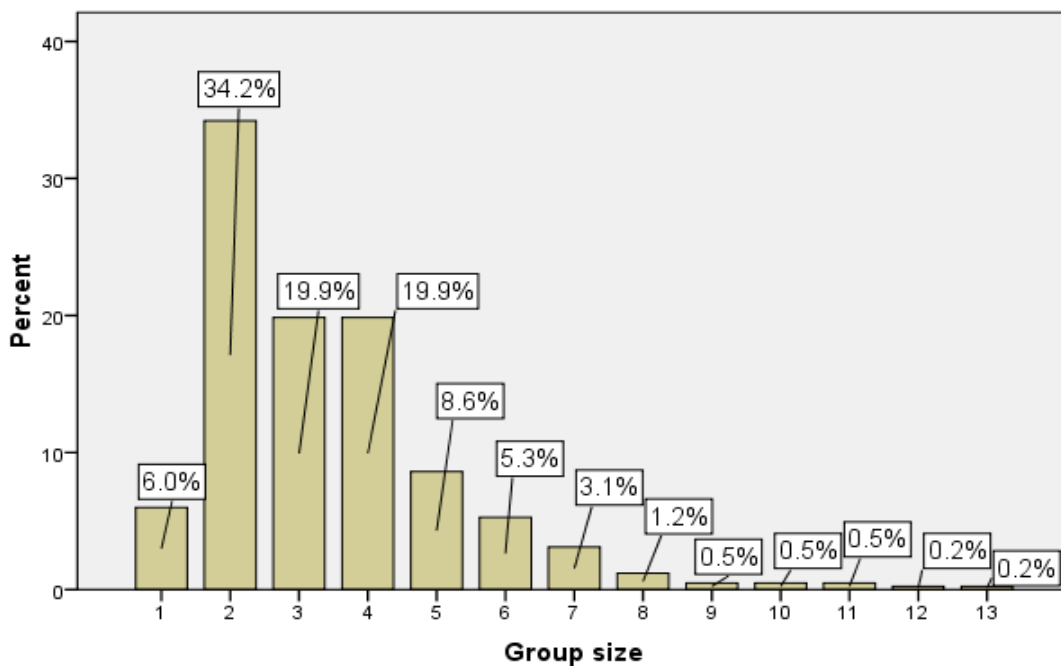
Distribution of group sizes was almost identical to figures from my small sample of aquariums:
- In a whole-aquarium study at Monterey Bay Aquarium, "a third were visiting in two-person groups (34%), while 19% were in groups of five or more" (Quadra Planning Consultants, Ltd. 2009).
- Shedd Aquarium's long-term data show one-third coming in 2-person groups, with 20% in groups of five or more. The distribution is almost identical to that at NHMU:

Groups of 1	3%
Groups of 2	35%
Groups of 3	21%
Groups of 4	21%
Groups of 5+	20%

This researcher observed informally what seemed to be a higher proportion of very large groups at NHMU compared to other museums and aquariums: the largest group in this sample contained 13, including 3 adults and 10 children (sample #6). Figures for other institutions were not available.

STAY-TIME: HOW LONG DID VISITORS STAY?

The *average* (mean) total time spent in the Museum for the whole sample (n=418) was 111 minutes (1:51). The *median* (i.e. with half shorter and half longer) was 106 minutes (1:46). The *shortest* stay-time was 35 minutes (:35) and the *longest* stay-time was 274 minutes (4:34).[7]

With a standard deviation of 42 minutes, 5 seconds, the stay-time distribution was essentially normal (Figure 2).   In other words, most of the sampled groups stayed at the Museum for close to the average time, with fewer staying a longer time and fewer staying a shorter time. There were not just some visitors who stayed a long time and some who stayed a shorter time.

Two-thirds of visitors in the sample (68%) stayed between 69 minutes (1:09) and 153 minutes (2:33).

This distribution pattern was fairly consistent from the time of the first progress report when the sample size was just 19, to the midpoint when the sample size was 215, and to the end of the study when we had a sample of 418.

