RK&A

IMPACT PLANNING • EVALUATION • AUDIENCE RESEARCH

SUMMATIVE EVALUATION

DISCOVERY GARDEN

Prepared for the
Brooklyn Botanic Garden
Brooklyn, NY

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SUMMARY

This report, prepared by Randi Korn & Associates, Inc. (RK&A), presents results from an evaluation of the new Discovery Garden in the Brooklyn Botanic Garden (BBG) and examines the experience of visitors from April to August 2016. RK&A employed two methods: (1) exit questionnaires administered to a random sample of adult visitors; and (2) focused observations and interviews of visitors at two docent carts. The data include 225 questionnaires, 82 observations of docent carts, and 20 interviews with visitors who used the docent carts.

Overall, visitor groups with children have a positive experience at the Discovery Garden. Most use some form of interpretation—mostly exhibits, followed by docent carts. Both questionnaires as well as focused observations and interviews confirm that by and large the greatest take-away for visitors to the Discovery Garden is an appreciation and wonder of nature, followed by an opportunity for the physical exploration of nature. To a lesser extent, visitors take away the perception that they are doing science in nature or particular content and knowledge. Observations show that while most docents encourage visitors to interact directly with plants and nature and shared information with them, few docents made explicit connections to science or the process of science, thus it is not surprising that doing science did not rate high as a take-away. A somewhat surprising finding is that nearly as many adult only groups as groups with children visit the Discovery Garden. The focus of this study is groups with children, so we do not know much about the adult only groups—only that they are much less likely to use a docent cart than a group with children is. BBG may wish to understand the motivations of this adult only audience for future Discovery Garden plans.

On the next page, we present a dashboard of key findings (see the body of the report for a complete presentation of results). On the pages that follow the summary, we provide explanation of these results as well as recommendation

WHO IS VISITING THE DISCOVERY GARDEN?

Group Composition: 47% are adult-only groups, 54% are groups with children

Age of Children: 79% of visiting children are less than 8 years old

Ethnicity: 66% are Caucasian

Language: 83% speak English

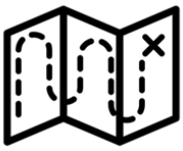
Education Level: 77% have a college degree or higher

Members: 40% are BBG members

Previous Visitation: 61% are repeat visitors to the Discovery Garden

Frequency of Visitation: 26% are frequent visitors to the Discovery Garden

WHAT DO GROUPS WITH CHIDLREN DO WHEN THEY VISIT THE DISCVOERY GARDEN?



Exhibits: 83% use exhibits

Touch Plants: 79% touch plants

- ► Docents encourage visitors to touch plants

Docent Carts: 68% use docent carts

Field Cards: 27% use field guide cards

Field Journals: 13% use field journals

HOW DO VISITORS INTERACT WITH EACH OTHER AND GARDEN VOLUNTEERS?

Adults perceive their role in the Discovery Garden as:

1. allowing their child to explore nature
2. facilitator of exhibits and conversations

- ► Adults who perceive their role as facilitator of exhibits are more likely to use the docent carts

Interaction with Docents:

- ► In families with young children, adults primarily interacted with docents
- ► In families with older children, children primarily interacted with docents
- ► Docents were generally adept at facilitating different kinds of interactions and following the lead of the group.

WHAT DO VISITORS PERCEIVE AS THEIR TAKE-AWAYS FROM A VISIT TO THE DISCOVERY GARDEN?

Visitors perceive as greatest take-away

Appreciation and Wonder of Nature
Physically Exploring the Natural World
Doing Science
Learning Content

Visitors perceive as lowest take-away

WHAT DIFFERENCE DO DOCENT CARTS MAKE IN THE EXPERIENCE?

- The Discovery Garden attracts adult-only and family groups, but groups with children are much more likely to use a docent cart
- Statistical tests show that docent carts do not effect what visitors perceive as their take-aways
- Docent's encouragement of touching plants seems related to visitors' pleasure in the physical engagement with the natural world
- Docent training should more explicitly include messages around science

WHO VISITS THE DISCOVERY GARDEN?

Notably, though the Discovery Garden is designed for families and visitors with children, its visitors are split nearly evenly among adult-only groups[1] and groups with children (47percent and 54 percent, respectively). This was the case in a survey administered by BBG in the previous summer, thus seems to be a persistent pattern. This study focused on groups visiting with children, so little is known about the motivations or experiences of adult-only groups in the children's garden. BBG may want to understand this audience better for the future so as to either meet their particular needs or steer them away from the Discovery Garden.

Among groups visiting with children, most were with children in the younger age range of the Discovery Garden's target ages of 1 to 12 years—85 percent had at least one child ages 3 to 7 years and 54 percent had at least one child younger than 3 years, whereas only 18 percent of families had at least one child 8 to 12 years old. Many museums and other informal learning environments desire to attract older children, but it is challenging because of all the competing activities for this age group (organized sports, birthday parties, etc.). BBG should ensure that it continues to provide experiences that meet this age group's needs if it wants to maintain or grow the older child audience.

Among the groups with children, more than one-half are repeat visitors (58 percent) to the Discovery Garden, with about one-quarter of groups having visited four or more times in the past year. Notably, some of these repeat visitors are not members (members make up 40 percent of groups visiting with children), suggesting an opportunity to increase memberships among these families who could benefit most.

Other demographic data demonstrate that Discovery Garden visitors are similar to the audiences of other similar institutions. Many of Discovery Garden groups with children identify as Caucasian (66 percent), following by Hispanic (12 percent), Asian (9 percent), and African-American (8 percent). Most speak English at home (83 percent), followed by a small portion who speak Spanish (10 percent). Adults visiting in groups with children are highly educated—three-quarters have a college degree or higher. If BBG strives for greater diversity it should be explicit about what kind of diversity it wants then institute explicit programs or incentives for diverse audiences.

[1] Though adults represent a large portion of visitors, this was unexpected, and the questionnaire was designed for the target audience, visitors with children. Thus, adults were not asked most of the questions about experiences in the Discovery Garden and we can only speculate about their motivations and experiences.

HOW DO VISITORS USE THE DISCOVERY GARDEN?

The Discovery Garden is a free-choice learning environment that offers a variety of interpretative elements and programming, including exhibits and signage, docent carts/activities, field guide cards, a field journal, and touchable plants. When looking at use of all these elements, results show that most groups with children used at least one exhibit (83 percent). This is not surprising since there were many more exhibits and signs than any other form of interpretation. Results suggest that most used an interactive exhibit, or an exhibit that "prompted them to do an activity" (79 percent). Among the small portion of groups with children who did not use an exhibit, the most common reasons were the desire to so something else instead, foul weather, or not noticing them.

Docent carts were used second most frequently—68 percent of groups with children used a docent cart (perhaps not surprising, only 12 percent of adult only groups used one[2]). Groups with children most often used Monarchs and Milkweed (54 percent) followed by Botany Bonanza (34 percent). We know from focused observations and interviews that visitors typically chose to use a docent cart because either a docent invited them over or they were drawn to an element of the cart, particularly the butterflies. Further, since docent carts are a particular interest of this evaluation, visitors with children were asked to rate their experience of them—ratings were very high, with ratings varying from 5.9 to 6.3 on a scale of 1 to 7, indicating visitors agreed the docent carts are hands-on, fun, very educational, age-appropriate, and deeply engaging. Interviews confirm that visitors most liked the opportunity to engage physically with plants as well as their educational content at the carts. The most common reason for not using a docent cart was that a visitor group did not notice them (30 percent). And from interviews, we know that some visitors thought the carts, particularly Botany Bonanza was limited in content and unchallenging.

