



***U.S. Botanic Garden  
Visitor Research Study  
Final Report***

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## EXECUTIVE SUMMARY

In 2006, the U.S. Botanic Garden (USBG) decided to conduct an institution-wide study of their visitors—why they come to the Botanic Garden, how they utilize the space, their level of satisfaction with the experience, and overall effectiveness of the USBG’s exhibitions and interpretation-- in order to provide input to a strategic planning process that will align its living collections with its educational mission. To date, the only existing data characterizing USBG visitors was gathered in the early 1990s. Since then, the USBG has undergone a major transformation, including complete renovation of its 1933 Conservatory (completed 2001), preparation and implementation of an interpretive master plan, and restructuring its staff and programs.

The Institute for Learning Innovation (ILI), a non-profit research and evaluation focused on understanding free-choice learning, was contracted to conduct the visitor study collaboratively with senior staff at the US Botanic Garden. The study was not intended to be prescriptive, but rather provide the USBG with a rich picture of their visitors, their experience, and outcomes in order to guide the institution in future decision-making.

The central evaluation questions for this study were as follows:

- 1) Who is coming to the USBG?
- 2) Why are visitors choosing to visit?
- 3) What is the nature and level of visitors’ engagement in the experience?
- 4) What do visitors take away from their experience at USBG?

Multiple methods were used over the course of a year (Fall 2007 to Summer 2008) to answer these questions, including observational demographics, cued timing and tracking of visitors, exit interviews, and individual room interviews. Researchers also used a previously tested framework of “enacted identities” or “entry narratives” based on visitors’ motivations for coming to a free-choice learning setting, which identifies five visitor types: *The Explorer*, *Professional/Hobbyist*, *Facilitator*, *Spiritual Pilgrim*, and *Experience Seeker*. Looking across these four sub-studies, the following key trends emerged:

- **Visitors motivated by personal interests and “spiritual” renewal.** The visitors to the USBG are coming largely because they are personally interested in plants, are plant “hobbyists,” and/or want to experience the beauty of the garden’s plants and flowers as a means of relaxation and renewal. Fewer visitors have a learning agenda (though those that do are focused specifically on learning about plants), or a social agenda—that is, they are coming for the benefit of others, such as their children.
- **Visitors value the aesthetic, immersive experience of plants.** USBG visitors were predominantly focused on enjoying the plant life and immersing themselves in “real,” authentic environments. They strongly appreciated the visual beauty of the gardens and the overall sensory experiences (sights, sounds, smells) of being there.

- **Visitors also value learning more about plants, but less so than experiencing them.** Many visitors to the USBG were also interested in learning more about plants and ecosystems, and their relationship to human society, or they appreciated the educational aspect of the garden once they got there. While this agenda was most often secondary to the more affective ones, if present at all, it seems clear that visitors appreciate having both experiences available to them. That is, the US Botanic Garden is successfully providing both an aesthetic and an educational experience.
- **Visitors are extremely satisfied with their experience at the USBG.** Both as an overall experience and by specific rooms/areas, visitors consistently conveyed extremely high levels of satisfaction. This suggests that there is no urgent need to change the exhibits and interpretive approach of the Conservatory from the visitor perspective.
- **Use of interpretive materials seemingly low, but may be sufficient.** While the percentage of visitors using the extended labels and panels at first appears low, one must keep in mind that the Conservatory offers a great deal of interpretation and cannot expect visitors to utilize high percentages of them. Rather, visitors will choose to read about what interests them most; further, research supports the fact that few visitors to museums and museum-like settings are avid “label readers,” so other methods of interpretation are often necessary. That said, the study showed that there is some room for improvement in the interpretive approaches of the Botanic Garden, such as making content more simple and clear, placing signage in more “obvious” places (especially making sure it’s not hidden behind foliage), and using visual designs that stand out more.
- **Visitors’ understanding of the “Big Ideas” is closely aligned with the USBG mission and goals.** Despite the relatively low use of interpretive materials, visitors picked up on many of the key messages the USBG hopes to convey—such as diversity of plant life and ecosystems, the importance of protecting and conserving habitats, how plants work, how people use and impact the natural environment, appreciating the beauty of nature, and experiencing environments and foliage that one may not experience otherwise (such as a tropical forest or desert).
- **Visitors had more trouble understanding themes/messages in individual rooms.** Visitors were less likely to pick up on the intended theme or message of the individual rooms. Those who spent more time in the room or read more were slightly more likely to get a basic understanding of the theme, but generally visitors struggled to articulate what a particular room or area was about. This indicates that the USBG would need to find alternate strategies for conveying this information if these themes are considered important to their overall educational mission.

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## INTRODUCTION

In 2006, the U.S. Botanic Garden (USBG) decided to conduct an institution-wide study of their visitors, the level of visitor satisfaction, and the effectiveness of the USBG's exhibitions and interpretation. This visitor study is intended to provide the US Botanic Garden with detailed information about visitor demographics and psychographics at various points in time (or "seasons"); visitors' satisfaction with the overall experience and with various areas or rooms in the conservatory; and visitor learning (broadly defined as awareness of Big Ideas, and overarching and specific messages).

The only existing data that characterizes visitors to the U.S. Botanic Garden (USBG) was gathered in the early 1990s. Since then, the USBG has undergone a major transformation, including complete renovation of its 1933 Conservatory (completed 2001), preparation and implementation of an interpretive master plan, and restructuring its staff, including building active public programs, visitor services, and security. The USBG wishes to study its current status in order to provide input to a strategic planning process that will align its living collections with its educational mission.

The Institute for Learning Innovation (ILI), a non-profit research and evaluation focused on understanding free-choice learning, was contracted to conduct the visitor study collaboratively with senior staff at the US Botanic Garden. In 2006, ILI served as the summative evaluator for the NSF-funded exhibition *sLowlife* at the US Botanic Garden, and had developed considerable understanding of the visitors to the conservatory through this work, and had utilized survey instruments and evaluation methods that were partly transferable to this study.

The central evaluation questions for this study are as follows:

- 1) Who is coming to the USBG?
- 2) Why are visitors choosing to visit?
- 3) What is the nature and level of visitors' engagement in the experience?
- 4) What do visitors take away from their experience at USBG?

### Theoretical frameworks

This evaluation research was based on an intertwined constructivist theoretical model of free-choice and out-of-school learning and on frameworks of identity and learning: the Contextual Model of Learning (Falk & Dierking 2000), a general framework for understanding free-choice learning (see also Falk & Storksdieck, 2005, for an application and quantitative validation of the model); the Integrated Experience Model (Storksdieck, 2004, 2006), a constructivist model developed to explain specific affective and cognitive learning experiences; and the framework of enacted identity during a museum visit (Heimlich et al, 2005; Falk, 2006) that was used successfully in the summative evaluation of *sLowlife*.

The latter refers to overarching motivations visitors have for visiting a specific museum or other informal learning institution. For example, when visitors are asked to state why they visit a specific museum, aquarium, zoo, or botanic garden, they may answer using rather different frames of reference, ranging from

the very proximate, such as “I had some time”; “it was nice weather”, “we wanted to do something fun” to more fundamental reasons like “visiting a museum with my children makes me feel like a good parent,” “I like to expose my family to meaningful learning opportunities in their spare time”, “I love plants and coming to the Botanic Garden makes me feel happy and fulfilled.” Proximate answers to the question “why are you here today” are common if not followed up with subsequent probes that allow the researcher to dig deeper into the motivation for the visit. Unfortunately, proximate answers do not connect the visitor with the venue in specific ways and are therefore of limited use in understanding visitors.