Figure 2: Distribution of visitor stay-times at NHMU

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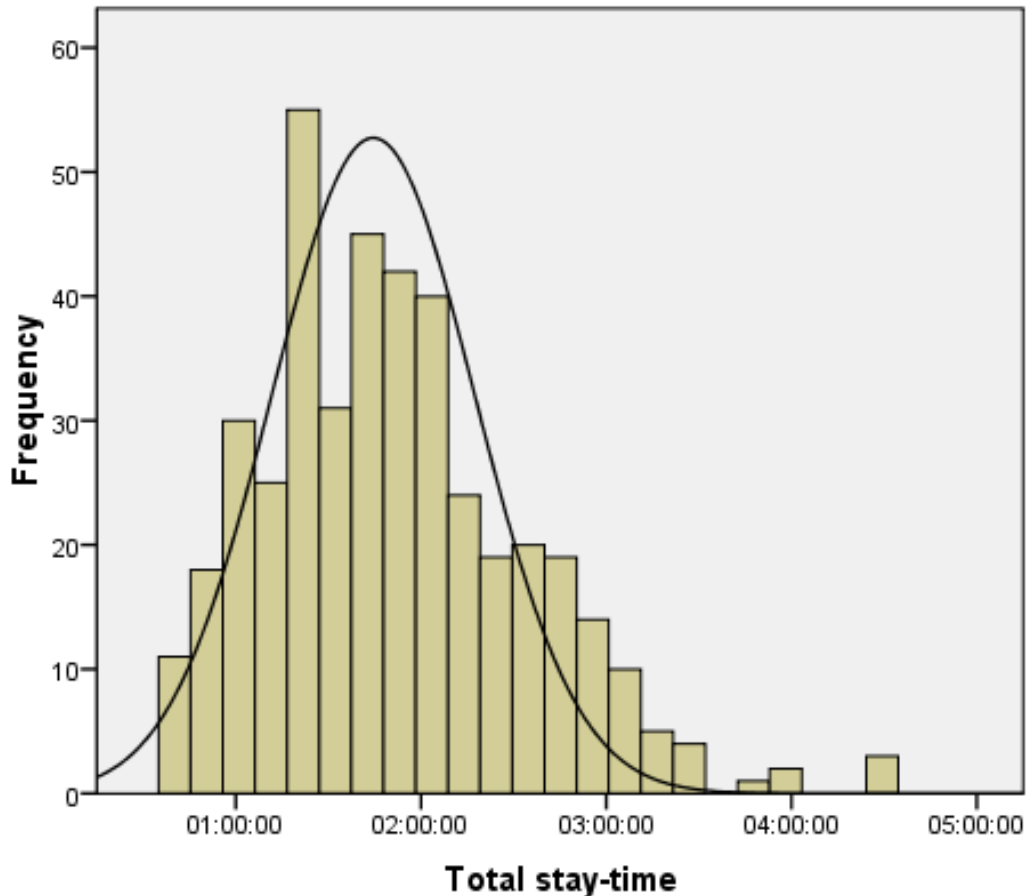
[7] Researchers excluded one outlying stay-time from the analysis at 5 hours, 32 minutes—a full hour longer than the next closest time.

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Discussion about Time Spent

This study isolated "time spent" by visitors in the Natural History Museum of Utah. Time is a single, limited parameter, a reductive measure that nonetheless allows us to compare results and observe trends that will help us make choices about the best ways to focus future research.

Although time does not necessarily equal learning, there is a broad connection between the amount of time people spend in an exhibition, and the amount of learning that can potentially take place. Visitors who spend more time are likely to use more of the elements on offer, and perhaps use some of them more thoroughly (Serrell 1998).

There are limited studies on total stay-time in large museums, perhaps because of challenges with collecting the data (e.g., long periods of research time required; multiple entrances and exits). McLean cites research showing that "a typical family visit lasts from one-and-a-half to two-and-a half hours" (1993, p 19.) A whole-visit study at Monterey Bay Aquarium found the average stay-time to be 145 minutes (2:25) (Quadra Planning Consultants, Ltd. 2009). This sample at NHMU had an average stay-time of 111 minutes (1:51).

But because time spent is only broadly related to learning, the critical question now becomes—how are visitors using their time while they are there? What messages, memories, and emotions are they taking away from the experience? What determines whether they leave happy and ready to return—or exhausted and frustrated? And how do these match the outcomes hoped for by the Museum?

Additional understandings about how Museum visitors spend their time (no matter what the content) come from past visitor research (and a bit of common sense).

- Visitors are likely to pay the most attention to exhibits during the first part of their stay, particularly in a large museum. Attraction, attention and reading all tend to decline as the visit proceeds (Melton 1972, Serrell 1977, Bitgood 2009).
- During the time visitors spend, they must also get oriented, find and use the bathrooms, eat, shop, rest and visit with each other. This can take up to half or more of the total visit time (Falk 1992).
- Visitors generally spend no more than 15 to 20 minutes on average in a single exhibition (Serrell 1998).
- Typically, the duration of any museum visit is limited by pragmatic considerations: overall schedules, children's needs, parking meters, personal motivations and museum fatigue all contribute to how long visitors will stay on any one day (Serrell 1998, McLean 1993, Bitgood 2009.)