The field guide cards or the field journal were the least used interpretive strategies (27 percent and 13 percent, respectively). The most common reasons given for not using either element was that they went unnoticed or they were not age appropriate.

BBG wants very much for visitors to view the Discovery Garden as a place where they can touch plants. Since touching plants in the rest of BBG is mostly forbidden, staff were concerned visitors would not realize the Discovery Garden is in different in this respect. Findings are quite positive with 79 percent of visitors reporting touching a plant. Results of focused observations and interviews suggest that docents may contribute to this high percentage, with many of them observed encouraging visitors to touch plants. Further, results show that this kind of physical engagement with the natural world is one aspect of the carts visitors appreciate most (explained more below).

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[2] Since docent carts were of significant interest in this evaluation, adults were asked about their use of them; however they were not asked about their use of any other elements in the Discovery Garden.

WHAT IS THE NATURE OF INTERACTIONS AMONG VISITORS AND DOCENTS IN THE DISCOVERY GARDEN?

The Discovery Garden's design is such that it encourages both intergenerational interaction (through exhibits and docent carts) as well as independent exploration (through safe enclosures and child-size activity areas). The Garden desires for its visitors to interact socially but also gain confidence in exploring the natural world. Results show that adults visiting with children agree that this combination of interaction and independence describe their experience in the Discovery Garden, with adults ratings their perceived role in the Discovery Garden nearly equally for letting their child explore nature as well as facilitating exhibits and conversations.

Obviously, visitor groups who used the docent carts also interacted with docents (we do not know if visitors who did not use the carts had any staff or volunteer interactions). The nature of these interactions varied, especially by the age of the child. In families with very young children, adults did most of the speaking with docents, whereas in families with older children, the children did most of the speaking. In about one-quarter of all cases, both children and adults interacted with docents. Docents were generally adept at facilitating these different kinds of interactions and following the lead of the group as necessary, and visitors were satisfied with the level and nature of the of interactions.

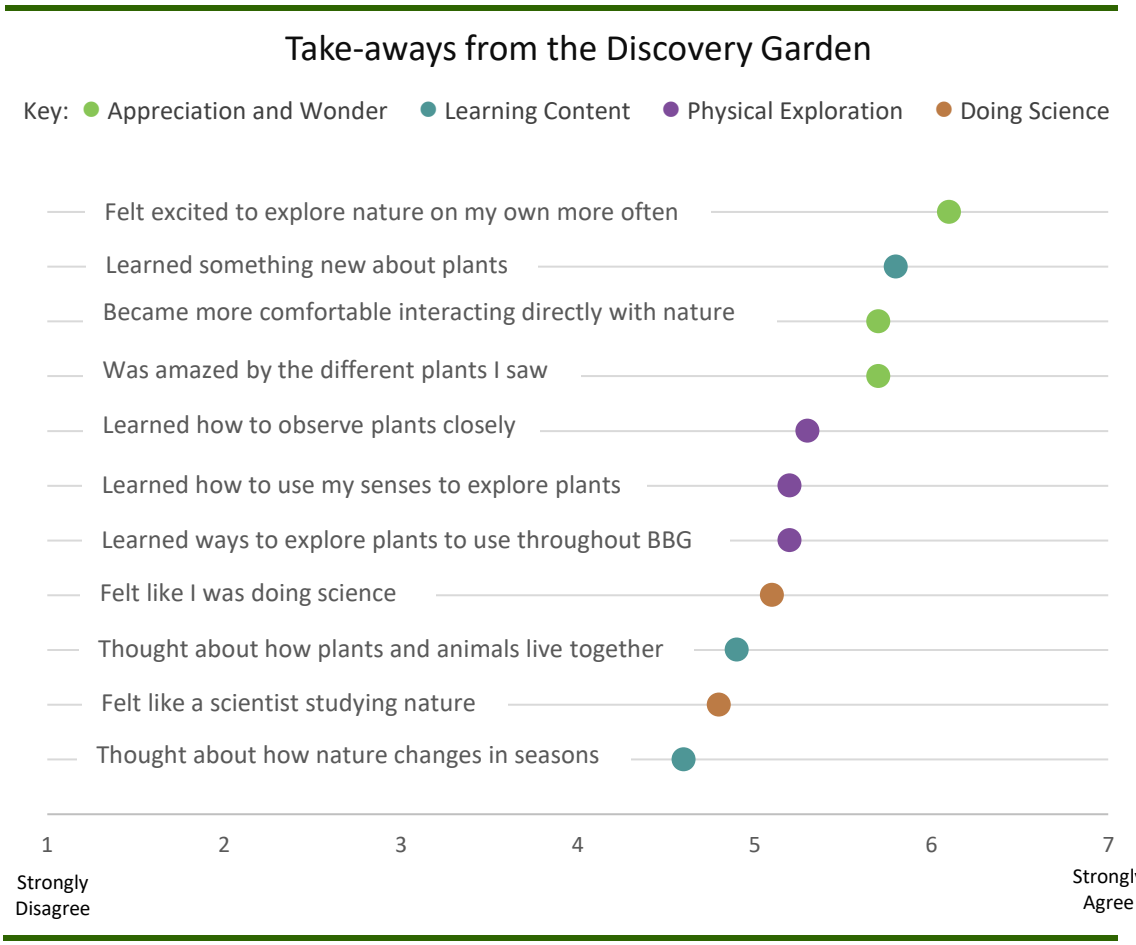
WHAT DO VISITORS GAIN FROM A VISIT TO THE DISCOVERY GARDEN?

BBG has several intended outcomes for audiences to the Discovery Garden. These fall into four categories we refer to as:

1. Appreciation and wonder of the natural world, which includes excitement for and comfort with nature
2. Physical exploration of the natural world, which includes observations, smelling, and touching
3. Doing science in nature, which includes the perception that one is doing and studying science while in nature
4. Learning content, which has to do with the acquisition of specific content knowledge

To understand the achievement of these outcomes, we asked visitors with children to rate their experience with a number of statements that correlated to these outcomes. Results are notable in their consistency. As the graph on the next page clearly shows, visitors greatest take-away is an appreciation and wonder of nature (as indicated by the statements marked light green), followed by the physical exploration of nature (as indicated by the statements marked in purple). To a lesser extent, visitors take away the perception that they are doing science in nature (indicated by statements marked brown), or particular content and knowledge (statements indicated in dark green)—although one statement about learning about plants rated high. The one area of concern in these findings is that explicit statements related to science fall to the bottom of the rating scales. This is not surprising—observation data shows that docents rarely used the word science or referred to the activities as science, and interviews with visitors at the

docent carts showed that they did not perceive they were doing science (although some believed they learned science content at Monarchs and Milkweed). Of course, wondering and appreciating nature and the physical exploration of the natural world *are* scientific endeavors, but visitors do not necessarily make these connections. With very intentional training, docents can begin making these connections for visitors. Docents already encourage science-like behaviors, like observations, but they need to explicitly help visitors perceive this as something a scientist would do. This may also require rethinking the activities of the carts so they lend themselves more to explicit connections to science.



