



How Do You Improve the Experience of Museum Visitors?

An Experiment at the National Museum of Natural History



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Executive Summary

In collaboration with the National Museum of Natural History (NMNH), the Office of Policy and Analysis (OP&A) conducted an experiment to identify the impact of the museum's Visitor Concierge Volunteer Program on visitors, as measured by overall experience ratings and the experiences reported as especially satisfying. A secondary aim was to test the effect on these measures of a new Concierge training method that is based on a theory of visitors (known as IPOP) currently being developed by OP&A. The experiment was conducted with a control group of randomly chosen exiting visitors and three treatment groups: those who stopped at the information desk, those who talked with a Concierge who had not received the IPOP training, and those who talked with a Concierge who had received the training. Training was conducted over three sessions and the survey was administered on December 9, 2012.

Altogether 311 exiting visitors completed surveys. With respect to visitors' ratings of their overall experience, the null hypothesis of no difference among the groups was rejected and there was a statistically significant difference between the group with the highest ratings, (those who interacted with the IPOP-trained Concierges), and the group with the lowest ratings (those who stopped at the information desk). The fact that the information desk group had the lowest experience ratings suggests a different way of thinking about the role of the information desk (See Observations and Conclusions). An alternative statistic, effect size, indicated that although the impact of Concierge interaction varies according to the training and the comparison group, it had a positive impact on overall experience rating.

With respect to satisfying experiences, the experience of Appreciating the natural world and our place in it was considerably higher for the IPOP-trained group, but the significance level of the difference ($p=.06$) did not allow for the rejection of the hypothesis of no difference.

The study found that many visitors engaged with staff during the course of their visit. Across the six different sources of staff interaction included in the study (information desks, concierges, Butterfly Pavilion and Insect Zoo staff, maintenance, sales staff, and security) three out of five visitors (58%) had at least one contact. Two in five (40%) got directions, one in four (25%) learned details about exhibit items, and one in ten (11%) talked about something else.

A deeper analysis of the data revealed that those who reported Appreciating the natural world and our place in it as especially satisfying were more likely to rate their overall experience highly, whether they talked to a staff person or not.

Background

In collaboration with the National Museum of Natural History (NMNH), the Office of Policy and Analysis (OP&A) designed and conducted an experiment to evaluate the impact of both the museum's Visitor Concierge Volunteer Program as well as a new training method for Concierge volunteers which is based on a theory of visitors (known as IPOP) currently being developed by OP&A.¹

The Visitor Concierge Volunteer Program

NMNH's Concierge Program is staffed by trained volunteers who assist visitors to NMNH. The program is modeled on the visit planner service provided by staff at the Natural History Museum London (NHM).² According to the description on the NMNH website:

The Visitor Concierge program is a new, keystone program of the Office of Visitor Experience that recruits and trains world-class volunteers to engage with and inspire the myriad visitors who visit the museum each day. The Museum programs over 385k square feet of public space with exhibitions, films, interactive experiences and amenities, and only a well-informed visitor-centric staff can transform a visit to a meaningful experience. As a Concierge you will join a select team of volunteers who work closely with museum staff, undergo specialized training and receive additional service benefit all with the aim of elevating the visitor experience at Natural History.

Visitor Concierges are available to Museum visitors to orient and enhance experiences throughout the Museum.

Visitor Concierge serve in central locations throughout the Museum to welcome visitors, and discern from visitors which of the over 25 exhibition halls their interests lie and how best to connect each of these awesome experiences to one another. The Concierge team will become the primary response team that helps build visit itineraries for visitors to Natural History.³

¹ This study was commissioned by Samir Bitar, Chief of Visitor Experience at NMNH. It was designed by Andrew Pekarik, Senior Research Analyst at OP&A, and James B. Schreiber, Professor at Duquesne University and Associated Research Fellow at OP&A. Training was conducted by Andrew Pekarik with the assistance of Barbara Mogel. Participating Concierge volunteers were Maria Colella, Holly Frick, Mike Jones, Greg Lunch, Cathleen Miller, Cristina Russo, Odilo Self, and Regina Todd. Overall project support was provided by Donna Tuggle, Volunteer and Visitor Services Manager at NMNH. Survey data collection and editing was accomplished by Zahava Doering, Senior Social Science Analyst at OP&A, together with Barbara Mogel, and OP&A interns Yifei Chen, Sierra Coe, Hye-min Kim, and Hannah Pheasant. Andrew Pekarik analyzed the data with the assistance of James B. Schreiber and wrote this report.

² NHM is currently replicating the experiment described in this report.