The NHMU visitors we sampled also had things to say about their time at the Museum. [8]
Some were able to predict the length of their stay:

> *This will be a short visit because we have a plane to catch.* [205]

Some wished they'd had more time:

> *Loved it. Did not want to leave. We'd stay longer if we could.* [362]
> *This place is great! Just needs to be open more hours!* [220—stayed nearly 3 hours]

Some may have been frustrated by not having enough time:

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8 Visitor remarks, gleaned from the database, are not always verbatim but have been paraphrased for clarity. Numbers in brackets after the quotes are sample numbers.

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> *We made it all the way through the whole museum, but were rushed through the last part, since the museum was closing.* [262]

Or fatigued:

> *We probably* [spent most time in] *dinosaurs because we weren't as tired.* [336]
> *Very good. A lot of walking. You probably should warn people at the ticket desk.* [190]

Some questions the Museum might want to consider:

- For the median under two-hour visit time, how would visitors BEST use that time in your opinion?
- Are there any particular experiences you might wish for visitors who stay for 35 minutes versus those who stay for 4hours?
- Is "seeing it all" on one visit a primary objective of the Museum?
- Are there cases in which a SHORTER visit might be better for some visitors?

STAY-TIME AND VISITOR CHARACTERISTICS

We correlated stay-times with the demographics and visitation data and also with total attendance at the Museum on each day samples were taken. Researchers' expectations to the contrary, just four traits (membership status, student status, group size and day of week) had any statistically significant impact on the average stay-time (See Table 3). Five traits (repeat visitorship, presence of children, residence, daily attendance, and the level first visited) had NO significant impact on the average stay-time (See Table 4).

Characteristics that had a significant relationship with stay-time

These are listed in Table 3 and discussed below.

Table 3: Visitor characteristics with significant associations with average stay-time

Visitor Characteristic	Significant Impact/Outcome on Total Stay-Time
NHMU membership	Non-members were more likely to stay longer (1:53) than members (including those who joined on the same day as data collection) (1:43).
University of Utah students[9]	Visitors who were not University of Utah students were more likely to stay longer (1:55) than University of Utah students (1:34).
Group size	Visitors in larger groups (more than four individuals) were more likely to have a longer stay-time (2:00) than visitors in smaller groups (one to four individuals) (1:49).
Day of week	Visitors on Saturdays were more likely to have a longer stay-time (2:01) than visitors during the rest of the week (1:50) and visitors during late hours (1:40).

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[9] University of Utah staff (*n*=10) were not included in this analysis.

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- *Members were more likely to have shorter visits than nonmembers.*
- *University of Utah students were more likely to have shorter visits than nonstudents.*
  These categories of individuals do not pay a daily entrance fee. (Students always get free admission, while Members pay a yearly fee.) As a result, they can potentially visit more often and stay less time per visit.[10]

- *Visitors on Saturdays were more likely to stay longer than visitors during the rest of the week and during late hours.*
  In contrast to many large museums that experience relatively high attendance on both weekend days, Sunday attendance at NHMU is much lower than Saturday's. Results from this study show that Saturday visitors had longer average stay-times, while Sunday stay-times were more equivalent to weekday figures. Since attendance probably has seasonal shifts, this may not be true for all times of year.

- *Visitors in larger groups (5+ individuals) were more likely to stay longer than visitors in smaller groups.*
  Of this sample, 20% arrived in groups of five or more, and they apparently stayed somewhat longer. Logistically, it's often harder for larger groups to manage their time—getting everyone fed, to the bathroom, and staying together from place to place, simply takes longer.

Characteristics that had no significant relationship with stay-time

These are listed in Table 4 and discussed below. Some visitor segments of interest (Level First Visited, Repeat Visitors, and Groups with Children) are discussed more fully starting on page 17.

Table 4: Visitor characteristics with NO significant associations with average stay-time

Visitor Characteristic	Impact/Outcome on Total Stay-Time Not Significant
NHMU visitation status	There were no differences in the stay-times between first-time visitors (1:52), repeat visitors (1:43) and visitors in groups with both (1:58).
Group type	The stay-time of visitors with children (1:51) were the same as visitors without children (i.e., adults only) (1:51)
Residence	There were no differences in the stay-times depending on where visitors live: Residents (1:49); Utah tourists (1:56); Other US State (1:58); International (1:44)
Level first visited	The floor or level on which visitors started made no difference on how much time they spent: Fifth (1:56); Fourth (2:00); Third (1:58); Second (1:48).
Attendance level	There was no relationship between total daily attendance and visitors' stay-time (Figure 2).

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[10] Studies of individual exhibitions indicate that when visitors pay an entrance fee (for example in a special exhibit) they often stay longer than those who didn't pay an entrance fee.