HOW DO DOCENT CARTS EFFECT THE VISITOR EXPERIENCE?

Notably, observations suggest that docents may play a part in the high number of visitors who physically interacted with nature (79 percent touches a plant). Observations show that docents actively encouraged this kind of physical interaction (through all the sense, but mostly touch), and interviews show that what visitors valued most about the carts was the hands-on physicality.

On the other hand, statistical tests show that the docent carts do not affect visitor outcomes—in other words visitors who use the docent carts did not rate their take-aways from the Discovery Garden (as described above) any differently than visitors who did use the docent carts. On the one hand, this is a positive findings—its indicates that there are many ways visitors can wonder about, explore, and interact with nature in the Discovery Garden; they do not need to rely on experiences with docent carts. On the other hand, this finding is disappointing. There was the expectation that visitors who used the docent carts would be more likely to come away feeling as though they had done science, but as described above, science was not an explicit part of the docent experience so this finding is not surprising.

And lastly, docent carts do not seem to appeal to adult-only groups. Even though the Discovery Garden attracts a large number of adult-only groups, these adults are much less likely to use the docent carts than visitors with children. This is not surprising—the Discovery Garden and the docent carts were designed for families and children. But, as mentioned earlier, this leave BBG with the conundrum of what to provide for all the adult visitors (if anything at all).

RECOMMENDATIONS

- Train docents to make direct and explicit connections between the behaviors and dispositions encouraged at the carts (for example, observation and wonder) and what it means to do science in the natural world. Docents may need some fundamental training in these connections themselves before they can be expected to convey them to visitors. For instance, docents may not truly realize the importance of curiosity or smell to the work of science.
- Consider designing docent cart activities that more explicitly make these direct connections to science. For instance, a cart could include the word science or botanist in its name and show visitors what it is like to follow ones curiosities, make a hypothesis, and test one's assumptions. Botany Bonanza does this to an extent, but it framed much more as a game than the scientific process.
- The Discovery Garden attracts the age range of the children it desires (1 to 12 years old) even though the portion of older children is relatively small (about 20 percent); continue to provide experiences that appeal to this wide age group and consider programming that targets older children.

- If the BBG wishes its Discovery Garden audience to be more diverse, consider special programming or marketing to appeal to the audiences it desires.
- Consider doing a small qualitative study to understand the motivations of adults to the Discovery Garden and then make decisions about how to handle this unexpected audience.

STUDY BACKGROUND

The Brooklyn Botanic Garden (BBG) contracted Randi Korn & Associates, Inc. (RK&A), to conduct a study of visitors to the Discovery Garden from April 2016 to August 2016. The goal of this study is to assess the successes and challenges of the exhibition and accompanying interactive elements towards program improvement.

OBJECTIVES

Specifically, the objective of the study were:

- Who is visiting the Discovery Garden?[3]
- How are visitors using the Discovery Garden, including what kinds of sensory and tactile exploration are visitors performing?
- How do visitors describe the nature of their interactions with one another as well as with staff and/or docents?
- What do visitors feel they learn or gain from a visit to the Discovery Garden? In particular, do they view this as a space for science learning and skill-building?
- How well do discovery programs (as facilitated by docents) support the cognitive, experiential, and affective goals of the Discovery Garden?
- What, if any, differences in experience and outcomes emerge between visitors who use the docent carts and those who do not?

METHODOLOGY

STANDARDIZED QUESTIONNAIRE

Data were collected through standardized questionnaires with the online platform Survey Gizmo (see Appendix A for the questionnaire). Questions include mostly single- or multiple-choice questions and rating scales. The questionnaire also includes a few open-ended questions, which generated qualitative responses that were categorized in analysis. The questionnaire was administered by data collectors hired by RK&A.

RK&A trained local data collectors to administer the questionnaires. Data collectors used a random selection method to recruit participants; in accordance with this method, data collectors

[3] The Discovery Garden's target audience is families with children ages 1 to 12.

imagined a line near two designated exits (Four Seasons and Flatbush Avenue) and invited the first visitor 18 years and older who crossed the line to participate in the study. If the participant agreed, the data collector asked a screener question to make sure the participant had completed his or her visit and then administered the questionnaire. If the visitor declined participation, the data collector recorded a few data points so RK&A could compare the refusal sample with the respondent sample to contextualize the representation of the sample.

The questionnaire was administered through a one-on-one interview. For most questions, the data collector read the questions aloud, listened to the visitor's response, and then marked the questionnaire accordingly. Demographic questions were completed by the visitor.

Survey data are mostly quantitative, generated from single- or multiple-choice and rating-scale questions. Quantitative data are analyzed statistically using SPSS 20 for Windows. Quantitative analyses conducted include:

- Frequency distributions (e.g., percent of respondents that are members).
- Summary statistics (e.g., ratings).
- Inferential statistics[4] to examine the relationship among variables. The types of analyses include:
  - Cross-tabulations show the joint frequency distribution of the variables, and the chi-square statistic (X^2) to test the significance of the relationship.
  - Analysis of variance (ANOVA) was performed and the F-statistic was used to test the significance of the difference. For example, mean ratings of experiences were compared by gender.

Some qualitative data were collected through open-ended questions where participants could respond in their own words. The researcher coded and categorized these responses according to emergent trends.

[4] A 0.05 level of significance (p) was employed to preclude findings of little practical significance. When the level of significance is set to $p = 0.05$, any finding that exists at a probability (p-value) 0.05 is "significant." When a finding (such as a relationship between two variables) has a p-value of 0.05, there is a 95 percent probability that the finding exists; that is, in 95 out of 100 cases, the finding is correct. Conversely, there is a 5 percent probability that the finding would not exist; in other words, in 5 out of 100 cases, the finding appears by chance.

FOCUSED OBSERVATIONS AND INTERVIEWS

Observations of the docent cart program were collected over seven days in May, July, and August, 2016. As observations are unobtrusive, visitors were not asked to participate, but rather selected randomly upon approaching the docent cart. To select visitors, the observer watched a group approach the docent cart area. If the visitor group stayed at the cart and interacted with the docent or the cart activities, the observer unobtrusively studied the behaviors of the selected visitors. The observer did not use a form or guide, but took detailed notes about the experience. When the visitor walked away from the cart, the observer ended the observation session and waited for the next eligible visitor group to approach the cart.

RK&A conducted 23 interviews with visitors who had just finished participating in the docent cart program over seven days in May, July, and August, 2016. The interviewer used a random selection method to recruit visitors to participate. The evaluator approached every third family who participated in observed docent-led cart activities and spoke to one adult in the group. After concluding the interview, the evaluator confirmed and recorded both the group composition and ages of the children. Visitors were asked a series of questions about their experiences with the docent cart program and what they learned during their experience (see the interview guide in Appendix B). The interviews produced descriptive data that were analyzed qualitatively, meaning that the evaluator studied the data for meaningful patterns and, as patterns and trends emerged, grouped similar responses. Where possible, participants' verbatim language (edited for clarity) is included to exemplify trends. Within quotations, the evaluator's comments appear in parentheses.

CONFIDENCE IN THE RESULTS

Our goal is always to provide reliable and valid results from which a museum can make informed decisions. Every study has limitations, so in this section we describe our confidence in the results for the museum's consideration. Overall, RK&A is fairly confident in the results given the following items. We note any results that might need further consideration beyond the straight reporting of numbers in the results that follow and the discussion.