³ <http://www.mnh.si.edu/education/volunteering/volopps.html>

IPOP

For the past several years OP&A has been developing a new theory of visitors. The heart of the theory is a typology of experience preference, known as IPOP. IPOP refers to four preference orientations – to IDEAS (an attraction to concepts, abstractions, linear thought, rational reasoning, and facts), PEOPLE (an attraction to emotion, stories, and social interactions), OBJECTS (an attraction to things, aesthetics, craftsmanship, ownership, and visual language), and PHYSICAL (an attraction to physical sensations, including movement, touch, sound, lights and smells). The theory contends that many people have a natural inclination more towards one of these four more than to the other three. In activities that engage this preference they reveal a natural advantage. The ability to operate with effectiveness and skill in the other dimensions is improved by practice and training. In a sense, then, education can be described as the movement towards achieving high levels of ability in all four areas. In the museum, the theory has two major claims: 1) choice of museum/exhibition, focus of attention, behavior, and response are all influenced by an individual's type preference; 2) while museum visitors tend to be drawn to experiences that align with their preferences, they will be especially pleased and excited by their visit when they are engaged in a strong experience outside their preference. The degree of preference is measured by a score that is created from responses to set of questions asking about interests outside of the museum. The present version of the full set has 37 questions, but a visitor survey cannot ask that many. A subset of ten items was carefully chosen to provide individual scores for the four dimensions in this study.

Measuring Impact

This study used two performance measures to ascertain visitor impact: Overall Experience Rating, and Satisfying Experiences. These two methods have been widely used in OP&A studies at the Smithsonian for about a decade. Overall Experience Rating is a simple survey item: "Please rate your overall experience in this museum today." The item uses a five-point scale: Poor, Fair, Good, Excellent, Superior. The use of this measure in over a hundred studies at the Smithsonian, including all of the museums, has established a very stable overall average for the Institution, as well as an average for NMNH. Satisfying Experiences refers to the following survey question: "Which of these experiences were especially satisfying to you in the National Museum of Natural History Today? [Mark one or more]" This list of experiences usually contains seven to ten items that are selected for the study based on previous studies at the particular museum or on related research.⁴ In this case the list included 8 items:

⁴ For a comprehensive review of how this question has been used and what it reveals see Pekarik, A.J., and J. Schreiber, 2012. The Power of Expectation. *Curator: The Museum Journal* 55(4): 487-496.

- Appreciating the natural world and our place in it
- Being moved by beauty
- Connecting with the emotional experience of others
- Feeling awe and wonder
- Gaining information
- Getting a sense of the everyday lives of others
- Seeing rare, valuable, or uncommon things
- None of these

Five of these were asked previously at this museum (Appreciating, Beauty, Awe, Information, and Rare),⁵ and two were added as a result of IPOP research to reflect People-oriented experiences (Connecting, and Everyday).

The Experiment

The design identified three treatment groups and one control group to be surveyed together on Sunday, December 9, 2012. The control group consisted of a random selection of visitors exiting NMNH at both exits. One treatment group was the set of visitors who interacted with the 4 Concierge volunteers who had participated in three sessions of IPOP training. Another was the set of visitors who interacted with the four Concierge volunteers who closely matched the IPOP-trained volunteers in their Idea and People scores, but who did not participate in or know anything about the IPOP training, beyond the initial IPOP presentation that was open to all Concierges and that determined eligibility. The third treatment group was the set of visitors who stopped at the information desk to ask questions. In order to distinguish between the three treatment groups, Concierges who engaged with visitors were asked to give them a green card (for IPOP-trained Concierges) or blue card (for Non-IPOP-trained Concierges), and information desk volunteers were asked to give yellow cards to visitors they served. Those who received cards were asked to present them to the staff at the exits, identified by their white hats and Smithsonian t-shirts. The staff at exits asked these card-holders to complete the survey. The survey form also asked respondents whom they spoke with in the museum and, in general, what they talked about.

⁵ See the OP&A report on the two-year entrance-exit survey conducted at NMNH in 2009-10.
<http://www.si.edu/content/opanda/docs/Rpts2010/10.11.GGHC2YearVisitor.Final.pdf>

The key research questions:

1. Do visitors who engaged with a non-IPOP-trained Concierge, an IPOP-trained Concierge, an Information Desk volunteer, or the control group differ with respect to the two impact measures (Overall Experience Rating and Satisfying Experiences)?
2. If there is a difference among the groups, is there also a difference between the impact measures for the IPOP Concierge group and the Non-IPOP Concierge group?

The IPOP Training

Twelve of the concierge volunteers both completed the full 37-version IPOP questionnaire and attended a presentation (on September 19, 2012) introducing the IPOP theory and answering their questions about how it might be useful in the museum. The IPOP scores of this eligible group were calculated and four pairs were identified based on very similar (or identical) Idea and People scores. One pair had much higher Idea scores, two had higher People scores, and one had high scores on both dimensions. These candidates were invited to participate in the program. Since training sessions could only be held on three Sunday afternoons every other week (September 30, October 14, October 28), the choice of which member of the pair who would receive training was based on who could commit to attending at the pre-determined training times. In the end, meeting times needed to be changed due to unanticipated circumstances (including Hurricane Sandy), and took place on October 14, November 11 and November 25. Each meeting was four hours long, the standard length of a Concierge volunteer duty period.