Based on research conducted at a science center and confirmed with a multi-institutional study at zoos and aquariums, Falk (2006) stated that people visit museums, or more broadly, engage in free-choice or informal learning, for identity-related reasons. “Identity” in the context of leisure activities is not seen as a conscious, semi-permanent quality of the individual such as gender, race/ethnicity, profession, and religion (sometimes referred as Capital “I” Identity), but is a continuously constructed, often unconscious, response to the world—a highly situated and emergent characteristic of the visitor (sometimes referred to as lower-case “i” identity). Based on incoming visitor motivations, Falk identified five major categories of visitors to informal science learning venues such as botanic gardens:

*Explorers* are motivated by personal curiosity; they want to learn and are following their own interests;

*Facilitators* are motivated by the perceived needs and desires of other people; they are socially oriented and act altruistically;

*Experience Seekers* are motivated by their desire to see and experience a specific venue, place or experience, mostly for the sole purpose of “having done it”;

*Professional/Hobbyists* are motivated by specific knowledge or interest-related goals, mostly connected to their job, education or hobby (serious leisure);

*Spiritual Pilgrims* are motivated by their desire to achieve a contemplative or restorative experience.

While motivations for a visit, and hence behavior during a visit, may differ widely between visitors, they all share a sense of wanting to enjoy themselves or experience the joy of others; and while it may be possible to assign a dominant reason for visiting a site to a large portion of visitors, many still bring with them multiple reasons or a mixed agenda for the visit. Still, Falk, Reinhard, Vernon, Bronnenkant, Deans and Heimlich (2007) found in a study at two zoos and two aquariums (n=1861) that more than half of all visitors (55%) expressed a single dominant identity-related visit motivation, and that individuals in different categories behaved differently and learned and remembered different things. In addition, visitor long-term satisfaction was intimately connected to fulfilling their entry identity-related motivation. In other words, capturing the underlying, identity-related motivation of visitors to the US Botanic Garden will provide useful information for interpreting summative evaluation results and for creating future interpretive master plans.



## METHODS

### Study Design and Rationale

The study required a comprehensive approach, utilizing multiple methods at various times and at various locations within the conservatory. The main evaluation questions were answered through four sub-studies as follows:

- 1) Observational demographics;
- 2) Tracking and timing;
- 3) Overall exit interviews; and
- 4) Individual room interviews.

#### **1. Overall demographics observation study**

During various times of the year (2006-2007), volunteers recorded observable basic demographic information, including group size, group composition, age, ethnicity, and gender of visitors. These data were gathered by USBG staff and volunteers over a defined period of time, during short, mostly one-hour time intervals, spread randomly between weekdays and weekends, and various times of the day. These structured observations were gathered using a detailed observation sheet (See Appendix A). All data was entered into an Excel spreadsheet by USBG staff and volunteers and then transferred to an SPSS 15.0 database by ILI staff (except for Summer 2007 data, which was entered directly into an SPSS database by ILI staff). Data was collected during four times of the year: holidays (special visitation), winter (quiet time: regular visitors); spring (regular visitors and increasingly more tourists); summer (tourist season). [See Table 1: Study A].

#### **2. Timing and Tracking Study**

ILI conducted an unobtrusive study on how visitors use the Botanic Garden through cued timing and tracking with 98 visitors during winter (n=54) and spring (n=44). Protocols and training [See Appendix B for protocols and instruments] were provided by ILI researchers, and tracking was conducted by ILI staff and contracted data collectors, predominantly Master and PhD students from the Museum Education, Museum Studies, and Curriculum and Instruction programs of the George Washington University. Each tracked visitor was also asked to complete a short exit interview. [See Table 1: Study B].

#### **3. Overall exit interviews (psychographics, visitor satisfaction and messaging)**

ILI researchers, in close collaboration with US Botanic Garden staff, developed an exit interview protocol and instrument (See Appendix C) that addressed the psychographics of visitors (motivations for visit, expectations, enjoyment and satisfaction, overall learning, and awareness of Big Ideas). The exit interviews were conducted with a random sample of 421 visitors who left the USBG, and with 71 of the 99 tracked visitors who were willing to be interviewed upon leaving the conservatory (Study B). Random sampling with exiting visitors were conducted during five times of the year: summer (tourist season, n=106); fall (quiet time: regular visitors, n=85); holidays (special visitation, n=60), winter (quiet time: regular visitors,

n=93) and spring (regular visitors and increasingly more tourists, n=77). [See Table 1: Study C]. Exit interviews associated with timing and tracking were conducted in Winter and Spring.

#### 4. Individual room interviews

Researchers conducted individual room interviews with visitors from March through May 2007, defined as the “Spring” season. Using a randomized sample, researchers conducted 5-10 minute interviews with visitors as they exited one of 10 rooms/galleries in the conservatory, selected in consultation with USBG staff. as follows: Garden Court, Rare and Endangered, Plant Explorations, Orchids, Medicinal Plants, World Deserts, Jungle, Oasis, Garden Primeval, Plant Adaptations, and East Gallery.<sup>1</sup> The instrument combined open-ended, closed-ended, and scaled questions to better understand the visitors’ experience, enjoyment, satisfaction, and learning outcomes in each room. [See Table 1: Study D].

**Table 1: Overview of methods**

Study	Method	Sample Size	Location	Time period
A	Conservatory observable demographic count	N=5758	Conservatory exit	Holidays, plus 3 seasons*
B (1)	Timing and Tracking	N=98	Entire conservatory	Winter & Spring
B (2)	Conservatory Exit interviews (linked to timing and tracking)	N=71	Conservatory Exit	Winter & Spring
C	Conservatory Exit interviews Random seasonal sampling	N=421	Conservatory exit	Holidays, all 4 seasons
D	Individual “room” in-depth exit interviews	N=413; k=10 N=48; k=1	Exit locations of individual areas	Spring

\* Due to shortage of staffing resources, observable demographic data were not collected in Fall 2007

### Data analysis

All data were analyzed by ILI research staff. Answers to open-ended questions from the Overall Exit and Room interviews were coded and quantified. Codes were derived through content analysis of a small sample of answers and cross-checked against the purpose of the question to ensure validity of codes. Codes were verified by multiple team members. A small sample of responses was then coded independently by two researchers to establish satisfactory inter-rater reliability. All quantitative and coded data were entered in SPSS 15.0 databases, spot-checked for errors (data cleaning), and analyzed using a variety of statistical methods, including descriptive statistics for frequency and central tendencies (mean, standard variation, median), and inferential statistics for assessing potential differences along a variety of factors.

<sup>1</sup> The West Gallery was assessed in a separate study conducted by GW graduate student Elena Guarinello. The results of this study are included in the Appendices.

## RESULTS AND DISCUSSION

### Who visits the U.S. Botanic Garden?

Data collected for this study characterized visitors coming to the U.S. Botanic Garden (USBG) along two dimensions: 1) Demographics (including age, gender, ethnicity, and social group); and 2) Psychographics, primarily visitors' motivations for coming to the USBG. These data were collected and analyzed across five seasons (Holidays, Winter, Spring, Summer, and Fall).<sup>2</sup>

#### **Demographics**

Observational Demographics (Study A) included a large sample of visitors (n= 5758) across four seasons. This study provides an overview of USBG's visitorship in terms of type of group, group size, gender, age, and ethnicity. Data showed that 55.5% (n=3169) of US Botanic Garden visitors are female, and 44.5% (n=2546) are male. Adult-only groups were most common (49%; n=2795), followed by adult groups with children, or "intergenerational" (39%; n=2,225). Least common were those visiting alone (n=742). The average size of a visiting group was 3.46 individuals (including children), and the average age was 34 years old. When categorized into age groups, the majority of USBG visitors were in their 20s through 40s, with the least represented groups being young children (0-5 years old) and teenagers (13-19 years old). [See Figure 1]. The majority of USBG visitors were White/Caucasian (75%; n=4240), followed by Asian/Asian American (13%; n=733), Latino/Hispanic (6%; n=362) and Black/African American (5%; n=295). Ethnicity demographics should be interpreted with some caution, however, as the data were based on observations made by data collectors and not visitor self-report. [See Table 3 for sample characteristics for the Observational Demographics compared to the other three studies.]