- *Stay-time was not related to whether visitors had been at the Museum before*
  This sample included 21% repeat visitors, 63% first time visitors and 17% mixed groups. The average stay-time for repeat visitors was not significantly different than for first time visitors, or visitors in groups with both. (See discussion on page 18.)

- *Stay-time was not related to whether a group included children*
  57% of sampled groups included children. On average they stayed about the same time as adult only groups. As noted on page 7 above, this percentage is similar to those recorded elsewhere. (See discussion page 19.)

- *Stay-time was not related to where visitors began their visit*
  As sampled visitors checked out at the end of their stay, data collectors asked *"And where did you begin your visit today? Did you take the elevator to the top and walk down, or did you start someplace else?"* Data collectors coded the answers Top, Bottom or Other, and noted how the visitor identified "other."

  The majority of visitors in this sample (62%) began their visit at the "bottom" (Level 2).
  Thirty-four percent began on the "top" (Level 5).
  A small but noticeable number (11) stated that they began their visit in "gems" or "gems and minerals"
  There was no relationship between length of stay and where visitors began their visit. This issue is discussed further on page 17.

- *Stay-time was not related to daily attendance*
  Stay-time was strikingly unrelated to attendance at the Museum (see Figure 3; Table 5 shows dates and days for each attendance level). Visitors who came to the Museum on busy days (when nearly 1,600 visitors were admitted) stayed about the same range of times as visitors who toured the exhibition on days when fewer than 700 visitors were admitted.

  While some visitors may find their personal experiences affected in some way on crowded days, the visitors sampled here did not curtail their visit because of it. Whether this result would change as attendance figures at NHMU reach maximum levels of 4,000 or more is unknown. However, in a study at the Monterey Bay Aquarium, stay-time was also not correlated with attendance, even though crowding is one of the most common complaints received from Aquarium visitors. [Ava Ferguson, Personal Communication.]

Table 5: Date and days for each attendance level (data referenced in Figure 3)

Attendance	Day (date)
634	Sunday (April 1)
738	Wednesday (April 18)
812	Sunday (April 15)
883	Saturday (April 21)
966	Tuesday (April 24)
967	Saturday (April 28)
991	Thursday (April 26)
1031	Wednesday (April 11)
231	Wednesday (April 25)
1569	Friday (April 13)

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Figure 3: NHMU daily attendance and total stay-time

In this box plot, the dark lines across each box indicate the median stay-time for each attendance level. By looking at just the dark lines, it's clear that as attendance goes up, average stay-time continues to vary randomly.

Other features of the chart: The boxes encompass 50% of the visitor data points for each attendance-day, extending from the 75th percentile at the top, and the 25th percentile at the bottom. The lines (or tails) complete the 1st to the 98th percentile of the samples and the circles and asterisk indicate the outliers for each day. The asterisk is the longest stay-time included in the sample.

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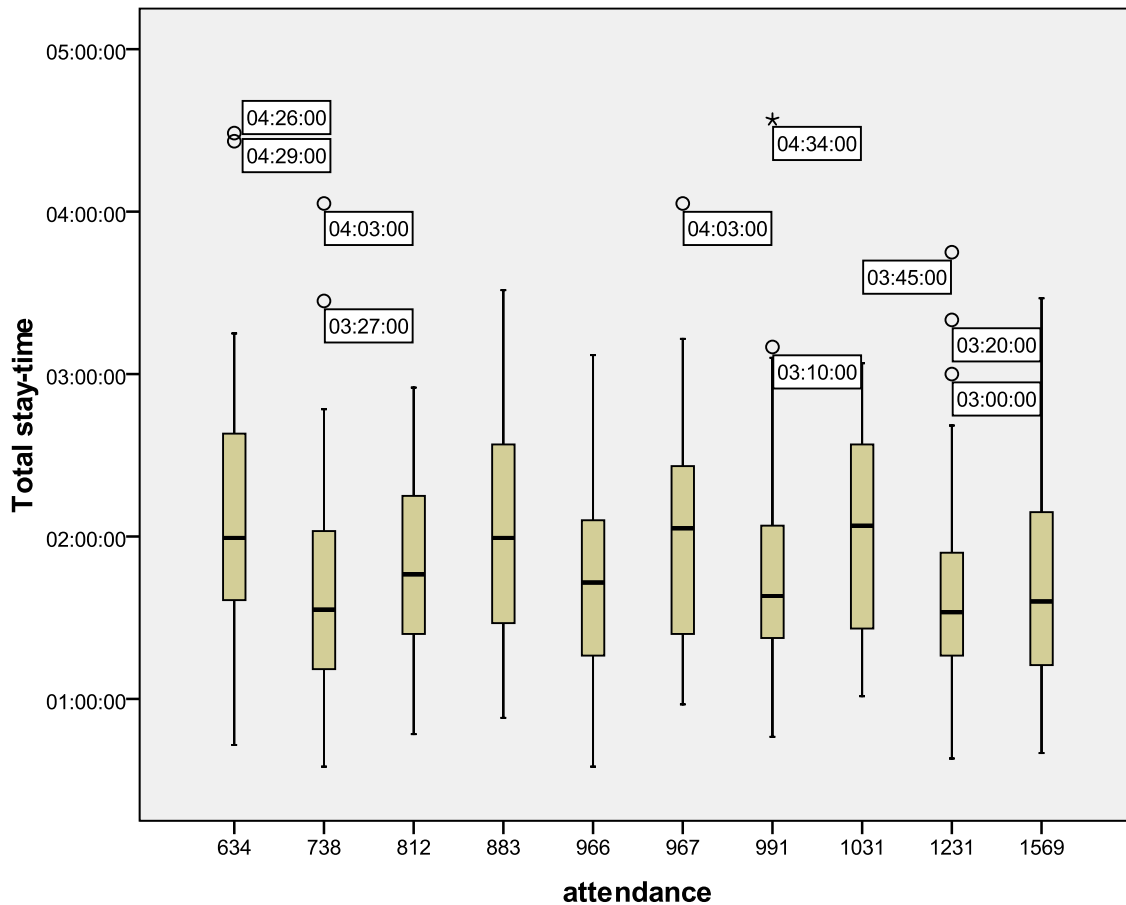
WHERE VISITORS SPENT TIME: QUALITATIVE FINDINGS