The IPOP training focused on the concept of “3E Displays.” A 3E display is a striking object that is also associated with a strong, compelling idea (“an idea worth having”), and an engaging personal story.⁶ Since the experiment did not allow for changing what was on display, the group began by identifying outstanding objects in the museum – those that were visually compelling. Over 30 items were identified.

The first session was devoted to thoroughly understanding the 3E display concept, identifying 3E items, discussing what was known and not known by the participants about ideas and people that could be associated with these items, and selecting items to be researched. Each participant left the meeting with one or two items to research before the next meeting – seeking either a compelling idea or an engaging personal story that was associated with the item.

⁶ A 4E display would also provide an opportunity for strong physical sensation, but this aspect was not considered in the training.

At the second session participants described the results of their research, discussed strong and weak points, and spent time on the museum floor with visitors testing their new ideas and the 3E approach. It was emphasized that each Concierge needed to find his/her own particular way to incorporate this new way of thinking about the museum's contents into the interaction with visitors. When encountering an opportunity in their contact with visitors, some, for example, experimented with talking to visitors about objects that were far away in the museum, while others focused on talking about things closer at hand. Participants were encouraged to try multiple approaches, but to stay with the overall style that they had developed prior to this training and with which they felt comfortable. At the end of the session the group discussed their experiences and selected an additional item to research. It was also agreed that for the final meeting, each individual would provide written materials summarizing their 3E research for distribution to the group, and that participants would continue to experiment with how to use these findings as they performed their usual Concierge duties between training sessions.

The third session began with the sharing and discussion of the complete set of materials (compelling ideas and engaging personal stories for nine items), and then allowed more time on the floor practicing them. The training concluded with a discussion of their interactions with visitors and how the IPOP approach, as developed over the three training sessions, had affected their experience as a Visitor Concierge.

The Questionnaire

A one-page, letter-sized questionnaire was designed for the study. After an initial question about whether or not this was the visitor's first visit to the museum, the survey asked the two impact questions (Overall Experience Rating and Satisfying Experiences). This was followed by a question asking which staff the visitor had interacted with on the visit (Information Desk, Green Vests (Concierges), White Coats (staff in the Butterfly Pavilion and Insect Zoo), Maintenance, Salespeople, or Security. In each case the options were "Didn't talk, Got Directions, Learned details about exhibit items, Other." Next they were asked 10 IPOP questions (3 Idea items, 3 People items, and 4 Object items, alphabetically ordered). A simple set of demographic questions concluded the survey (who with, residence, age, sex). The survey form also provided a way to note whether or not the visitor had one of the colored cards (i.e., belonged to a treatment group).⁷

⁷ See the questionnaire in Appendix A.

The Survey

The survey was administered as scheduled on Sunday, December 9, 2012 from 11am until 5pm. This covered the assignment periods of two sets of Concierges. Two pairs were on duty from 10:30 – 1:30, and two pairs from 1:30-5:30.⁸ Visitation was moderate, similar to the comparable Sundays in the previous two years, although a marathon was being run around the National Mall in the morning, and the Washington Redskins were playing the Baltimore Ravens in the afternoon. The official visitor count for the day was 12,150.⁹

For the control group, surveyors intercepted either every fifth or tenth eligible visitor, depending on location and flow.¹⁰ Cooperation rate for the control group was 46%.¹¹

Cards given to Concierges were pre-counted and remainders collected and counted at the end of their shift. Altogether there were 190 cards handed out by IPOP-trained Concierges and 108 by Non-IPOP-trained Concierges -- 66 IPOP-trained Concierge cards were handed back (33% of those distributed), and 43 Non-IPOP-trained Concierge cards (40% of those distributed).¹² Yellow cards (Information Desk interactions) were handed back by 43 visitors.¹³ Cooperation rate for those who presented cards was 85%.

⁸ In order to avoid confusion with other types of staff interactions similar to those provided by the Visitor Concierge volunteers, the museum's Learning Experience Volunteers were not present in the exhibitions or leading tours on the survey day.

⁹ This is calculated by security staff at the doors using hand clickers. It includes museum staff, visitors of all ages, contractors, and organized groups. The study interviewers counted over 3,000 visitors. See the following footnote.

¹⁰ Children under the age of 12, staff, contractors, volunteers, and organized groups were ineligible. Counting was interrupted when multiple visitors from the treatment groups presented cards. The final control group data is weighted according to the interval in use when and where the survey was collected.