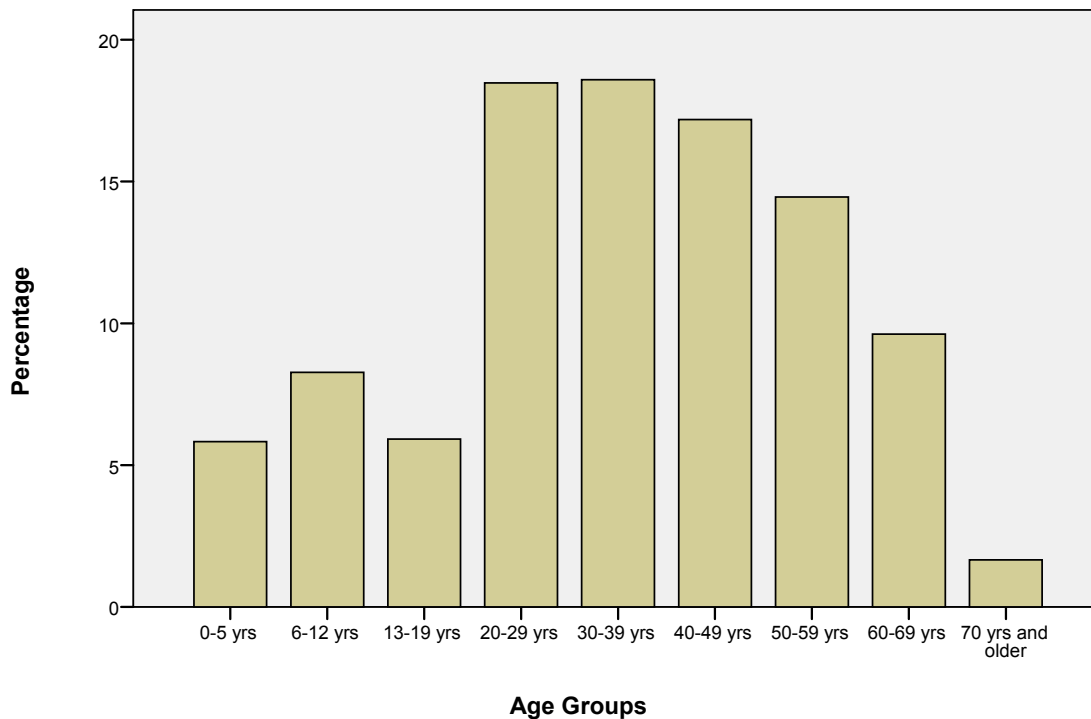
Looking across the four "seasons" (Holiday, Winter, Spring, and Summer), overall demographics remain relatively constant in terms of gender and race/ethnicity. Data suggest that there are slight differences in age group by season. Specifically, children five years of age and younger are most likely to visit during the holiday season (comprising 14% of the visitorship, compared to 4 or 5% during other seasons). Teenagers are slightly more likely to visit in Spring and Summer, while visitors in their 20s and 30s are slightly more likely to come in winter. Visitors in their 50s are least likely to visit during the holidays, comprising 7% of the visitorship, compared to 19% in the Spring. Visitors in their 60s and 70s are slightly less likely to come visit during the winter months, while those 70 years and older are slightly more likely to visit during the summer than any other time of year. [See Table 2]

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<sup>2</sup> Observational demographics were not collected in the Fall season; demographic and psychographic data for the Fall was drawn from self-report interview data.

**Table 2:** Observational demographics by season

Characteristic	Holidays	Winter	Spring	Summer
<i>Gender</i>	<i>n=800</i>	<i>n=1596</i>	<i>n=1202</i>	<i>n=2117</i>
Male	45%	45%	44%	44%
Female	55%	55%	56%	56%
<i>Race/ethnicity</i>	<i>n=780</i>	<i>n=1575</i>	<i>n=1201</i>	<i>n=2097</i>
Caucasian	79%	78%	73%	73%
African American	5%	4%	7%	5%
Latino/Hispanic	5%	6%	9%	6%
Asian/Pacific Islander	11%	12%	11%	15%
Native American	-	-	-	1%
<i>Group Type</i>	<i>n=792</i>	<i>n=1612</i>	<i>n=1184</i>	<i>n=2117</i>
Alone	13%	16%	12%	11%
Adults only	38%	57%	49%	46%
Adults and children	46%	27%	39%	44%
<i>Age</i>	<i>n=781</i>	<i>n=1605</i>	<i>n=1207</i>	<i>n=1969</i>
0-5 yrs	14%	5%	5%	4%
6-12 yrs	9%	5%	9%	11%
13-19 yrs	4%	5%	9%	14%
20-29 yrs	19%	24%	14%	17%
30-39 yrs	19%	22%	15%	18%
40-49 yrs	18%	18%	17%	17%
50-59 yrs	7%	14%	19%	15%
60-69 yrs	12%	7%	10%	11%
70 yrs and older	0%	1%	2%	3%



**Figure 1:** Overall distribution of USBG visitor age groups

### ***Description of Samples***

Demographic data were also collected as part of the Exit Interview (tracked and non-tracked) and Room Interview studies in order to compare those sub-samples to the overall population of visitors at USBG, as well as to characterize the sample in relation to other measures and outcomes (See Table 3). Data showed that the study samples were relatively similar to the USBG's overall visitorship on all comparable demographic measures: gender, ethnicity, age, and group type. Statistical analysis showed no significant differences across the samples; thus any apparent differences between the study samples are due to a slight sample and/or researcher bias.

**Table 3: Sample Characteristics**

Characteristic	Exit Interviews (non-tracked)	Room Interviews	Tracking	Observation
<i>Gender</i>	<i>n=399</i>	<i>n=411</i>	<i>n=93</i>	<i>n=5758</i>
Male	42%	36%	42%	45%
Female	58%	64%	58%	55%
<i>Race/ethnicity</i>	<i>n=395</i>	<i>n=407</i>	<i>n=94</i>	<i>n=5653</i>
Caucasian	76%	81%	83%	75%
African American	5%	3%	3%	5%
Latino/Hispanic	3%	5%	3%	6%
Asian/Pacific Islander	11%	8%	8%	13%
Native American	0.3%	2%	-	0.4%
Other/mixed	5%	4%	2%	n/a
<i>Group Type</i>	<i>n=393</i>	<i>n=407</i>	<i>n=81</i>	<i>n=5705</i>
Alone	19%	22%	12%	13%
Adults only	63%	60%	64%	49%
Adults and children	19%	18%	24%	39%*
<i>Age</i>	<i>n=383</i>	<i>n=400</i>	<i>n=97</i>	<i>n=5562</i>
0-5 yrs	n/a	n/a		6%
6-12 yrs	n/a	n/a		8%
13-19 yrs	3%	4%	1%	6%
20-29 yrs	17%	15%	17%	19%
30-39 yrs	17%	15%	23%	19%
40-49 yrs	23%	19%	25%	17%
50-59 yrs	23%	19%	18%	15%
60-69 yrs	14%	10%	4%	10%
70 yrs and older	4%	8%	3%	2%
<i>Residence</i>	<i>n=391</i>	<i>n=409</i>	<i>n=79</i>	n/a
Local (within the beltway)	17%	11%	11%	
Nearby (Greater DC area)	16%	15%	24%	
Out of state (non-neighboring)	58%	68%	62%	
Foreign country	10%	7%	3%	
<i>Visitation of USBG</i>	<i>n=393</i>	<i>n=404</i>	<i>n=79</i>	n/a
First-time visitor	64%	70%	58%	
Been once before	13%	11%	13%	
Occasional	17%	12%	20%	
Regular	6%	7%	9%	
<i>Website usage before visit</i>	<i>n=391</i>	<i>n=469</i>	<i>n=77</i>	n/a
Yes	10%	8%	9%	
No	90%	92%	91%	