Toward the end of the study, researchers decided to add one additional question. About one-fourth of the sample (n=98) was asked—*"And where in the museum do you think you spent the most time today?"* While "most time" was a speculative category for respondents (and one that group members sometimes disagreed upon), the question encouraged comments and opened the doors on a number of perceptions that can help in focusing future research. See Table 6.

Table 6:   Frequency of responses: visitor self-reports about where they spent the most time[11]

Specific reference (other phrases)	Number of mentions
"Dinosaurs" ("fossils", "Past Worlds")	52
"Native Voices"	17
"Life" ("biology")	13
"Land" ("rock formations") or an activity within Land (e.g. erosion table or earthquake)	13
Bugs Learning Lab, Naturalist Learning Lab ("puppets")	5
"Gems"	6
I evenly divided my time	10

Within this sample, nearly one-half of the responses (44%) mentioned dinosaurs as the single place or one of the places where visitors felt they had spent the most time. Although researchers predicted that groups with children or groups who began their visit on Level 2 might have spent more time in dinosaurs, there were no differences in stay-time or demographic characteristics between all visitor groups and this group.[12]

Past Worlds has the largest footprint in the interpretive galleries, which may account for some of the perception of time spent. However, it seems clear from past studies (RKA 2005) that the Museum's audiences in part identify the Museum with dinosaurs and are avid devotees. In addition, the current exhibition is dramatic and mesmerizing, with lots to see and do, including for children.   Even before the final question was added, visitor often volunteered positive comments about the dinosaurs.

Awesome! Dinosaurs were the best. [229]

We spent the most time in the Past Worlds for sure! We've been to many museums including in D.C. and Colorado and our museum rivals those. [441]

Very nicely done, we were very impressed. The dinosaur displays rival the Smithsonian. [353]

Native Voices received the second highest number of mentions. This might suggest a strong interest in the subject among the community. In this colorful, circular space, visitors are invited to linger and be engaged with the impressive artifacts, video and photography.

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[11] Because few groups could truly say where they'd spent the "most" time, researchers tabulated the results based on any reference to an exhibition, even though it might be one of several named.

[12] First-time vs. repeat visitors, members vs. non-members, groups with children vs. adult-only groups, students vs. non-students and starting floor were compared.

> *Time spent most in Native Voices…would like to see an exhibit on Native American musical instruments* [385].

But this high number of references might also reflect an often-observed behavior—visitors spending more time and looking more closely at the first activities they encounter, before energy and attention taper off.[13] As previously noted, 34% of this sample began their visit on Level 5 where the Native Voices exhibition is located.

Life, the second largest exhibition, and Land, the third largest, received the third highest number of mentions. There were numerous references to hands-on activities in the Land gallery (specifically the erosion table and the earthquake activity); and the Bug Brigade and other Learning Labs in the Life exhibition as occupying much of their time.

> *Spent most time in land with gallery interpreter using moon sand to make different land formations.* [492]
> *A lot of time at the Bug Brigade in the Naturalist Lab. [443]*

Eleven respondents stated that they had divided their time evenly across the exhibitions. Seven of the eleven were either repeat visitors, or in a group with both first time and repeat visitors. The other three were first-time visitors.