¹¹ Those who completed questionnaires (and their accompanying children) were given a souvenir bookmark when they handed them in.

¹² The difference in number of cards handed out was due to the fact that IPOP-trained Concierges tended to give cards in all interactions, while Non-IPOP-trained Concierges primarily gave them out only for interactions that went beyond giving directions. Sometimes cards were given to multiple individuals in a group and sometimes only to one person. When a card was presented at the exit, all members of the group who were eligible were asked to complete a survey.

¹³ This greatly underestimates the overall number of contacts with the Information Desk. Information Desk Volunteers did not consistently hand out yellow cards.

The Randomly Selected Visitors

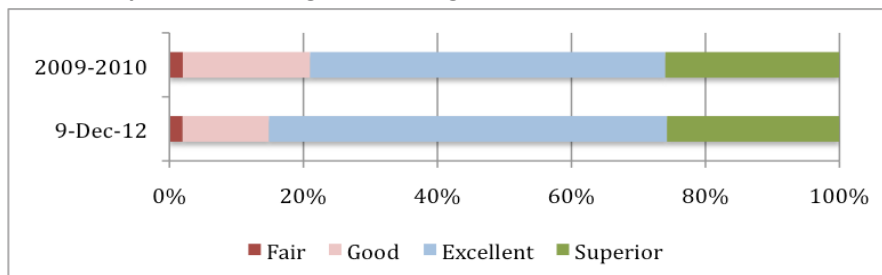
Among the 311 visitors who completed surveys, there were 173 respondents who were randomly intercepted as they were exiting the museum and did not present cards.¹⁴ Their responses to the question of whom they talked to suggest the importance of staff contact in the museum. Nearly three out of five visitors (58%) in the random sample reported at least one type of staff contact, with one in four getting directions from an information desk and one in four learning details about exhibition items from at least one of the six listed sources. (See Table 1.)

Table 1
Engagement with staff

N=173	Got Directions	Learned details about exhibit items	Other	Any Contact
Information Desk	26%	8%	2%	35%
Green Vests (Concierge)	9%	5%	1%	13%
White Coats (Butterflies or Insect Zoo)	1%	8%	1%	10%
Maintenance	0%	2%	0%	2%
Salespeople	1%	10%	6%	17%
Security	11%	3%	4%	18%
At least one staff contact	40%	25%	11%	58%

These randomly selected visitors rated their overall experience as: 2% Fair, 13% Good, 59% Excellent, and 26% Superior. This rating is comparable to the museum average among exiting visitors that was established in the 2009-2010 Entrance-Exit Study (2% Fair, 18% Good, 52% Excellent, 29% Superior), as shown in Figure 1.

Figure 1
Overall Experience Ratings for Exiting Visitors



¹⁴ Some of those intercepted as part of the random sample of exiting visitors revealed that they had cards only after they had been approached or agreed to complete the survey.

The experiences reported as especially satisfying were also closely comparable to levels in 2009-2010, as shown in Table 2.

Table 2
Especially Satisfying Experiences



The distribution of demographic characteristics was also very similar to the January-February, 2010, sample, with one notable exception: women outnumbered men in the December 2012 sample (53% vs. 47%), while men outnumbered women in the 2010 sample (54% vs. 46%). (See Appendix B.)

The Null Hypothesis

The first null hypothesis for this experiment is that there would be no statistically significant differences in Overall Experience Rating or reported Satisfying Experiences among the four groups: random sample of visitors, those who stopped at the information desk, those who interacted with a non-IPOP Concierge, and those who interacted with an IPOP Concierge. The second is that if there is a statistically significant difference in Rating and Experiences among the four groups, there would be no difference between the Non-IPOP Concierge group and the IPOP Concierge group.

The simplest way to identify the four groups is on the basis of the cards they were given. Thus we can identify those with no cards (random sample), yellow cards (info desk), blue cards (Non-IPOP Concierge), and green cards (IPOP Concierge). Do these four groups have different Overall Experience Ratings? And do they report different Satisfying Experiences?

Testing Ratings

There were 173 randomly selected visitors who completed the survey (no card), 40 who presented a yellow card (Information desk), 33 who presented a blue card (Non-IPOP Concierge), and 65 who presented a green card (IPOP Concierge). The data for the four groups are shown in Table 3.

Table 3
Overall Experience Ratings for the Four Experimental Groups

Rating	No Card (Control)	Yellow Card (Info desk)	Blue Card (Non-IPOP Concierge)	Green Card (IPOP Concierge)
Superior	26%	25%	33%	39%
Excellent	59%	50%	58%	56%
Good	13%	25%	9%	5%
Fair	2%	0%	0%	0%

Since rating is an ordinal variable, the most appropriate test is Kruskal-Wallis. Running this test on these four groups shows that there is a statistically significant difference.¹⁵ This leads us to reject the first null hypothesis and to conclude that there is a statistically significant difference among the four groups. The Mean Rank is highest for the IPOP Concierge group (178), lower for the Non-IPOP Concierge group (166), and random sample (150), and lowest for the information desk group (137). Since the available statistical software does not provide a post hoc test for Kruskal-Wallis, the researcher is unable to address the second null hypothesis with this method.