\* The discrepancy of group type distribution between the Observational Demographics and the other three studies is largely due to the fact that the unit of analysis for the observable demographics was the individual, while the unit of analysis for the other studies was the group itself. Thus, the frequencies are not directly comparable. Specifically, groups with children tended to be larger than adult-only groups (4.97 individuals per group on average, compared to 2.90), which accounts for the larger percentage of individuals belonging to intergenerational groups (i.e. including children) in the Observational study.

## **Exit Interviews**

Visitors were interviewed across five “seasons”: Holidays (n=60); Winter (n=146), Spring (n=120), Summer (n=106) and Fall (n=85). About 16% (n=83) of those were interviews conducted after the individual participated in the Timing and Tracking study (see below). Two-thirds of the visitors, including both tracked and non-tracked, were interviewed on a weekday (67%; n=346) and one-third on a weekend (33%; n=171). About 12% (n=62) were interviewed in the morning (10:00-11:30 a.m.), 32% (n=160) around lunch time (11:30 a.m. -1:30 p.m.), and 56% (n=281) in the afternoon (1:30-5:00).

More than half (57%; n=275) of the visitors interviewed were female. More than three-quarters of the visitors defined themselves as white/Caucasian (77%; n=364), and 10% (n=48) as Asian American or Pacific Islander. The most common age groups were those in their 40s (23%; n=106) or 50s (23%; n=104).

Almost two-thirds of the visitors interviewed (63%; n=298) were first-time visitors to the US Botanic Garden; 13% (n=59) had been there once before; 18% (n=84) described themselves as “occasional” visitors; and 7% (n=31) as “regular” visitors. The majority of visitors (59%; n=275) were from out of state (non-neighboring to DC) and 8% (n=39) were from out of the country. About equal numbers of visitors were “local” (within the beltway) and “nearby” (greater DC area), with 16% (n=76) and 17% (n=80) respectively. Only 10% of the visitors (n=45) had gone to the USBG website before their visit. (See Table 3).

## **Room Interviews**

Researchers collected the same demographic data for the Room Interviews (Study D) as for the Exit Interviews. All room interview data was collected in Spring 2007 for comparability of results across individual rooms of the conservatory. About three-quarters of the data was collected during the week (74%; n=304) and 26% (n=109) on a week end. Ten percent of the room interviews were conducted in the morning (10:00-11:30 a.m.), 38% during lunchtime (11:30 a.m.-1:30 p.m.), and 53% in the afternoon (1:30-5:00 p.m.). Room interviews were conducted in 10 rooms/galleries in the conservatory, selected in consultation with USBG staff. Note that West Gallery interviews were conducted by Elena Guarinello as part of a separate graduate research study, included at the end of this report (See Appendix E).

**Table 4:** Numbers of visitors interviewed per room

	N (visitors)
Garden court	40
Jungle	41
Rare and Endangered	40
Plant Exploration	40
Orchids	40
Medicinal Plants	41
World Deserts	40
Garden Primeval	47
Plant Adaptations	40
East Gallery	44
<b>TOTAL</b>	<b>413</b>

Of the visitors interviewed in individual rooms, almost two-thirds were female (64%; n=263) and 36% male (n=147). About 40% (n=161) were visiting with family; of those, about 40% (n=64) were visiting with a child or children. Sixty percent (n=244) were in adult-only groups, 22% (n=90) were in groups that included children, and 18% (n=73) were visiting alone. The majority of these visitors were white/Caucasian (81%; n=328), with 8% (n=31) defining themselves as Asian American or Pacific Islander, and 5% (n=20) as Latino or Hispanic. Age groups were fairly evenly distributed between people in their 40s, 50s, and 60s – with about 20% in each category. About 15% each were in their 20s and 30s; 8% (n=33) were 70 or older; and just 4% (n=15) were between 16 and 19 years of age. (Anyone who appeared younger than 18 years old was not approached).

The majority of visitors interviewed in individual rooms were first-time visitors (70%; n=282), with 11% (n=45) having been to the USBG once before; 12% (n=48) defining themselves as “occasional” visitors; and 7% (n=29) as “regular” visitors to the botanic garden. The majority were also from out-of-state (66%; n=276); and 7% (n=28) were visiting from another country. About 11% (n=43) were “local” (within the beltway), and another 15% (n=62) live in the Greater DC area. Just 8% (n=32) of these visitors had gone to the USBG website before coming to the site. (See Table 3).

### **Timing and Tracking**

Ninety-eight visitors were timed and tracked during their visit to the US Botanic Garden. About 55% (n=54) were tracked during Winter, and 45% (n=44) were tracked during Spring. Sixty percent (n=59) of the tracks were conducted during the week, and 40% (n=39) on a weekend. About 14% (n=14) were conducted in the morning, 39% (n=38) during lunchtime, and 46% (n=45) in the afternoon. Crowdedness levels were reported for 91 of the timing and tracking observations; 23% occurred when the USBG was “empty”, 50% when it was moderately visited, 20% when it was “crowded” and 8% when it was “very crowded”, roughly representative of crowd conditions observed in the Observational Demographics study [See Table 5 for comparison] About 14% of the tracks are considered “partial” (n=14), mostly because the data collector “lost” the visitor at some point during the track and was not able to find them again. Eight-six percent (n=84) of the tracks were complete.



**Table 5: Crowdedness levels during sampling**

Level	% Observational Demographics (n=5431)	% Timing & Tracking (n=91)
Empty	19%	23%
Moderately visited	52%	50%
Crowded	27%	20%
Very crowded	2%	8%

Of the visitors tracked, 58% were female (n=54) and 42% male (n=39). The majority were identified as White/Caucasian (83%; n=78); 9% (n=8) as Asian, 3% (n=3) as African American, and 3% (n=3) Latino/Hispanic. Almost half the visitors tracked were in their 30s or 40s (23% and 25%, respectively); 17% (n=16) were in their 20s, 18% (n=17) in their 50s, and 14% in their 60s. Only one person was under twenty years of age (data collectors were instructed not to track anyone who appeared less than 18 years old), and 3 visitors were 70 or older. Of those who were also interviewed, the majority (62%; n=49) were from out of state (non-neighboring), about a quarter (24%; n=19) lived in the Greater DC area, and an additional 11% (n=9) lived within the Beltway. More than half (58%; n=46) were first-time visitors, 13% (n=10) had been once before, and almost one third (29%; n=23) were either “occasional” or “regular” visitors. Nine percent (n=7) had gone to the USBG website before visiting, while 91% (n=70) had not.