REPRESENTATION OF SAMPLE

Data collectors invited 358 visitors to participate in the study. A total of 225 visitors agreed to participate in the questionnaire, for a 63 percent response rate. It should be noted that 19 of the visitors who declined participation in the study did so due to language barriers (visitor did not speak and/or understand English well enough to respond to questionnaire).

Data collectors recorded the observed gender, age, and exit from which the visitor was recruited for all invited visitors. RK&A investigated whether there was a relationship among these variables and participation in the study to determine any representation issues with the sample.

There are no statistical differences in the sample who agreed and those who declined by gender or age. However, refusal data suggests visitors exiting via Flatbush were more likely to decline participation in the study.

FOLLOW UP QUESTIONS

Following the submission of the final report for the summative evaluation of the Discovery Garden, BBG staff requested additional analysis on data related to two questions: the comparison of ages between adult-only groups and groups that included children, and the ages of children in groups with respondents who said certain activities were not age appropriate. The findings from these inquiries can be found in Appendix C.

QUESTIONNAIRE FINDINGS

A total of 225 questionnaires were collected from Discovery Garden visitors between April 2016 and August 2016. RK&A analyzed the statistical differences between groups of participants to compare and explore the effects of different factors on visit experience. For example, statistical analysis was compared between respondents who used the docent carts versus those who did not (responses when carts were unavailable were collapsed into this group), and between adult-only groups and family groups that had at least one child. Few statistically significant differences were found. As a result, these differences are presented in the narrative of the section where they emerged. We have presented all results in percent or mean of participants who responded.

DATA COLLECTION CONTEXT

Thirty percent of questionnaires were collected in spring (April and May) and 70 percent were collected in summer (June, July, and August).[5] The majority of questionnaires were collected on weekends (60 percent). Data collectors intercepted visitors to participate in the study evenly at both entrance/exits to the Discovery Garden; 51 percent of questionnaires were collected at the Four Seasons entrance/exit, and 49 percent at the Flatbush entrance/exit.

Table 1

Season of Visit (n=224)	All Questionnaires %
Summer (June, July, August)	70
Spring (April-May)	30

Day (n=225)	All Questionnaires %
Weekend	60
Weekday	40

Location (n=222)	All Questionnaires %
Four Seasons	51
Flatbush	49

[5] It should be noted that data collection was cancelled whenever docent carts were cancelled for reasons such as rain and severe heat.

Respondents included in the sample were recruited in the Discovery Garden. Groups were most often composed of children and adults (54 percent). More than one-quarter of those groups were composed of multiple adults and children (29 percent), and 25 percent had one adult with multiple children. Forty-seven percent of groups were composed of adults only. Of those adult groups, 40 percent had multiple adults and 7 percent of groups were solo individuals.

It should be noted that adult-only groups completed only part of the questionnaire, including demographic questions, questions about previous visitation, and whether they used the docent carts. BBG and RK&A were interested specifically in the experience of family groups in the Discovery Garden, so many of the questions about using exhibit elements were skipped for adult-only groups.

Table 2

Group Type (n=224)	All Respondents %
With children	54
Multiple adults with children	29
One adult with children	25
Without children	47
Multiple adults	40
One adult	7

CHILD/ADULT RELATIONSHIP

Respondent groups that included children were asked what the relationship was between the adults and the children. Most groups with children are accompanied by parents (77 percent), with some accompanied by relatives (17 percent), and a nanny or babysitter (10 percent). A few respondents selected "other," and write-in responses include, "friend of parent," and "teacher and nanny." Some respondents gave multiple responses, so the percentages do not total 100.

Table 3

Child/Adult Relationship (n=120)	All Respondents %
Parent	77
Relative	17
Nanny/Babysitter	10
Other	3

DEMOGRAPHICS

Almost three-quarters of BBG visitors who participated in the questionnaire are female (71 percent). Respondents ranged in age from 18 years old to 77 years old; the median age for participants is 35 years old.

Table 4

Gender (n=204)	All Respondents %
Female	71
Male	29

Age (n=187)	All Respondents %
Median	35
Mean	37
Standard deviation	± 12.8
Min	18
Max	77

Age Category (n=187)	All Respondents %
18 – 24 years	12
25 – 34 years	36
35 – 44 years	31
45 – 54 years	10
55 – 64 years	4
65 + years	6

AGE OF CHILDREN

Groups that included children were asked to record the ages of those children. These groups were composed of children of various ages; the largest segment was 3 to 7 year olds (51 percent), followed by less than 2 years old (28 percent), 8 to 12 years old (18 percent), and 13 to 17 years old (2 percent). In groups with children, the median number of children is one.

Table 5

Ages of Children With Respondents (n=120)	Children %
< 2 years	24
3 – 7 years	36
8 – 12 years	13
13 – 17 years	2

Number of Children Per Group (n=120)	Groups with Children
Median	1.0
Mean	1.8
Standard deviation	± 1.0

ETHNICITY

The greatest percentage of respondents identify as Caucasian/Euro American (66 percent), followed by Hispanic/Puerto Rican (12 percent), Asian/Pacific Islander (9 percent), Black/African American (8 percent), and Alaskan/American Indian (2 percent). A few selected "other" (4 percent), and write-in responses include "Jewish," "Jamaican," and "all of the above." Some respondents identify with multiple ethnicities, the total exceeds 100 percent. About one-quarter of participants chose not to identify their ethnicity.

Table 6

Ethnicity (n= 177)	All Respondents %
Caucasian/Euro American	66
Hispanic/Puerto Rican	12
Asian/Pacific Islander	9
Black/African American	8
Other	4
Alaskan/American Indian	2

RESIDENCE

Most respondents are United States residents (88 percent), with 12 percent visiting from other countries. Those countries include Argentina, Canada, Chile, China, Denmark, England/UK, France, Germany, Israel, Italy, Mexico, Morocco, Portugal, Ukraine, and Venezuela.

Of those respondents who are United States residents most live in New York State (85 percent). A small percentage of respondents came from various other states across the country, including New Jersey (4 percent), Massachusetts (2 percent), and Connecticut (2 percent).

Table 7

Country of Origin (n=206)	All Respondents %
US resident	88
Foreign resident	12

State of Origin (n=181)	All Respondents %
New York	85
New Jersey	4
Massachusetts	2
Connecticut	2
Texas	1
Virginia	1
Illinois	< 1
Maryland	< 1
Florida	< 1
California	< 1
Ohio	< 1
Oregon	< 1
Pennsylvania	< 1
Georgia	< 1

LANGUAGE

Respondents were asked to select their primary language and some selected more than one language. Most respondents said they primarily speak English (83 percent). Ten percent said their primary language is Spanish, 5 percent speak Russian, 3 percent speak Mandarin, and 2 percent speak Yiddish. An additional 3 percent responded with "other" and write-in responses include "French," "German," "Italian," and "Portuguese."

Table 8

Language (n=195)	All Respondents %
English	83
Spanish	10
Russian	5
Mandarin	3
Other	3
Yiddish	2

EDUCATION LEVEL

The majority of respondents are college educated; 38 percent hold graduate or professional degrees, and 35 percent have college degrees. Some respondents have completed some college courses (11 percent), have graduated high school (8 percent), have completed some graduate courses (4 percent), or completed some high school courses (2 percent).