Among NHMU visitors, special interest groups might include dinosaurs, Native Americans, gems, or families with children.
- How much does the Museum actually know about their dinosaur and other special interest fans? What are these visitors' interests, motivations, and commitments?
- Is the interest in dinosaurs driven by children or is there equal interest from adults?
- How might the Museum capitalize on these special interests to encourage maximum impact? Repeat visitation?

> *We really liked First Peoples because it gave so much more info than most exhibits that we have seen other places. It gave an appreciation of the skill and craftsmanship of how artifacts were made and patterns used. Really done well.* [498]

> *It's difficult to say where we spent the most time because it was all so overwhelming in a good way. The museum has very motivational displays. [429]*

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[13] After visiting NHMU, an outside professional observer noted that her group spent a large amount of time in Native Voices, in part because it was the first exhibition they saw. Noticing the passing time, she chose to leave her group, walk ahead to scan the rest of the Museum and decide where else she wanted to spend time. (Deborah Perry, Personal Communication)

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DISCUSSION OF SOME VISITOR SEGMENTS

NHMU staff have described some institutional investment in a "top down" Museum visit and expressed interest in cultivating repeat visitors. In addition, over half of the groups sampled in this study consisted of adults with children. This section briefly discusses these three topics.

DIRECTION OF VISIT

The Museum has made some investment in the "top down" experience (Level 5 to Level 2). Exhibit planners intended the Museum's storyline to flow from Level 5 down to Level 2. Cashiers and floor attendants are instructed to recommend—especially to first-time visitors—that they start their visit on Level 5. Architecturally, the building provides a winding path dipping down easily from Level 5 to Level 2 and finishing with Utah Futures and the Canyon.

Yet the results of this study indicated that just one-third of all visitor groups began their visit at Level 5. (See Table 7.) Among first-time visitors, just one-third (33%) began at the top—about the same proportion as among repeat visitors (36%).

Table 7: Direction of visit for All visitors, First-time visitors and Repeat visitors

	Began at Level 5	Began at Level 2	Began elsewhere
All visitors	34%	62%	4%
First-time visitors	33%	64%	3%
Repeat visitors	36%	58%	6%

In fact, visitors very often made their own choices about how to tour the Museum, managing the direction of their visit in a variety of ways:
Some followed directions to begin at the top.[14]
> *The staff recommended that we start at the top.* [309]

Many others consciously planned their visit very differently and for a variety of reasons.
> *We usually start at the top, but we started at the bottom this time. We only came for the dinosaurs.* [254]
> *We started at the top. We've started at the bottom before.* [3]
> *We went all over. First we saw the rocks* [gems and minerals-3rd fl]*, then we took the elevator to Life, then walked down to earthquakes.* [13]
> *We started at the children's area, then went to the top and worked our way down.* [158]
> *Went to the middle to meet up with friends and then went up.* [167]

Some may have regretted their choice:
> *We should have started at the top and walked down.* [200]
> *If I come back, I'll start at the bottom and work my way up.* [355]

One visitor noticed differences depending on the direction of travel.
> *We went from bottom to top and then back to bottom; I noticed that when going from top to bottom we had seen some exhibits backward.* [479]

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[14] These directions might not have been offered consistently and rigorously to all visitors.

And some were confused.

> *There were different ways to start? I wish I would have known where to go. It was kind of confusing.*
> [74]
>
> *The brochure could have been clearer.* [335]

The Museum might consider some of the following questions.

- How important is the top down approach to the Museum and the outcomes it hopes for?
- Can the Museum better support and direct the choices visitors are making?

REPEAT VISTORS

This sample included 21% repeat visitors and 17% in groups with both repeat and first-time visitors. The average stay-time for repeat visitors was not significantly different than for first time visitors, or visitors in groups with both.

However, by testing correlations in the data it was revealed that repeat visitors had some particular characteristics in common. Repeat visitors[15] were more likely than first-time visitors to:

  - be in groups with children (77% vs. 49%),
  - be members (51% vs. 6%),
  - come on a weekend day (70% vs. 52%),
  - start their visit in the morning (between 10 and 11:59 AM) (59% vs. 44%)

Visitor comments showed that the museum has some dedicated repeaters and at least a few who had been visitors at the old museum and came for a look at the new.

> *I come most Saturdays from 10 to 3 with my five kids.* [195]
>
> *This was my first visit to the new building. Visited old building but not since I was six!* [15]

Some seemed to look forward to returning, and a few suggested ways for the Museum to make it easier for them to come back.