### **Visitor Motivations**

Researchers collected data on visitors’ motivational identities as part of the overall exit interviews (both tracked and non-tracked visitors) during all five seasons. Table 6 summarizes the results and contrasts the five seasons for identity-related motivations for visiting USBG.

#### **Relative importance of various visitor motivations**

Not surprisingly, the “Explorer” item “I like to see plants” was chosen by the highest percentage of respondents across all seasons (about half in the overall sample and across all seasons). This item indicates that visitors come to the USBG to experience plant life in the most basic sense. The second most frequently chosen item, “I like to learn about plants” (selected by 45% of respondents overall), indicates that many visitors have a specific learning agenda that extends beyond just learning in general, which was expressed by 31% of visitors. However, visitors perceive that the US Botanic Garden provides them with more than looking at and learning about plants: the next three most frequently chosen items are aesthetic and affective in nature, assigned to the Spiritual Pilgrim category. These were followed closely by items that indicate the visitor has a strong relationship with or interest in plants (Professional/Hobbyist items). Facilitator and Experience Seeker items were not favored strongly by USBG visitors. The overall picture that arises is that of visitors who enjoy the beauty, peacefulness, and aesthetics of the Botanic Garden, but also have a strong connection to and interest in plants, and like to learn something about them.

**Table 6:** Visitor agendas and enacted identities for five seasons of USBG visitors

	Total [n=436]	Holiday [n=55]	Winter [n=116]	Spring [n=98]	Summer [n=97]	Fall [n=70]
<i>Experience Seeker</i>						
This is an important institution in this community	24.1%	29.1%	25.9%	36.0%	15.5%	18.6%
I came a long time ago and want to revisit it	14.2	29.1	12.1	20.4	11.3	1.4
It is one of the best places to visit around here	19.5	25.5	20.0	18.4	16.5	21.4
Visiting here is part of my tourist program for DC	14.4	16.4	12.1	17.3	17.5	8.6
<i>Professional/Hobbyist (Plant aficionado)</i>						
I frequently visit botanic gardens when I go on trips	36.2	38.2	37.9	38.8	37.1	27.1
I like to learn about plants	45.0	47.3	37.1	53.1	44.3	45.7
I support the mission to study, celebrate, and protect plants	39.9	45.5	37.1	44.9	36.1	38.6
I actively support conservation and the protection of plants	29.6	40.0	26.7	27.6	27.8	31.4
<i>Spiritual Pilgrim (Appreciation, restoration)</i>						
Coming here helps me appreciate nature	41.3	41.8	42.2	44.9	39.2	37.1
I feel at peace in these surroundings	44.5	47.3	47.4	40.8	44.3	42.9
Viewing the different species fills me with wonder	41.3	40.0	37.9	41.8	44.3	42.9
I discover things about myself when I come here	7.3	9.1	6.0	12.2	5.2	4.3
<i>Facilitator/reluctant participant</i>						
My wife/partner/husband made me come	7.1	9.1	6.9	10.2	2.1	8.6
This is a good way for my family/friends to share quality time	21.1	25.5	21.6	25.5	20.6	11.4
My family/friends enjoy themselves here	11.9	20.0	5.2	20.4	9.3	8.6
My family/friends have good experiences here	8.7	16.4	6.0	12.2	4.1	8.6
<i>Explorer</i>						
I like the type of things I can learn here	31.0	29.1	27.6	30.6	33.0	35.7
I get more here than going to a shopping mall or a movie	19.0	29.1	19.0	13.3	16.5	22.9
I like to see plants	51.8	50.9	53.4	49.0	52.6	52.9
It was my choice for how to spend the day	23.9	34.5	25.9	22.4	20.6	18.6

There is a weak but statistically significant relationship between the items “I like to see plants” and “I like to learn about plants” ( $r=0.170$  for a Kendell’s tau\_b,  $n=436$ ,  $p<0.000$ ), and the relationship is stronger than that between “I like to see plants” and “I like the kinds of things I can learn here” ( $r=0.111$  for a Kendell’s tau\_b,  $n=436$ ,  $p<0.008$ ), which suggests that the learning agenda is focused on plants itself, and that the plant experience is tied to the desire to learn about plants. In short, plants dominate visitors’ motivations, which is not surprising.

### **Seasonality of motivation items**

Looking across all five seasons, little differences emerged in the spiritual, aesthetic and conservation oriented items. This suggests that these experiences or values resonate with visitors irrespective of the season

or potentially different visitor composition. Regardless of the time of year, visitors tend to be motivated to visit the US Botanic garden because they want to experience a natural, beautiful, aesthetically pleasing environment, and because they support the mission to protect and conserve plant life.

However, subtle shifts in the motivational identity of visitors did occur across the seasons. For example, visitors in the summer and fall did not choose the item about the USBG importance to the community as often as the others, particularly those visiting in spring or during and holidays, who chose that item almost twice as often. This may be partially due to the fact that a larger percentage of holiday visitors were local or nearby residences, and thus may have a stronger sense of the Botanic Garden's importance within the community. It is less clear why Spring visitors may feel a stronger sense of connection to the Garden as an important institution in the community.

Spring and holiday visitors were more likely to select items related to being a facilitator—such as “this is a good way for my family and friends to spend quality time” and “my family/friends enjoy themselves here.”—than were visitors during other seasons. This may be due to the “special” nature of the holiday and spring displays, which visitors may perceive as something interesting to do with their family and friends; or as a place to bring visitors to see the unique displays. Winter visitors were least likely to say they were visiting for others' benefit, in part because there were a higher percentage of people visiting alone during this time.

In addition, winter visitors were somewhat more likely to select the items related to seeing plants and feeling at peace in the surroundings than spring visitors—suggesting that winter is more of a solitary time for contemplation and relaxation. In addition, spring visitors were more likely to say they were there to learn about plants than were winter visitors, again suggesting that the winter visitors were more focused on aesthetic and spiritual experiences than a learning agenda.

Holiday visitors, surprisingly, were more likely to state than others that they actively supported conservation and the protection of plants, while they were also the most likely to compare the visit to the botanic garden favorably with a visit to the mall or a movie (seemingly a positive statement, but most would not even place the USBG in the same category). This is possibly due to the fact that going to the mall or a movie are particularly common leisure-time choices during the holidays, but the special holiday display at USBG (particularly the building replicas) may be seen as a more interesting, educational alternative “event”.

In sum, the visitor-motivation scale indicates that visitor motivation differs somewhat between seasons, but certain core characteristics of visitor motivation—such as the aesthetic, spiritual, and conservation-oriented motives—are relatively constant across all times of the year.

Table 7 summarizes the results of an analysis that places individuals into “dominant” visitor agendas (that is, if they score higher than 14 on a potential total score of 28 in each category) by season. Two-thirds of visitors could be assigned a dominant visit-related identity in the overall sample. The rate for the seasons ranged from a low of 47% for summer to a high of 98% for the holidays. This suggests that visitors coming to the Botanic Garden during the holiday season are more homogenous in motivational identity, with the Professional/Hobbyist and Explorer as the strongest “enacted” identities. The desire to see the special holiday display may account for the high percentage of dominant Explorers during winter.