Table 9

Education Level (n=205)	All Respondents %
Some high school	2
High school graduate	8
Technical school	1
Some college	11
College graduate	35
Some graduate school	4
Graduate/Professional degree	38

INCOME

While 43 percent of the sample chose not to identify their household income, those who reported their income most often fell into the highest earning category, $100,000+ (21 percent). A smaller percentage of respondents fell into the following categories: $40,000- $59,999 (9 percent), $60,000- $79,999 (8 percent), $20,000- $39,999 (7 percent), below $20,000 (6 percent), and $80,000- $99,999 (5 percent).

Table 10

	All Respondents
Income (n=224)	**%**
Below $20,000	6
$20,000- $39,999	7
$40,000- $59,999	9
$60,000- $79,999	8
$80,000- $99,999	5
$100,000 +	21
Did not respond	43

PREVIOUS VISITATION

More than one-half of respondents had been to BBG before (58 percent). Of repeat visitors to the BBG, more than one-half had visited the Discovery Garden before (61 percent), with many visiting multiple times in the last year. Of those respondents who visited the Discovery Garden six or more times in the last year, 79 percent said they visit the Discovery Garden approximately weekly during certain seasons.

Table 11

Visitation To BBG (n=224)	All Respondents %
Repeat visitor	58
First visit	42

Repeat Visitors' Visitation To Discovery Garden (n=138)	All Respondents %
Not at all	40
Once	20
2-3 times	15
4-5 times	12
6 or more	14

Weekly Visitation to Discovery Garden (n=14)	All Respondents %
Yes, during some seasons	79
No, do not visit weekly	21

MEMBERSHIP

The majority of respondents are not members of BBG (60 percent). It should be noted that due to certain skip logic used in the online survey, only groups with children were able to respond to this question.

Table 12

	Groups with Children
Membership (n=120)	**%**
No, I'm not a member	60
Yes, I'm a member	40

DOCENT CART PROGRAM PARTICIPATION

Almost one-half of respondents did not participate in the docent-led activities (48 percent). Forty-two percent used the carts. The carts were not available for 9 percent of visits. Table 13 shows a comparison of cart use between adult-only groups, groups with children, and all questionnaire participants to explore whether there are behavior differences between these groups.

Table 13

Cart Program Participation (n=224)	Adult-only Groups %	Groups with Children %	All Respondents %
No, I did not[1]	71	28	48
Yes, I participated	12	68	42
Unavailable/not present	15	3	9
I'm not sure	1	0	< 1

[1] $X^2 = 72.3$; $p = 0.00$

STATISTICALLY SIGNIFICANT RELATIONSHIPS

- **Group type and cart participation –** Adult-only groups are less likely to use the docent carts than groups with children.

Respondents who participated in the docent cart activities were asked which cart they used during their time in the Discovery Garden. More than one-half used the Monarchs and Milkweed activity cart (54 percent), while 35 percent used the Botany Bonanza cart and 20 percent used the Music cart. A smaller portion of respondents used the Worms cart (9 percent), Predatory Plants cart (8 percent), and the Wonderful Woodlands cart (1 percent).

Table 14 shows a comparison of cart use between adult-only groups, groups with children, and all questionnaire participants to explore whether there are behavior differences between these groups.

Table 14

Name of Cart (n=95)	Adult-only Groups %	Groups with Children %	All Respondents %
Monarchs and Milkweed	31	57	54
Botany Bonanza	38	34	35
Music	0	23	20
Make and Take	7	13	13
Soggy Soil/Science	0	13	12
Potting Plants	0	12	10
Insect Hotel	15	10	10
First Discoveries	0	12	10
Worms	0	11	9
Predatory Plants[1]	38	4	8
Wonderful Woodlands	0	1	1

[1] $X^2 = 17.6$; $p = 0.00$

STATISTICALLY SIGNIFICANT RELATIONSHIPS

- **Group type and cart participation –** Adult-only groups are significantly more likely to use the Predatory Plants carts than groups with children.

Groups with children who participated in activities with docents were asked which individual spoke the most with the docent during the activity. Most often the children in the group spoke with the docent (43 percent). Thirty-one percent of groups had adults conversing with the docent most often, and 25 percent of groups had children and adults talking with the docent. Note that the rest of the questionnaire was completed only by groups that included children, except the question about additional feedback (see Table 25). BBG and RK&A were interested specifically in the experience of family groups with different exhibit elements. At this point, data collectors skipped to the end of the questionnaire for adult-only groups.

Respondents were asked to rate their experience of the docent-led cart activities on a scale from 1 to 7, with 1 representing a negative score on a continuum and 7 representing the most positive score. Respondents rated their experiences positively, with mean rating scores between 5.9 and 6.3 out of 7 for each variable. The highest mean rating scores were about the docent activities being hands-on (mean = 6.3) and being fun (mean = 6.3).

Table 15

Spoke With Docent (n=83)	Groups with Children %
Children only	43
Adults only	31
Adults and children	25

Statements Rated on Scale: 1 – 7	n	Groups with Children Mean Rating
1 = Hands-off / 7 = Very hands-on	84	6.3
1 = Boring / 7= Fun	83	6.3
1 = Not educational / 7 = Very educational	84	6.2
1 = Not age appropriate / 7 = Age appropriate	84	6.1
1 = Superficial / 7 = Deeply engaging	83	5.9

Respondents who did not engage in the docent-led activities were asked why they chose not to do so. Respondents most often said they did not notice the carts (30 percent). Some said the activities were not age appropriate for their group (22 percent), the activities were not interesting to the group (13 percent), or that the group was short on time (8 percent). Several respondents selected "other," and write-in responses include comments about choosing to do other activities and language barriers. Some gave multiple reasons for not participating, so the total exceeds 100 percent.

Table 16

Why Visitors Did not Participate in Cart Program (n=37)	Groups with Children %
Did not notice them	30
Not age appropriate for my group	22
Other	19
No response	13
Not interesting to me or my group	13
Short on time	8
Too crowded	0

DISCOVERY GARDEN EXHIBITS

Groups with children visiting the Discovery Garden were asked if they used the exhibits. Most respondents used the exhibits (83 percent).

Respondents who used the exhibits were asked how they used them during their time in the Discovery Garden. More than three-quarters said the exhibits prompted them to try an activity (79 percent). Twenty-one percent of respondents used the exhibit to tell them more about what they were looking at, and another 21 percent were prompted by the exhibits to look for certain objects, including plants and animals, in the garden. Some respondents used the exhibits to prompt discussions (20 percent). Seven percent selected "other", and write-in responses include comments about young children playing with the exhibit elements.

Table 17

Used Exhibits (n=120)	Groups with Children %
Yes, I participated	83
No, I did not	14
I'm not sure	2
Unavailable/not present	< 1

How Visitors Used Exhibits (n=100)	Groups with Children %
Prompt us to try an activity	79
Tell us more about what we're looking at	21
Prompt us to look for certain Garden objects	21
Prompt us to discuss the questions on the exhibits	20
Other	7

Respondents who did not use the exhibits in the Discovery Garden were asked why they made that decision. Thirty percent of respondents chose "other," and write-in responses include comments about choosing to do other activities and the hot weather. Some did not notice the exhibits (20 percent), some felt the exhibits were not age-appropriate for the group (15 percent), and some did not have time to use the exhibits (15 percent). A few felt the exhibits were too crowded (10 percent) or they were not interested in the exhibit content (10 percent).