An alternative test is one-way analysis of variance (ANOVA), treating rating as an interval variable.¹⁶ Because the distribution is slightly skewed, the rating values were standardized. Applying the ANOVA also shows that there is a statistically significant difference among the four groups.¹⁷ Again the first null hypothesis can be rejected. The standardized means for the four groups are 0.30 for the IPOP Concierge group, 0.15 for the Non-IPOP Concierge group, -0.07 for the random sample, and -0.22 for the information desk group. Since the sample sizes are so different, the preferred post hoc test is Scheffe's Least Significant Difference. The difference between the IPOP Concierge group and the Non-IPOP Concierge group is not statistically significant in this test and the second null hypothesis cannot be rejected.

However, identifying the groups solely through the cards is imperfect, since there are some overlaps among the four groups. As noted in Table 1, 35% in the random sample had contact with the information desk, but had not presented a card.¹⁸ Reducing the no card group to those who reported no staff interactions at all, and moving to the information desk group those in the random sample who

¹⁵ Chi-square (3, 311)=8.79, p=.03.

¹⁶ This can be justified on the basis of the argument that it reflects an underlying continuum.

¹⁷ F(3, 311)=3.18, p=.02.

¹⁸ As noted earlier, information desk volunteers distributed few cards.

indicated talking to staff at the information desk but did not report talking to a Concierge, creates more balanced and “cleaner” groups.

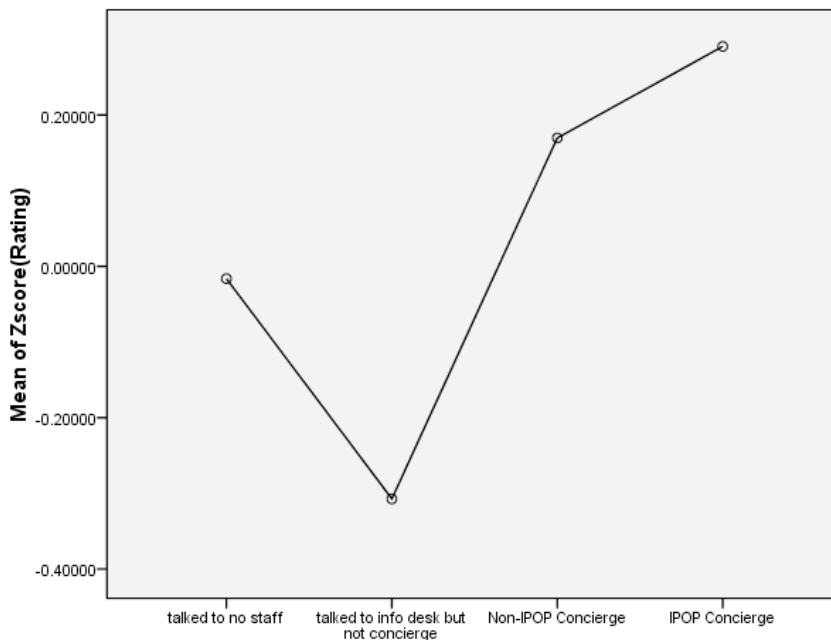
This produces four new groups from the full dataset:

- Those who did not talk to any staff (No talk, N=72)
- Those who talked to information desk staff but not a Concierge (Info desk, N=54)
- Those who talked to a Non-IPOP Concierge (31)
- Those who talked to an IPOP Concierge (63)

The ANOVA on the standardized rating allows us to again reject the null hypothesis that the groups do not differ in rating.¹⁹ Since the datasets are closer in size and we are interested in all pairwise comparisons, Tukey’s post hoc test was selected for comparisons. It calculates that there is a statistically significant difference only between the mean rating for the IPOP Concierge group and the info desk group.²⁰ Since the comparison of the IPOP Concierge group mean with the Non-IPOP Concierge group mean is not statistically significant, the second null hypothesis cannot be rejected.

The standardized ratings means for the four groups are shown in Figure 2.

Figure 2
Plot of Standardized Ratings Means for Four Groups



¹⁹ $F(3, 219)=2.71, p=.045$.

²⁰ $p=.04$.