**Table 7: Dominant visitor agendas and enacted identities for five seasons of USBG visitors**

i-Identity	Total [n=436]	Holiday [n=55]	Winter [n=116]	Spring [n=98]	Summer [n=97]	Fall [n=70]
Experience Seeker <sub>a</sub>	6.9%	12.7%	6.9%	9.2%	4.1%	2.9%
Professional/Hobbyist <sub>b</sub>	22.7	29.1	19.0	29.6	15.5	24.3
Spiritual Pilgrim	18.1	20.0	19.8	19.4	14.4	17.1
Facilitator <sub>d</sub>	3.9	9.1	3.4	7.1	0	1.4
Explorer <sub>e</sub>	14.4	27.3	12.1	12.2	13.4	12.9
Total	66	98.2	61.2	77.5	47.4	58.6

Note: (a) Chi-Square = 6.67; df=4; p=0.16; (b) Chi-Square = 7.85; df=4; p=0.097; (c) Chi-Square = 1.4; df=4; p=0.84; (d) not valid (50% of cells have expected values below 5); F=11.85, df=4, p=0.019; (e) Chi-Square = 8.46; df=4; p=0.076.

Overall, plant aficionados (professional/hobbyists) dominated with 23%, followed by spiritual pilgrims (aesthetic and conservation related considerations) with 18% and explorers (learning agenda, but mostly an interest to see plants, and therefore related to plant aficionados) with 14%. The USBG does not seem to be predominately a venue for those who bring others for their benefit (facilitators) or for those who see value in being at the venue for the sake of being there (experience seekers)—except for slight peaks during the holiday and spring seasons for both identities. Seasonal differences are more closely tied to the percentage of visitors that can be assigned to a dominant identity than to radical shifts in the relative composition of the sample, with the notable exception of the holiday sample: more experience seekers than during other times seem to visit, and the explorer identity is more prevalent than the spiritual pilgrim identity.

Researchers compared the results of the USBG on dominant visit-related identities with those in two East Coast zoos and two East Coast aquariums (see Table 8). Aquariums and zoos also provide visitors with the experience of a living collection, though the audience to zoos and aquaria is generally believed to be more family and child oriented. The main difference between the USBG and the four other venues was in the pre-dominance of plant aficionados (professional/hobbyists) and spiritual pilgrims, and the lack of facilitators. The data suggest that aquaria might attract twice as many “professional/hobbyists” than do zoos, and the botanic garden seems to attract about 50% more than the aquaria. Most importantly, though, “spiritual pilgrim” items did not resonate with zoo and aquarium visitors while they did so strongly with visitors to the USBG. Many parents bring their children to the zoo as an educational spare-time activity, and they are quite aware of their motivation when doing so. While there are likely as many family visitors who do so for an aquarium visit, it does not dominate their identity as much as it did for zoo visitors. However, facilitator-related items played practically no role in the USBG.

**Table 8:** Dominant visitor agendas and enacted identities in comparison to other living collections institutions

Enacted identity	USBG (This study) [n=436]	Philadelphia Zoo [n=366]	Salisbury (MD) Zoo [n=594]	National Aquarium (Baltimore) [n=247]	New York Aquarium [n=238]
Experience Seeker	6.9%	6.0%	9.8%	5.9%	8.4%
Professional/Hobbyist	22.7	7.7	8.2	13.2	15.1
Spiritual Pilgrim	18.1	2.5	4.7	5.3	5.5
Facilitator	3.9	23.2	17.3	6.7	15.4
Explorer	14.4	15.8	15.7	14.0	22.3
Total	66.0	55.1	55.7	45.1	66.8

Note: Data from Falk, Heimlich & Bronnenkant (2008). Using Identity-related visit motivations as a tool for understanding adult zoo and aquarium visitors' meaning-making. *Curator* 55(1): 55-80.

Table 9 provides correlations between the most frequently chosen items. The correlation between the rather similar items “I support the mission to study, celebrate and protect plants” (a general statement of support) and the item “I actively support the conservation and protection of plants” (an action-oriented specific statement of support) is postulated to be the highest of all in the item list. The correlation is still relatively weak (0.285), but the low correlations in this analysis are mostly due to the fact that only five items could be chosen before they were rated.

Surprisingly, “I like to learn about plants” only correlates with two other items: positively with “I like to see plants” (see above) and negatively with “I feel at peace in these surroundings”. I like the things I can learn here, incidentally, does not correlate with any of the frequently chosen items other than the “I like to learn about plants”. In other words, the learning agenda, even the learning about plants, seems to be in slight conflict with the aesthetic and spiritual agenda of visitors.

Wanting just to see the plants correlates slightly negatively with the two items focused on supporting conservation, indicating that there is a segment of visitors whose aesthetic appreciation for plants is not connected to their sense of conservation and preservation. They love to look at and admire plants, but they are not necessarily conservationists or ecologically minded.

There is a weak correlation between the stated frequency of botanic garden visits and the two support items, suggesting that visitors don't necessarily visit botanic gardens frequently because they support protection and conservation efforts.

**Table 9:** Inter-item correlations for motivations to visit the USBG (Kendell's tau\_b)

	This is an important institution in this community	I support the mission to study, celebrate and protect plants	I frequently visit botanic gardens when I go on trips	I like to learn about plants	I actively support conservation and the protection of plants	Coming here helps me appreciate nature	Viewing the different species fills me with wonder	I feel at peace in these surroundings
I like to see the plants	-0.069	-0.104(*)	0.065	0.170(**)	-0.107(*)	-0.051	0.062	0.017
This is an important institution in this community		0.121(**)	0.050	-0.050	0.092(*)	0.082	0.011	-0.021
I support the mission to study, celebrate and protect plants			0.117(**)	0.019	0.285(**)	-0.033	0.014	-0.086(*)
I frequently visit botanic gardens when I go on trips				0.075	0.041	-0.062	-0.040	0.014
I like to learn about plants					-0.012	-0.028	-0.026	-0.158(**)
I actively support conservation and the protection of plants						-0.079	0.008	-0.010
Coming here helps me appreciate nature							0.116(**)	0.047
Viewing the different species fills me with wonder								0.048

Note: \* Correlation is significant at the 0.05 level (2-tailed). \*\* Correlation is significant at the 0.01 level (2-tailed).

Feeling at peace in the Botanic Garden correlates negatively with “agenda” items (learning about plants and supporting the mission), suggesting that visitors who are there for an immersive, affective experience are not as focused on learning or conservation messages.

In fact, the post-hoc analysis of items leads to a slight re-interpretation of the identity meanings: Spiritual Pilgrims are now a group of people who either have an aesthetic experience at the USBG, or they have a conservation and preservation agenda that is fulfilled or supported by a visit to the conservatory.

Professional/Hobbyists are plant aficionados, some with an aesthetic agenda, others with a learning agenda. The Explorer item “I like to learn about plants” is strongly connected to the Professional/Hobbyists.

## What is the nature of visitors’ experience at the US Botanic Garden?

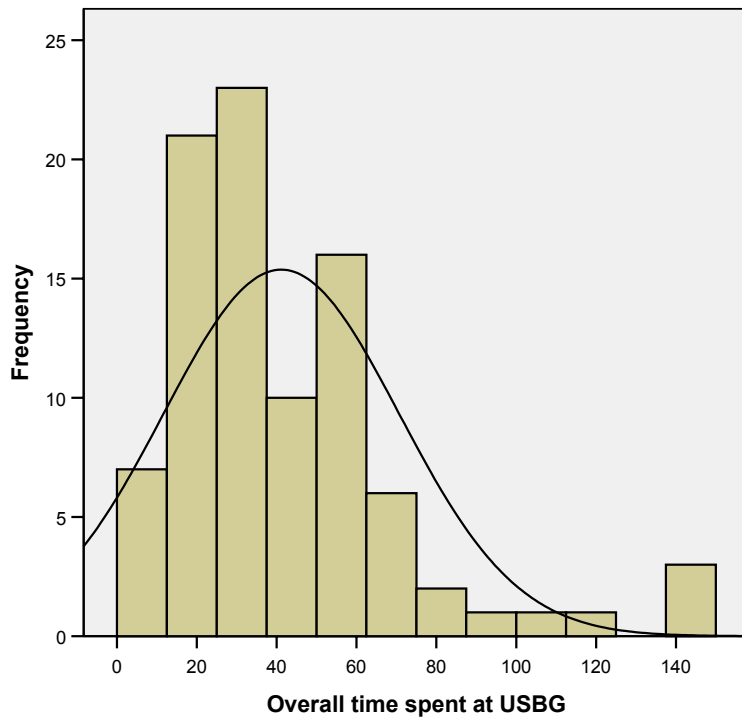
### ***Time spent at the US Botanic Garden***

Researchers gathered data on visitors’ stay times on two levels: 1) Overall time spent in the Conservatory; and 2) Time spent in individual rooms/galleries. Timing and tracking (Study B) provided observed data on stay times, while exit and room interviews provided self-report data on stay times.