Table 18

Why Visitors Did Not Use Exhibits (n=20)	Groups with Children %
Other	30
Did not notice them	20
Not age appropriate for my group	15
Short on time	15
Too crowded	10
Not interesting to me or my group	10

FIELD GUIDE CARDS

Groups with children were asked if they used the field guide cards during their time in the Discovery Garden. Almost three-quarters of respondents did not use the field guide cards (73 percent).

Groups who did not use the field guide cards were asked why they made that decision. Almost one-half of respondents said they did not notice the cards (46 percent). Other respondents did not think the cards were age appropriate for the group (29 percent), were not interested in the cards (14 percent), or did not have time to use the cards (9 percent). Eleven percent of respondents chose "other", and write-in responses include comments about choosing to do other activities, language barriers, and allowing the children in the group to take the lead in determining the flow of the visit.

Table 19

Used Field Guide Cards (n=120)	Groups with Children %
No, I did not	73
Yes, I participated	27
Unavailable/not present	0
I'm not sure	0

Why Visitors Did Not Use Field Guide Cards (n=87)	Groups with Children %
Did not notice them	46
Not age appropriate for my group	29
Not interesting to me or my group	14
Other	11
Short on time	9
Too crowded	0

FIELD JOURNAL

Most groups with children said they did not use the field journal while visiting the Discovery Garden (65 percent) while some said it was unavailable during their visit (22 percent). Thirteen percent of respondents used the field journal during their visit.

Groups that did not use the field journal were asked why they made that decision. Most often respondents said they did not notice the field journal (43 percent), while some thought it was not age appropriate for the group (21 percent). A few respondents did not have time to use the field journal (5 percent), were not interested in the journal (2 percent), or thought it was too crowded to use the journal (1 percent). A few respondents chose "other" (10 percent), and write-in responses include comments about choosing to do other activities or that the field journals were not available that day.

Table 20

Used Field Journal (n=120)	Groups with Children %
No, I did not	65
Unavailable/not present	22
Yes, I participated	13
I'm not sure	0

Why Visitors Did Not Use Field Journal (n=104)	Groups with Children %
Did not notice them	43
Not age appropriate for my group	21
Other	10
Short on time	5
Not interesting to me or my group	2
Too crowded	1

TOUCH PLANTS

The majority of groups with children touched plants during their visit to the Discovery Garden (79 percent).

Groups that did not touch plants were asked why they made that decision. Sixty-four percent said they did not realize that they could touch the plants, 12 percent were not interested in touching plants, and 4 percent did not have time. A few respondents chose "other" (20 percent), and write-in responses include comments about choosing not to touch plants today, concerns about insect stings or bites, or that they smelled but did not touch plants.

Table 21

Touch Plants (n=119)	Groups with Children %
Yes, I participated	79
No, I did not	21
Unavailable/not present	0
I'm not sure	0

Why Group Did Not Touch Plants (n=25)	Groups with Children %
Did not realize I could	64
Other	20
Not interesting to me or my group	12
Short on time	4
Too crowded	0
Not age appropriate for my group	0

ACTIVITIES VISITORS MISSED

Groups with children were asked if there was anything they would have liked to do in the Discovery Garden but were unable because it was unavailable. Respondents most often responded that they did not feel like they missed anything during their visit (39 percent). Several would have liked to experience the water pump (15 percent) and the marsh (10 percent). A few respondents said they were unable to experience certain activities that were available due to crowding in the Discovery Garden (11 percent). Nineteen percent gave responses that did not fit into any category. Those write-in responses include comments about the hot weather, aspects of the former garden that visitors enjoyed which are no longer available, and wanting to picnic in the garden. Some participants gave multiple activities they would have liked to experience, so the total exceeds 100 percent.

Table 22

Activities Visitors Missed (n=72)	Groups with Children %
Nothing/ I didn't feel like I missed anything	39
Other	19
Water Pump	15
Marsh	10
Crowded	11
More hands-on activities	7
Short on time/ missed time for program	4

TAKE-AWAYS FROM THE DISCOVERY GARDEN

Groups with children were asked to rate their experience in the Discovery Garden on a scale from 1 to 7, with 1 being "does not describe my experience," and 7 being "describes my experience." In general, respondents rated their experiences positively. The highest mean ratings were given for "Felt excited to explore nature on my own more often" (mean = 6.1), and "Learned something new about plants" (mean = 5.8). The lowest ratings were given for "Felt like a scientist studying nature" (mean = 4.8), and "Thought about how nature changes in different seasons" (mean = 4.6).

Table 23

Statements Rated on Scale: 1= Does Not Describe My Experience / 7= Describes My Experience	n	Mean Rating Groups with Children
Felt excited to explore nature on my own more often	117	6.1
Learned something new about plants	116	5.8
Became more comfortable interacting directly with nature	115	5.7
Was amazed by the different plants I saw	115	5.7
Learned how to observe plants closely	116	5.3
Learned how to use my senses to explore plants	117	5.2
Learned ways to explore plants to use throughout the rest of BBG	116	5.2
Felt like I was doing science	116	5.1
Thought about how plants and animals live together in different habitats	115	4.9
Felt like a scientist studying nature	115	4.8
Thought about how nature changes in different season	116	4.6

CAREGIVER ROLE IN THE DISCOVERY GARDEN

Groups with children were asked to use the following statements to complete the sentence: "In the Discovery Garden, I felt comfortable…." Respondents were asked to rate each statement on a scale from 1 to 7, where 1 is "Does not describe my experience in the Discovery Garden" and 7 is "Describes my experience in the Discovery Garden." In general, respondents rated their experiences positively. The highest mean ratings were given for experiences like "Letting the children I am with explore nature" (mean = 6.7), and "Facilitating exhibit activities for the children I am with" (mean = 6.5). Slightly lower ratings were given for "Talking about plants and animals with the children I am with" (mean = 6.4), and "Helping the children I am with use scientific tools like magnifying glasses" (mean = 5.8).

Table 24

Statements Rated on Scale: 1= Does Not Describe My Experience / 7= Describes My Experience	n	Mean Rating Groups with Children
Letting the children I am with explore nature.	118	6.7
Facilitating exhibit activities for the children I am with.	117	6.5[1]
Talking about plants and animals with the children I am with.	117	6.4
Helping the children I am with use scientific tools like magnifying glasses.	118	5.8

[1] $X^2 = 23.34$; $p = 0.01$

STATISTICALLY SIGNIFICANT RELATIONSHIPS

There was one statistical difference between the mean ratings of participants who used the docent carts versus those who did not use the carts or could not use the carts.

- **Cart participation and mean ratings –** Groups who used the docent carts are more likely than those who did not to feel comfortable "Facilitating exhibit activities for the children I am with."

ADDITIONAL FEEDBACK

All respondents were asked if there was other feedback they would like to give about their experience at the Discovery Garden. Respondents most often (45 percent) gave general positive feedback about their experience, saying, "it's beautiful," "very nice," and "I love this garden." Fifteen percent gave specific suggestions for improvement, such as "the only thing we want to know is why the water marsh part is not working," "beautiful garden but too much concrete," "more shady areas," "too many broken activities in discovery garden, very disappointed," and "need mesh in back section like in the front for safety." Some respondents (15 percent) gave positive feedback about certain aspects of the Discovery Garden, for example, "we really enjoy that we can actually touch plants to feel the different texture of leaves," "we really love the text materials, like the plastic cards. It's fun to read," and "liked the potting station -- very hands on!" Seventeen percent said they had no additional feedback for BBG about the Discovery Garden, and 8 percent gave responses that did not fit into any category. Those write-in responses include comments about the hot weather, aspects of the former garden that visitors enjoyed which are no longer available, and wanting to eat the vegetables growing the in garden.