Those who did not talk to any staff were very close to the overall mean rating, while those who talked only to the information desk gave lower ratings, those who talked to Non-IPOP Concierges gave higher ratings, and those who talked to the IPOP Concierges gave the highest ratings. Although the difference between the mean ratings for the IPOP Concierge group and Non-IPOP Concierge group was not statistically significant, it is enough to produce a small effect size.²¹ If we use the effect size statistic to measure the overall effect on rating of the Concierge interaction as against those who do not have any staff interaction, we find a medium effect size of 0.29.²² The effect size of Concierge interaction as against those who only stop at the information desk is 0.47, which is considered large.²³ Thus, although the effect of Concierge interaction varies according to the training and the comparison group, it appears to have a positive impact on overall experience rating generally.

Testing Experiences

Only one of the experiences, Appreciating the natural world and our place in it, comes close to showing a statistically significant difference among the basic groups (no card, yellow card, blue card, green card).²⁴ The item was selected by 71% of those who had a card from an IPOP Concierge; 53% of those who had a card from the information desk; 52% of those in the random sample; and 52% of those who spoke to a non-IPOP Concierge. Among the cleaner groups the differences were smaller (70% of IPOP Concierge group; 58% of Info desk but no Concierge group; 55% of the Non-IPOP Concierge group; and 53% of those who spoke to no staff) and not enough to show a statistically significant difference among the groups.²⁵ Thus, the null hypothesis cannot be rejected with respect to experiences.

Qualifications

There were two unexpected differences among the treatment groups. Unlike the other three groups, those who talked with Non-IPOP Concierges were much more likely to be on a first visit,²⁶ and those who talked with IPOP Concierges were much more likely to be visiting with youth under the age of 18.²⁷ This probably reflects differences in the ways that the different Concierge Volunteers selected individuals to interact with. In addition, it should be noted that there were not enough cases in the study to isolate individuals who talked to a Concierge but did not also stop at the information desk. An

²¹ Effect size is the difference between two means divided by the pooled standard deviation. In this case it is $(0.29 - 0.17) / 0.88 = 1.36$.

²² Standardized rating mean for the two concierge groups combined is 0.25, and for those who did not talk is -0.03, and the pooled standard deviation is 0.95.

²³ Standardized rating mean is 0.25 for the two concierge groups combined, -0.22 for those who stopped at the info desk but did not talk to a Concierge, and the pooled standard deviation is 1.00

²⁴ ANOVA $F(3, 304) = 2.54$, $p = .06$.

²⁵ ANOVA $F(3, 215) = 1.6$, $p = .19$.

²⁶ 68% of the Non-IPOP Concierge group were on a first visit, compared to 38% of the other visitors. Chi-square (1, 310) = 9.94, $p = .002$.

²⁷ 51% of the IPOP Concierge group were visiting with youth, compared to 27% of the other visitors. Chi-square (1, 311) = 13.6, $p < .001$.

underlying assumption of the analysis, therefore, is that the effect of a Concierge interaction is greater than the effect of an information desk interaction.

IPOP Scores

Visitors were asked to respond to ten questions that IPOP researchers have been using as part of the full-scale questionnaire to measure experience preferences. Three of these were meant to measure an Idea preference (divide things into categories; know the reasons behind things; think about my life). Three were to measure People preference (connect with others emotionally; help others in person; spend my leisure time with other people). Four were to measure Object preference (buy things; know how things are made; shop on Ebay). For each item visitors were asked to indicate the degree to which that item described them: Not me at all, A little me, Me, Very much me.

Measures were created for each of these three sets using Rasch-model software applied to the complete existing dataset of all those who have answered these questions in the course of the IPOP research to-date.²⁸ These measures were then standardized to create Zscores for each of the three preferences. Although the IPOP scores were not part of the experiment per se, it was hoped that they might provide deeper insight into visitor behavior or response.

Further Analysis

In order to gain a fuller understanding of the possible drivers of high ratings, we need to step beyond the hypothesis of the study and consider other factors that could be involved. The first possibility to be considered is the relationship between specific experiences and rating. Three of the seven experiences have statistically significant associations with rating overall: Appreciating the natural world and our place in it,²⁹ Feeling awe and wonder,³⁰ and Gaining information.³¹ There is also a relationship (perhaps partly as a result of these associations) between the number of experiences reported as especially satisfying and rating. The overall mean number of satisfying experiences reported was 2.6 out of 7 (median: 2.0). As rating increases, so do the mean number of satisfying experiences, and the ANOVA test indicates that these differences in the mean number of experiences are statistically significant except for the differences between Excellent and Good, and Excellent and Superior.³²

²⁸ Winsteps 3.75. The complete dataset currently has over 2,500 cases. Results from the Rasch-model analysis of the full questionnaire were used to select the ten items in this study.

²⁹ Independent Samples t-test indicated higher standardized ratings for those who marked the item ($M=0.22$, $SD=0.9$) than those who did not ($M=-0.24$, $SD=1.0$), $t(302)=4.1$, $p<.001$.