### **Overall time spent at USBG**

Based on the Timing and Tracking study, Figure 2 shows a frequency distribution of the overall time visitors (n=91) spent in the conservatory. On average, these visitors spent 41 minutes on their visit (Standard Deviation = 29.5 minutes), with a median visit time of 35 minutes and a range from 3 to 150 minutes. Three-quarters of the tracked visitors (76%) stayed between 15 and 60 minutes. Self-reported stay times from exit

interviews (n=397) indicated that visitors spent on average 47 minutes in the conservatory. The slightly higher average is likely due to the fact that people tend to overestimate the amount of time they spend in any given place.



**Figure 2:** Overall time spent at the US Botanic Garden (Timing & Tracking data)

No statistically significant difference was found in overall time spent at the USBG for sex (male versus female), season (winter versus spring), weekday or weekend, time of day, race/ethnicity, crowdedness levels, or whether they had previously visited the USBG (though there was some indication that frequent visitors may spend less time at the garden).

However, overall time spent in the USBG was influenced by group type ( $F=3.94$ ,  $df=2/79$ ,  $p=0.023$ ). Visitors with friends and partners stayed about 20 minutes longer on average than those with families or those who came alone (see Table 10). Residence might also play a role ( $F=2.09$ ,  $df=3/78$ ,  $p=0.109$ ). Local visitors spent considerably longer time in the conservatory than those who came from nearby locations in the greater DC metropolitan area or even from out-of state. (The low numbers make this statistic inconclusive, however).

**Table 10: Factors that influence visit time**

Level	Mean mins:secs	Standard Deviation mins:secs	N
<i>Group Type<sub>a</sub></i>			
With family	36:36	17:12	42
With friends/partner	55:54	39:06	28
Alone	37:12	36:12	10
<i>Residence<sub>b</sub></i>			
Local	61:54	44:18	9
Nearby (greater DC area)	46:06	37:48	19
Out-of-state (not VA or MD)	38:48	21:18	49
Foreign country	20:30	7:48	2

Notes: (a)  $F=3.94$ ,  $df=2/79$ ,  $p=0.023$ ; (b)  $F=2.09$ ,  $df=3/78$ ,  $p=0.109$ .

Stay time in the Conservatory might have been influenced by identity-related visit motivation (see Table 11). Less than half ( $n=41$ ) of the tracked visitors exhibited a dominant visit motivation, however, only *Professional/Hobbyists* ( $n=17$ ) and *Spiritual Pilgrims* ( $n=14$ ) were represented in sufficient numbers to run statistics. Dominant *Explorers* ( $n=6$ ), *Experience Seekers* ( $n=3$ ), and *Facilitators* ( $n=1$ ) were too infrequent for separate statistics. The low numbers made the statistical analysis difficult to interpret. While not statistically significant, there is indication, though, that those identified as *Professional/Hobbyists* or *Spiritual Pilgrim* might stay about 10 minutes longer than others (about 50 versus 39 minutes). In fact, having a clear or dominant entry narrative (reason for visiting) seems to increase stay time, rather than the nature of that entry narrative. Visitors with a dominant motivational identity stayed longer than those who did not express a dominant motivation (48 to 37 minutes).

**Table 11: Motivation and stay time**

Level	Mean mins:secs	Standard Deviation mins:secs	N
<i>Dominant Professional/Hobbyist<sub>a</sub></i>			
Yes	49:48	33:42	17
No	39:12	28:24	74
<i>Dominant Spiritual Pilgrim<sub>b</sub></i>			
Yes	52:36	51:12	14
No	39:06	23:30	77
<i>Dominant "Something"<sub>c</sub></i>			
Yes	47:36	35:12	38
No	36:36	23:54	53

Notes: (a)  $F=1.81$ ,  $df=1/90$ ,  $p=0.18$ ; (b)  $F=2.54$ ,  $df=1/90$ ,  $p=0.115$ ; (c)  $F=3.12$ ,  $df=1/90$ ,  $p=0.081$



[Note: we validated self-reported time in the conservatory by comparing self-reported visit time to observed visit time (see Table 12). The analysis shows that those who reportedly had just a cursory visit, or saw less than half or about half of the conservatory, all stayed about the same time: around 25 minutes. Those who claimed to have seen more than half and all or almost all of the conservatory were also observed to have spent an approximately similar amount of time in the US Botanic Garden: around 50 minutes, or twice as long as the other group. People's personal estimate is therefore rough, and the categories could be simplified to two: 1) less than half; and 1) more than half to all of the institution.]

**Table 12: Self-reported and observed visit time**

Level	Mean mins:secs	Standard Deviation mins:secs	N
Cursory visit - just passed through	26:00	8:30	3
Less than half	24:12	12:48	6
About half	26:12	10:54	9
More than half	47:18	28:06	21
All or almost all	52:54	32:48	32

Notes: F=2.89, df=4/70, p=0.029

### **Time spent in individual rooms**

The Timing and Tracking study provided information on how much time visitors spent in individual rooms/galleries in the conservatory. Data showed that, on average, visitors spent the most time (in absolute terms) in the Jungle (mean=11 minutes 9 seconds) and the Garden Court (mean=8 minutes 40 seconds). On average, visitors spent the least amount of time in the Oasis (mean=57 seconds), Garden Primeval (mean=1 minute 27 seconds), and Rare and Endangered (mean=1 minute 32 seconds). [See Table 13 below]

**Table 13: Average time spent in individual rooms**

Room	Mean mins:secs	Standard Deviation mins:secs	Max	N (visitors)	Visit rate (% of max)
West Orangerie	2:25	3:51	21	39	43
Garden Court	8:40	7:28	36	90	100
Jungle	11:09	11:20	64	81	90
Rare and Endangered	1:13	1:32	6	75	83
Plant Explorations	2:32	2:39	15	71	79
Orchids	2:46	2:57	18	72	80
Medicinal Plants	3:12	2:45	17	79	88
South Lobby	3:50	3:22	17	64	71
World Deserts	2:47	2:20	12	76	84
Oasis	0:56	0:51	4	68	76
Garden Primeval	1:52	1:27	7	69	77
Plant Adaptations	1:23	1:57	10	71	79
East Gallery	5:29	6:55	36	35	39
West Gallery	4:49	4:57	26	55	61

Researchers “weighted” the average times spent in each room by path length in order to create a more valid unit of comparison (seconds per foot of path), with the idea that visitors have less opportunity to spend time in smaller rooms and more opportunity in larger rooms. [See Table 14] This analysis showed that rooms roughly fell into four categories, excluding the South Lobby, which had the highest seconds/foot rate because this is where the restrooms and water fountains are located. There are also benches in this space, where visitors may sit and regroup before moving on with their visit. Removing the South Lobby as an “outlier,” four main categories or “paces” emerged: 1) slow pace, which includes only the Orchids room, where visitors spent almost 8 seconds per foot of path; 2) moderate pace, including Plant Adaptations, Oasis, and Rare and Endangered, which are all relatively small rooms where visitors spent 3 to 4 seconds per foot of path on average. (It is possible that the benches provided in Plant Adaptations and Rare and Endangered account for some of the longer stay times in this room); 3) fairly quick pace, including Medicinal Plants, World Deserts, and Plant Explorations, with visitors averaging about 2 seconds per foot; and 4) very quick pace, including the very large spaces of the Jungle, Garden Court, West Gallery, East Gallery, and the smaller Garden Primeval, with visitors spending about 1 second per foot of path. However, note that in the rooms categorized with a “fairly quick” or “quick” pace some visitors may have focused on a few areas very intensely, while skipping other areas or walking through other areas very quickly.