Table 25

Additional Feedback (n=114)	All Respondents %
General positive comments	45
Suggestions for improvement	15
Positive comments about specific aspects	15
No/nothing	17
Other	8

USE OF COLORING PAGES

Children were offered coloring pages to occupy them during the questionnaire. More than one-half of groups with children colored in the Marimba page (53 percent). Forty percent chose to draw on a blank page, and 27 percent colored in the Bird's Nest page. A few took the Woodland page (10 percent) or the Seed Play page (7 percent). Some participants chose to color multiple pages, so the totals exceed 100 percent.

Table 26

Coloring Pages (n=30)	Groups with Children %
Marimba	53
Blank page	40
Bird's Nest	27
Woodland	10
Seed Play	7

FOCUSED OBSERVATIONS AND INTERVIEWS

DATA COLLECTION CONTEXT

This section of the report presents a summary of first, docent cart program observations; and second, visitors interview data collected on May 15, May 22, July 10, July 13, July 24, August 9, and August 13, 2016. Observation data highlights key trends relating to designated outcome areas and from the interview data are presented by question (see Appendix B for interview instrument). In both sections, differences across carts are noted as relevant.

PROGRAM OBSERVATIONS

RK&A conducted 14.5 hours of observations of the docent carts in the Discovery Garden. Four and a half hours of observation were conducted between May 15 and 22, and nine hours between July 10 and August 13. Observation time was evenly distributed between the two carts available each day. The evaluator observed a total of 67 family groups and 15 adult-only groups. This included 32 family groups and 6 adult groups at the Botany Bonanza and Mystery Plant carts, and 35 family groups and 9 adult groups at the Monarchs and Milkweed cart.

INTERVIEWS

Data collectors conducted 20 interviews with families who stopped at a docent cart during the six dates of program observation. Interviews were conducted with one adult from each family. Among these:

- 10 were conducted with families who visited the Botany Bonanza and Mystery Plant carts.
  - The age range of interviewed adults was 27-67, with a median age of 41 years old.
  - Interviewed adults included six men and four women.
  - Three interviewees were visiting with more than one child, ranging in age from 2 to 7 years old.
- 10 were conducted with families who had visited the Monarchs and Milkweed cart.
  - The age range of interviewed adults was 26-47, with a median age of 37 years old.
  - Interviewed adults included nine women and one man.
  - Six interviewees were visiting with more than one child, ranging in age from 10 months to 11 years old.

PROGRAM OBSERVATIONS

ACTIVE AND ENJOYABLE EXPERIENCES OF THE NATURAL WORLD

Interactive experiences bridging hands-on and inquiry-based teaching empowered visitors' participation. Encouraged by docents who told them, for example, "You can touch anything on here. That's what it's for!" visitors to all carts regularly handled live plant materials and naturalist tools. For example, they rubbed their fingers on a lemon balm leaf before smelling it, and picked up magnifying glasses to look closely at butterflies preserved in resin. Docents consistently engaged visitors through questions ranging from, "What does this smell like to you?" to "Butterflies start out as tiny, tiny eggs, and then what do they turn into?" Visitors were also encouraged to ask questions themselves. On a few occasions, parents encouraged their children to listen, and in response docents made a point of empowering the children's participation. For example, one docent at the Monarch and Milkweeds cart stated: "No, it's great. Inquisitive people make the world go round; they make the world stronger!"

Visitors expressed pleasure and curiosity following hands-on encounters. Visitors engaging with live plants and real objects demonstrated their appreciation for the wonders of the natural world. At the Botany Bonanza and Mystery Plant carts, this was often in direct response to smells. For instance, after rubbing a leaf of the lemon balm plant, one woman proclaimed, "That smells so *good*." A 7-year-old boy smelling a peppercorn plant said, "It's so strong! Man oh man!" At the Monarchs and Milkweed cart, children were often moved by information on the importance of conserving butterflies. For example, children across two family groups spent time examining the butterfly in resin, asking multiple questions about how the butterfly died and how people could "keep butterflies alive." One of these children, before leaving the cart, proclaimed, "I love butterflies! They're so cool! I love them. They're very important."

SCIENCE CONTENT AND SCIENCE SKILLS

Docents at Monarchs and Milkweed strongly emphasized science content over science skills. Docents working with adult and family groups did not link cart activities to the process of doing science, though they consistently provided scientific information as visitors explored materials on the cart. For instance, docents framed visitors' experience at the outset by greeting them with, "Would you like to learn about butterflies?" or telling them, "We're trying to help educate people about why it's so important to protect the butterflies!" Docents emphasized basic botany and ecology concepts by using models to walk visitors through the life cycle of the butterfly, or by discussing the hypothetical scenario of a farmer planting his milkweed. Throughout they provided facts and introduced new vocabulary, including how butterflies' markings correlated with their sex and that the proper name for its cocoon was a "chrysalis." Interview data and visitors' comments, such as one father's acknowledgment before leaving the cart that his family's experience "was very educational," suggest visitors' takeaways from this cart deepened their understanding of science and nature.

Docents at the Botany Bonanza and Mystery Plant carts inconsistently emphasized both science content and science skills. Docents discussed using the senses as tools for discovery and knowledge with slightly less than one-fifth of groups observed at these carts. Only a few groups had docents who explained the activity was a way to explore how botanists or scientists

use their senses to make observations. Docents typically encouraged visitors' participation at these carts by inviting them "play a game" or "figure out what a plant is," and at times even more casually by asking "Want to smell some stuff?" or "Would you like to smell something really, really pretty?" During interactions, docents focused on encouraging visitors to interact with and smell plants and scent bottles available at the cart, and asked them to describe, identify, and (less frequently) compare what they were sensing.

ENGAGEMENT STRATEGIES

Diversity in engagement opportunities varied across carts. Docents were comfortable adapting content to the experiences of different audience groups. They did so, for instance, by inviting personal associations, such as asking visitors what "favorite food" they would choose to eat for the rest of their lives before sharing that butterflies only ate milkweed. Overall, however, docents at the Monarchs and Milkweed cart had more resources and activities available and thus had an easier time adapting activities to engage diverse visitors compared to those at the Botany Bonanza and Mystery Plant carts. For instance, when children (and particularly younger children) were not interested in learning about milkweed conservation or the butterfly's life cycle, these visitors regularly picked up or played with picture books, puppets, costume butterfly wings, and models of monarch butterflies preserved in resin available on the cart. In contrast, activities at Botany Bonanza and Mystery Plant were limited to touching, smelling, and identifying plants. Children in several family groups, with estimated ages ranging from 4 to 8, grew bored at this cart. For example, one specifically prompted his or her parent to leave.

The degree and type of visitor engagement varied across and within groups. In general, docents allowed adult groups to ask about topics of personal interest, such as whether milkweed was toxic to outdoor pets, where butterfly sanctuaries were located in the United States, and whether lemon balm could grow indoors. With family groups, docents followed a more prescribed script, and did not overtly encourage family members to interact with one another. Docents tended to ask questions of all family members, and in response, adults typically let children take the lead in conversing with docents and participating in cart activities, often standing behind them. On the other hand, adults tended to respond most often to docents if their children were younger than 4 years old, if their children were initially shy about engaging docents directly, or if their children were bored and had ceased participating.