> *Very impressive. Great addition to the community. We'll be back again.* [321]
>
> *It would be cool if you could have a "late night adults only" night one night a month. Open until midnight.* [327]
>
> *… maybe you should offer a discount for a return visit, like $16 for 2 days so you could see more of the museum.* [497]

Others felt they would have to come back to see the whole museum.

> *We spent equal amounts of time all over until we realized we were running out of time. We will be back* [463]

At this early stage in the new Museum's life, having a high rate of repeat groups that include children suggests that a rewarding, dynamic experience is on offer for these groups. The fact that repeat visitors were more likely to be members is not surprising; members do not pay admission every time they visit. Since members stayed on average a shorter time than nonmembers, this could reinforce the notion that shorter more frequent visits can be a satisfying option.

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[15] Groups with mixed first-time and repeat visitors were excluded from this specific analysis.

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Past studies (Falk 1985, 1991) have suggested that first-time visitors tend to spend a larger portion of their visit orienting themselves, and then hope to "see it all" before getting fatigued. In contrast, repeat visitors generally have no need for orientation and often go directly to an area that interests them and spend focused time there. Subsequent studies can determine whether these patterns hold true at NHMU, and whether they create different visitor outcomes and experiences. Is having to "see it all" an appropriate goal? What might shorter, more frequent visits look like?

VISITORS WITH CHILDREN

Fifty-seven percent of the sampled groups included children. As reviewed on page 7 above, this was a slight increase over the 50% adults with children recorded at the old Museum. In addition (see previous section) repeat visitors include a high rate of groups with children. Both these factors imply that the new Museum is successfully appealing to this demographic.

In their comments, many visitors focused on exhibits and activities that are presumably targeted at children. At least one was impressed with the "educational" value of the museum (an often-heard visitor code-word for "good for the kids"):

> *Wonderful! I was impressed with the educational opportunities.* [189]

Researchers also frequently hear visitors categorize hands-on experiences at museums as being "for kids", whether or not they (the adults) also enjoyed them. Several visitors noticed the interactivity at the Museum…

> *It was cool how interactive the exhibits are!* [294]

> *We spent the most time wherever there were interactives.* [398]

…and some related it specifically to children's interests.

> *We really liked how it was really interactive and kid friendly.* [230]

One gleeful 9-year-old girl cited *"Experiments!"* as the thing she liked most in the Museum. [16] Her adult companion was impressed that there were also things for adults:

> *I was amazed at all the demonstrations—and things for adults too.* [16]

When asked to estimate where they spent the most time, at least five visitors groups mentioned Our Backyard. Others also named the Learning Labs, especially in Life.

> *We spent the most time in Land with the interactive stuff, and with the Bug Brigade in the Naturalist Lab.* [446]

With interactivity also came a few complaints and requests:

> *It's very difficult for kids under 5 to use the interactive exhibits.* [336]

> *Some hands-on exhibits didn't work—earthquake, telescope, smells.* [338]

> *We noticed there was only one brush in Dino dig. We also thought it would be nice to have smocks in Our Backyard for kids to have around the water feature.* [467]

The Museum can continue to cultivate adult-child groups as repeat visitors. In addition, since previous studies have shown adult-child interactions to be a key factor in family learning (Borun, et al 1996), adult-child groups can perhaps play a role in generating future visitors with positive memories of learning and playing at NHMU. In considering their success so far with this demographic, the Museum might examine how the museum's different exhibitions appeal to different age ranges of children; and whether the exhibits support parent-child interactions successfully. Is there a difference between what you would like adults to get out of a visit versus adults with children?

SUMMARY AND NEXT STEPS

Knowing the average times visitors spent at NHMU is a crucial first step for truly understanding how the Museum's visitors are using the exhibitions, what they are learning, and what they find inspiring.

These are some of the main observations from this study

- Observed stay-times were fairly stable throughout the duration of the study. From the first progress report to the completed sample, the average stay was just under 2 hours with a range from less than 40 minutes to over 4 hours. A roughly 2-hour stay-time seems to be fairly typical, and a realistic expectation for the Museum.

- This sample shows the Museum successfully appealing to visitors with children. The percentage of adults visiting with children was slightly higher than what was recorded in a single study in the old museum—increasing from 50% up to 57%. In addition, repeat visitors were more likely to be adult-child groups than adult only groups.

- Visitors have many choices about where to begin and how to proceed during their visit. First-time visitors could use more support in understanding their options for where to begin and what the Museum's intentions are.

- Visitor behavior among all demographic segments suggests special interests in dinosaurs, Native Americans, and gems, as well learning labs and other interactive activities.