³⁰ Independent Samples t-test indicated higher standardized ratings for those who marked the item ($M=0.23$, $SD=0.9$) than those who did not ($M=-0.12$, $SD=1.0$), $t(302)=3.0$, $p=.003$.

³¹ Independent Samples t-test indicated higher standardized ratings for those who marked the item ($M=0.14$, $SD=0.9$) than those who did not ($M=-0.11$, $SD=1.1$), $t(302)=2.3$, $p=.02$.

³² Mean for Fair = 1.00, Good = 1.95, Excellent = 2.54, Superior = 3.04. ANOVA $F(3, 303)=12.45$, $p=.002$; Tamhane post hoc: Fair-Good ($p=.001$), Good-Excellent ($p=.49$), Excellent-Superior ($p=.14$), Good-Superior ($p=0.02$), Fair-Superior ($p<.001$).

One demographic characteristic was associated with higher ratings overall: visiting with youth under 18.³³ Idea scores and object scores also have statistically significant relationships with rating.³⁴ Those who rated their overall experience as Superior have higher mean Idea scores than those who rated Good or Excellent,³⁵ and they also have higher mean Object scores than those who rated Excellent.³⁶

However, when we control for interaction with an IPOP Concierge, i.e., when we consider only visitors who did NOT interact with an IPOP Concierge, only two of these factors are still significantly associated with higher ratings: Appreciating the natural world, and Gaining information.³⁷ Controlling for interaction with all Concierges does not change this result, but when we also exclude those who talked to information desk volunteers, i.e., when we look only at those who did not talk to anyone, marking Appreciating the natural world and our place in it is still significantly associated with higher ratings.³⁸

Observations and Conclusions

One of the unexpected findings of the study was the fact that those who stopped at the information desk gave significantly lower overall experience ratings than those who interacted with IPOP Concierges. As Figure 2 illustrated, those who did not talk rated their experience at the mean, while those who interacted with a concierge rated it higher and those who went to the information desk rated it lower. Although these differences were only statistically significant at the extremes, they did have meaningful effect sizes, and they raise a question of why information desk visitors rated their experience lower than those who did not talk to anyone. One possibility is that those who approach the information desk are different from other visitors in that they are drawn to the desk by a problem of either navigating the museum or finding what they want. Even if the interaction of the question-driven visitor with the information desk personnel is satisfactory, the question itself might reflect a general lack of ease with the visit as a whole.

This suggests a different way of looking at the relationship between the visitor and their overall experience in the museum, as it implies that the overall experience rating may reflect the influence of “fit,” the sense of comfort or familiarity that an individual has with the museum (whether through prior visits to this or other museums). As part of the research on IPOP, it has been observed that experienced museum-goers with strong preferences for one type of experience often seem to have developed ways to obtain the kind of experience they seek to a satisfying degree – whether or not the museum has

³³ Independent Samples t-test indicated higher standardized ratings for those who marked the item ($M=0.26$, $SD=0.9$) than those who did not ($M=-0.10$, $SD=1.0$), $t(308)=3.0$, $p=.003$.

³⁴ These scores are standardized for ease of comparison.

³⁵ Mean Idea score for Good= -0.36, Excellent= -0.08, Superior=0.33. ANOVA $F(3, 306)=5.52$, $p=.001$; Scheffe post hoc: Good-Superior ($p=.005$), Excellent-Superior ($p=.02$).

³⁶ Mean Object score for Excellent = -0.09, Superior= 0.26. ANOVA $F(3, 306)=3.86$, $p=.007$; Tamehane post hoc: Excellent-Superior ($p=.02$).

³⁷ Appreciating the natural world chi-square (154, 3)=9.61, $p=.02$; Gaining information chi-square (154, 3)=8.98, $p=.03$.

³⁸ Chi-square (72, 3)=6.6, $p=.04$.

provided it. Those with strong Idea preferences, for example, will come up with their own ideas, if the museum has not made new ideas available. If the museum or exhibition does not offer interesting stories about people, those with strong People preferences will either focus more on their companions, or, if alone, creatively project themselves or other people into imaginary interactions with objects on view. From this perspective, experienced museum-goers may be those who have learned (either from others or on their own) how to achieve a satisfying experience at any museum they choose to enter. Perhaps those who approach the information desk are more likely to be visitors with lower levels of museum experience, who do not feel confident to find their own way, regardless of whether they have been to this particular museum before at some previous point in their lives. If this speculation is correct, it might be beneficial to emphasize the role of the information desk volunteers in providing a sense of comfort and overall orientation to visitors, beyond addressing the specific questions directed to them.

The Concierge volunteers, on the other hand, because they approach visitors on their own, have an opportunity to provide added value to the visitor experience – beyond what the visitors on their own would be likely to find.