The Mystery Plant cart format promoted adult involvement more than other carts. The format of the Mystery Plant cart prompted adult involvement in activities for two reasons. First, children in about one-third of family groups observed expressed hesitation about engaging with the "mystery plants" hidden in boxes. For instance, when encouraged to reach in and touch the plants, one boy asked: "Is it going to hurt me?" These children often relied on other family members to take the lead before being willing to reach into the boxes on their own, with one mother stating cheerfully, "So I'll be brave for you. Mommy will be brave." Second, more than one-third of groups observed struggled with identifying smells. In several family groups, children acknowledged their difficulty by stating, for instance, "This is hard" or "I just don't know!" At this point, adults in their group typically began to assist them by making their own guesses.

PARTICIPANT INTERVIEWS

WHY PARTICIPANTS CHOSE TO ENGAGE WITH DOCENT CARTS

Most participants – nearly one-half of whom had visited the Monarchs and Milkweed cart – described a specific feature of the cart that was attractive to their families, such as the docent inviting them to "play a game" or seeing an array of "hands-on materials." Among these, about one-third stated that butterflies were a particularly enticing draw. For instance, one 32-year-old woman said of her 7-year-old daughter, "Oh you know, she loves butterflies." A 38-year-old woman said, "The kids saw the butterflies, and the wings, and they came right over." One-quarter of participants expressed a general sense of curiosity about the cart. For example, a 37-year-old man said the Botany Bonanza cart "was just there, so we stopped," and an 18-year-old woman said her family was "walking in this direction." One-fifth of participants said they stopped because the docent cart generally seemed "good" for kids, because it was "interactive" or because they "really like[d] it when [their] kids learn."

WHAT PARTICIPANTS LIKED MOST

Most participants – more than one-third of whom were discussing the Botany Bonanza or Mystery Plant cart – felt the cart offered a rare opportunity to interact with nature in a "hands-on" way that engaged multiple senses. For example, one 45-year-old man said the Botany Bonanza cart allowed his 7-year-old son to "touch, and to smell, because usually this kind of stuff is just looking and seeing, so it was nice they got to use all the senses, or more of them, at least." One-half of participants – several of whom were discussing their experiences at Monarchs and Milkweed – referenced the learning experiences the carts provided, though they described these with different levels of specificity. Among these:

- One-quarter spoke more generally. For example, they said they liked to take their children to the botanic garden because there were always opportunities for them to learn there.
- One-quarter named a particular fact they had taken away from the cart, four of whom had visited Monarchs and Milkweed. For instance, they said they learned about the importance of protecting butterflies by conserving milkweed, and that male and female butterflies are marked differently.
- One-quarter of participants praised the docent's facilitation strategies, such as their commitment to fostering conversation, their "very sweet" and patient disposition, and their ability to present information in a logical sequence.

WHAT PARTICIPANTS LIKED LEAST

Most participants stated there was nothing they liked least, more than one-third of whom had visited the Monarchs and Milkweed cart. One-third of participants interviewed at the Botany Bonanza and Mystery Plant carts said they wished there had been "more to do." They noted, for example, that the game was "pretty easy" and that it would have been preferable to have "more plants to test out" so that the children could "compare" them or so it would be "more fun for them." A couple of participants interviewed at the Monarchs and Milkweed cart felt having "real butterflies" would be "cool" and would give the children a "real sense" of the insects.

PARTICIPANTS' PERSPECTIVES ON INTERGENERATIONAL LEARNING

Nearly one-half of participants said the docent interacted primarily with their child, with nearly one-third noting this was "appropriate" and to be expected since the experience was "for" the children. One-third of participants stated the docent interacted with both them and their child. One-third of participants felt the docents interacted primarily with them, either because their child was "shy" or was "too young" for the docent to engage them directly. Overall, participants interviewed did not feel the docents explicitly encouraged them to interact with their children. A couple of participants specifically said this was okay because their child was "fine" or "independent" and did not need to be assisted.

PARTICIPANTS' PERSPECTIVES ON AGE-APPROPRIATE CONTENT

Overall, participants described their family's experiences at the carts as age-appropriate for their children. They provided two main reasons why:

Nearly one-half of participants said a "sensory" or multi-modal approach, where children could "touch things" and rely on "models" was particularly effective for their child. For instance, one 47-year-old woman said her 5-year-old daughter's experience at Monarchs and Milkweed was "good [for her age] because there are pictures and models, and she's using her eyes, her ears, her hands. It's very active. There's three or four ways of getting information all at one time." A 53-year-old man said the "sensory approach [was] good for" his 7-year-old daughter because "it's more concrete. Less abstract."

Nearly one-half of participants highlighted docents' ability to successfully adapt to children with varying age levels and interests. Among these:

- One-quarter of participants with children whose ages ranged from 7 to 11 said that their children were curious about content and comfortable asking questions or being "quizzed," and that docents engaged them at this level.
- A few participants described how docents successfully adapted to the varying ages of children in their families. For example, one 39-year-old woman said, "My younger son [7 years old] loves butterflies, so he got into all the puppets and the kite. But I think my older son [10 years old] was more interested in how they are disappearing because the plants they eat are going away. So there was something for everyone."
- A couple of participants with children ages 2 years old and 20 months, respectively, acknowledged their children were young and thus needed extra "help" or "encouragement and prompting" to engage with the docents. However, participants felt it was clear that the docents were aware of this and worked to adapt.

WHAT PARTICIPANTS TOOK AWAY

When asked what they or their children would take away from their experiences at the cart, answers varied by type of cart. Specifically:

Nearly all of the participants interviewed about the Botany Bonanza and Mystery Plant cart mentioned opportunities for their families to smell the plants. Among these:

- One-half of the participants who visited these carts discussed how the cart offered opportunities to "identify," "recognize," or "compare" plants by their scent.
- Nearly one-half of the participants who visited these carts said the cart offered their family the opportunity to smell plants, but that the experience did not have a learning goal. For instance, one 42-year-old woman stated, "Smells. I mean, I don't know. Touching things. Nothing more." A 38-year-old woman said, "With the smells, I really don't think there was anything to learn, per se."
- At the Monarchs and Milkweed cart, all participants shared a specific fact they had learned. These included, for example, that the monarch was indigenous to South America; that their orange color means they are poisonous; how "caterpillars become butterflies;" and how conserving milkweed supported a broader ecosystem in which "plants, animals, and people depend on each other."

When asked if they had learned anything about science, answers again varied by type of cart.

- At the Botany Bonanza and Mystery Plant carts, nearly all participants said they had not learned about science. One participant noted that perhaps the cart was about science "in a more general sense," since "in general science is about comparison and classification." Another said the idea "that different plants have different smells" might more broadly be related to science.
- At the Monarchs and Milkweed cart, all participants said they had learned about science, though the examples they provided varied and often reinforced facts they had previously shared. For instance, nearly one-half of these participants discussed learning that butterflies eat milkweed, and why it was important to conserve the plant; a few mentioned learning the proper terminology for cocoon was "chrysalis;" and a few said they had learned about the life cycle of the butterfly.

APPENDICES

Removed for proprietary purposes.