The following options are suggested for the next stages of visitor research

We recommend a tracking and timing study to find out exactly what visitors are doing with their time in the Museum. Having the range of stay-times from this study will help researchers design and forecast needs for tracking and timing. Some of the questions might include:

> What are visitors doing with their time; where are they spending it and how many of the exhibits are they seeing?
> Which exhibits are the most attractive and most thoroughly used?
> Is visitors' exhibit usage significantly different depending on where they start their visit?
> How much time are newcomers devoting to wayfinding? Can wayfinding be made easier for them?
> What proportion of time are all visitors devoting to eating, resting, shopping and visiting? Does it differ for first-time versus repeat visitors? (E.g. are repeat visitors perhaps seeing fewer exhibits and using more time to relax, enjoy the views, or draw on the museum as a gathering space?)

We recommend short questionnaires or interviews administered to visitors or certain segments of visitors, to determine the outcomes of a museum visit in terms of learning and inspiration. Knowing where visitors begin their visits, and what their special interests are, will help target those groups. Some of the questions to explore might include:

> What are visitors' perceptions of the main content and messages of the Museum and its exhibits?
> Do these differ depending on—
>> At which level visitors begin their visit?
>> Whether they are first-timers or repeat visitors?
>> Whether they come with children or are adult-only groups?
>> Whether they have any special prior knowledge or interest in natural history?
> Do visitors get enough support from the Museum for—

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Orienting and finding their way around?

Visiting with children?

Which activities contribute to visitors having fatiguing or frustrating experiences?

What about "marvelous," even inspirational experiences?

Throughout the study, visitors used many words for expressing their positive experiences at the Museum: They said the Museum was marvelous, awesome, great, fascinating, wonderful, motivational, beautiful, nicely done, cool/very cool, very interesting, a lot of fun, well worth the money. They said they were impressed, loved it, and didn't want to leave.

We look forward to the next chapter.

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APPENDIX
Intercepts and Forms

[Forms modified to vertical format for report.]

☼ ☼ ☼

PRE-VISIT Intercept   **NHMU: Stay-Time Study (April 2012)**

Hello. The Museum is asking visitors to help us out today by letting us know
how long they stay here on their visit. All it takes is just to wear this wristband *[show it]*
and then check out with us when you leave—and get a small gift for your help.
Would you be willing to participate?

If NO—
That's no problem—enjoy your visit!
Mark "Ref" in the ID# column, and record any observable demographic data

_____

IF YES—
Oh, good!
So I have three brief questions:

First, is this your first visit to the Museum?

Second, how many people do you have in your group today? How many kids?

And third, who wants to wear the wristband?
[Help with wristband]

Now when you're ready to leave today, look for a table upstairs in the main lobby that has THIS sign
on it
[Show sign on back of clipboard.]

Go there and show the person your wristband with the ID number. They'll ask you a couple more
questions and give you your prize.

Enjoy your visit and thank you very much! We really appreciate your help.

PRE

Natural History Museum of Utah: Stay-Time Study (4.9.12)

1 DC Initials	2 Date	3 ID # OR refuse	4 # of Adults	5 # of Kids	6 1st Visit (Y or N)	7 Start Time (incl. AM or PM)	8 Additional Notes Any questions they ask

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POST-VISIT Intercept   NHMU: Stay-Time Study (April 2012)

[When visitors approach the table, you want to find out if they are <u>ready to leave the museum</u>. If they want to go eat or shop, have them go and then come back—we want to know the entire time of their visit. BUT AS A PRECAUTION AGAINST THEM ESCAPING, JOT DOWN THE FIRST TIME THEY APPROACHED YOU!]

Are you ready to leave the Museum now*?*

Okay, let's see your number.   *[don't offer to cut it off until you've got the rest of the data]*
Record the number.
Record time very obviously.

Okay, just four quick questions.
Are you a member of the Museum?   A student?

And what is your zipcode?
[If needed, reassure them that it is being used only to get a look at who is visiting—where they are coming from.]

Finally can you tell me, where did you begin your visit today? <u>Did you take the elevator to the top and walk down, or did you start someplace else?</u>
[Listen to whatever they say and write it in the Notes. Just be sure to end up with a clear answer of Top, Bottom or Other.]

That's it!
Go ahead and choose a pencil that you like.
[Show a handful at a time. If families with multiple kids want more, try to keep it to a minimum, so we don't have to buy too many more. We started with 482!]

Thank you for your help today! Do you need help getting off the wristband?

POST

Natural History Museum of Utah: Stay-Time Study (4.12.12)

1 DC	2 Date	3 ID #	4 End Time (incl. AM or PM)	5 Member (Y, N or Today)	6 U.U. Student (Y or N)	7 ZIP Code	8 Starting Floor (Top, Bottom, Other)	9 Other Floor, or Comments (yours/ theirs)

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