The higher experience ratings given by those who interacted with the IPOP-trained Concierge volunteers could have been influenced by several factors, including both the renewed enthusiasm for their work that developed as a result of the training, and the training's emphasis on informing visitors about ideas and stories, in addition to recommending objects or exhibitions of note. Although the experiment did not prove conclusively that IPOP training alone made a difference on either overall experience rating or satisfying experiences, ratings were highest among those who interacted with an IPOP Concierge.

The result to this experiment should not be taken to indicate either that the Concierge program is without value or that IPOP training is not advantageous. Larger sample sizes might have shown a clearer result on the one hand, and, on the other, the two impact measures used in the study might not be the best ones to register the exact difference these interactions might make.

The data make it clear that the in-person services provided by these volunteers are very widely used and thus are an important component in the overall visit experience. Further experimentation and research are needed to identify more precisely the role they play in enhancing the quality of the visitor experience.

Appendix A: The Survey

9924062765	National Museum of Natural History Visitor Survey	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>		
<p>Is this your first visit to this museum, the National Museum of Natural History? <input type="radio"/> Yes <input type="radio"/> No</p>				
<p>Based on your visit today, please rate your overall experience at this museum: <input type="radio"/> Poor <input type="radio"/> Fair <input type="radio"/> Good <input type="radio"/> Excellent <input type="radio"/> Superior</p>				
<p>Which of these experiences were <u>especially</u> satisfying to you in the National Museum of Natural History today? [Mark one or more]</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><input type="radio"/> Appreciating the natural world and our place in it</p> <p><input type="radio"/> Being moved by beauty</p> <p><input type="radio"/> Connecting with the emotional experience of others</p> <p><input type="radio"/> Feeling awe and wonder</p> <p><input type="radio"/> Gaining information</p> <p><input type="radio"/> Getting a sense of the everyday lives of others</p> <p><input type="radio"/> Seeing rare, valuable, or uncommon things</p> <p><input type="radio"/> None of these</p> </div> </div>				
<p>On your visit today, what did you talk with staff about? [Mark one or more]</p>				
Information Desk	<input type="radio"/> Didn't talk	<input type="radio"/> Got directions	<input type="radio"/> Learned details about exhibit items	<input type="radio"/> Other
Green Vests (staff)	<input type="radio"/> Didn't talk	<input type="radio"/> Got directions	<input type="radio"/> Learned details about exhibit items	<input type="radio"/> Other
White Coats (staff)	<input type="radio"/> Didn't talk	<input type="radio"/> Got directions	<input type="radio"/> Learned details about exhibit items	<input type="radio"/> Other
Maintenance	<input type="radio"/> Didn't talk	<input type="radio"/> Got directions	<input type="radio"/> Learned details about exhibit items	<input type="radio"/> Other
Salespeople	<input type="radio"/> Didn't talk	<input type="radio"/> Got directions	<input type="radio"/> Learned details about sales items	<input type="radio"/> Other
Security	<input type="radio"/> Didn't talk	<input type="radio"/> Got directions	<input type="radio"/> Learned details about exhibit items	<input type="radio"/> Other
<p>Help us to understand your interests. For each of the following items, please indicate the degree to which that activity describes you.</p>				
I like to...	Not me at all	A little me	Me	Very much me
buy things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
connect with others emotionally	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
divide things into categories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
help others in person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
know how things are made	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to...	Not me at all	A little me	Me	Very much me
know the reasons behind things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
shop on Ebay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
study how things work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
spend my leisure time with other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
think about my life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>With whom are you visiting this museum today? [Mark one or more] <input type="radio"/> Alone <input type="radio"/> Adult(s) <input type="radio"/> Youth under 18</p>				
<p>Where do you live? <input type="radio"/> United States. ZIP Code: <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div> <input type="radio"/> Other country. Please specify: _____</p>				
<p>What is your age? <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div></p>				
<p>What is your sex? <input type="radio"/> Male <input type="radio"/> Female</p>				
OB	OG	OY	ONC	OC
Thank You for your time and assistance!				
OR	OL	OI		

Appendix B: Frequencies

Demographic and Visit Characteristics

	9-Dec-12 Randomly Selected Exiting Visitors	Jan-Feb 2010 – Exiting visitors ³⁹
Visit History		
First Visit	43%	43%
Repeat Visit	57%	57%
Visit Group		
Alone	14%	21%
With Adults	73%	72%
With youth under 18	32%	33%
Residence		
Washington, DC, Metro Area	32%	25%
Other US	56%	62%
Other Country	12%	13%
Age		
Mean:	39.3	38.1
Median:	37.0	36.0
Sex		
Male	47%	54%
Female	53%	46%

³⁹ See the full report on this study of NMNH visitors at
<http://www.si.edu/content/opanda/docs/Rpts2010/10.07.NMNHVisitors.Final.pdf>