**Table 14:** A comparison of time spent in individual rooms weighed against path length

Room	Visit rate (% of max)	Time relative to Oasis (=1)	Path length estimates (feet)	Seconds per foot path length
South Lobby	71	4.1	20	11.50
Orchids	80	3.0	22	7.55
Plant Adaptations	79	1.5	20	4.15
Oasis	76	1.0	15	3.73
Rare and Endangered	83	1.3	20	3.65
Medicinal Plants	88	3.4	96	2.00
World Deserts	84	3.0	87	1.92
Plant Explorations	79	2.7	88	1.73
Garden Court	100	9.3	371	1.40
Garden Primeval	77	2.0	88	1.27
West Gallery	61	5.2	250	1.16
East Gallery	39	5.9	350	0.94
Jungle	90	12.0	728	0.92
West Orangerie	43	2.6	n/a	n/a

### ***Use of space***

Data from Timing and Tracking, Exit Interviews, and Room Interviews provide information on what visitors did and where they went during their visit to the US Botanic Garden. Researchers gathered information on how much of the conservatory people saw; what they did in individual rooms or galleries; as well as what areas they skipped and why.

## **What visitors did at the USBG**

Room Interview data offered self-report information about what visitors did in each room or gallery included in the study. While visitors may not recall everything they did, this data provides insight into what was most significant to visitors about that room. Not surprisingly, the largest percentage of visitors talked about looking at the plants, either in general (43%; n=176) or at specific plants or types of plants (44%; n=180), such as ferns, cacti, flowering plants, hydrangeas, the banana tree, or “the stinky plant.” Almost one third of visitors (27%; n=112) noted reading some kind of interpretive materials, such as plant labels, extended labels, and/or panels, and the same number (27%; n=111) said they had some kind of social interaction within their group, such as pointing out plants or talking about something they saw or read. Almost a quarter (22%; n=92) said they took photos in the room; and another 22% (n=91) recalled just enjoying the sights, sounds, smells, and/or “natural beauty” of the room. Only 5% (n=20) said they did an activity or used an interactive, likely because this type of experience is not often available in many of the galleries.

**Table 15:** What visitors did in rooms/galleries (overall)

	Percentage (n=413)
Looked at plants (specific)	43.7
Looked at plants (general)	42.7
Read interpretive materials (plant labels, extended labels, and/or panels)	27.2
Had conversations with others in group	26.9
Took photos	22.3
Enjoyed the beauty, atmosphere, sensory experience	22.1
Just walked through quickly	10.4
Looked at an architectural feature	9.2
Looked at a special exhibit	5.8
Did an activity or interactive	4.9
Relaxed, sat down	3.9
Other	3.6

Note: Visitors gave multiple responses, so totals do not equal 100%. Average number of answers per visitor

In comparing what visitors reported doing across the 10 rooms included in the study, many differences emerged, but they were relatively predictable in nature and connected to the characteristic of the room (See Table 16). For instance, in Orchids people did not tend to look for specific plants, but were fascinated by all of them in the room, hence the high rate for photography and for enjoying the sensory atmosphere and beauty of the room. The Jungle and Garden Court were also common areas for taking photographs and for enjoying the natural beauty or atmosphere. The Garden Primeval was also a place where many visitors noted enjoying the atmosphere, often because they felt it was moist, humid, and “tropical.”

On the other hand, Plant Adaptations was used often as a walkway, and when people looked at plants, they focused on particular ones—most often the “thorny tree,” which drew many visitors’ attention. The East

Gallery had predictably the lowest rate of plant observations and the highest for reading of interpretive materials and interactives, reflecting the nature of this room. It was also a space where many visitors tended to walk through quickly, often using it as a passageway to get back into the Garden Court.

Not surprisingly, more visitors used the Garden Court to “sit down and relax” than any other room in the conservatory. This space was most often used as a “lobby” or gathering space, where people relaxed, took photos, waited for others in their group, and so on. Visitors also noted enjoying or looking at an architectural feature in the Jungle (most often the waterfall and/or catwalk), Plant Explorations (the fountain), and the Garden Court (usually the reflecting pools).

**Table 16:** What visitors did in individual rooms/galleries

	Total (n=413)	Garden Court	Rare & Endangered	Plant Exploration	Orchids	Medicinal Plants	Jungle	World Deserts	Garden Primeval	Plant Adaptations	East Gallery
Looked at plants (specific)	44%	51%	50%	48%	15%	54%	39%	48%	45%	68%	23%
Looked at plants (general)	43	41	53	28	68	44	49	53	55	25	14
Read interpretive materials	27	13	8	25	8	20	10	15	28	18	34
Had conversations with others in group	27	13	23	33	28	29	39	45	23	20	18
Took photos	22	36	28	10	48	20	34	15	21	10	5
Enjoyed the beauty, atmosphere, sensory experience	22	31	3	13	43	20	32	25	30	15	11
Just walked through quickly	10	5	8	8	5	5	5	8	9	25	27
Looked at an architectural feature	9	23	8	25	3	0	17	0	11	0	7
Looked at a special exhibit	6	5	0	18	0	0	0	0	0	0	34
Did an activity or interactive	5	3	5	0	0	0	15	5	0	5	16
Relaxed, sat down	4	15	5	8	0	0	7	0	0	3	2
Other	4	3	5	3	5	2	5	3	6	5	0

Note: Visitors gave multiple responses, so totals do not equal 100%.

### Where visitors went in the Conservatory

Tracking data provides information on where visitors went during their visit to the USBG. Table below summarizes the percentages of visitors tracked (n=98) who visited each room/gallery, even if only briefly. The most commonly visited rooms were, naturally, the Garden Court (100%), as all visitors must walk through there to enter the building. Other “hot spots” included the Jungle (88%; n=84) and Medicinal Plants (87%; n=82). All rooms were visited by at least 70% of those tracked, except for the West Gallery (63%; n=59), East Gallery (40%; n=37), and West Orangerie (44%; n=42), likely because these areas are very different from the others in that they don’t feature plants, and are also less on the “central route” of the conservatory. Visitation to the East Gallery was lowest (40%), possibly because visitors don’t notice it right away, can walk from Garden Primeval back to the Garden Court without going through the gallery, are more interested in the “plant” rooms, or because visitors often went through the garden in a counter clockwise path, thus leaving the East Gallery last and more likely to be skipped.

**Table 17:** What rooms/galleries were visited

Room	Percentage visited (n=98)
Garden Court	100%
Jungle	88%
Medicinal Plants	87%
World Deserts	85%
Rare and Endangered	84%
Plant Explorations	81%
Orchids	81%
Garden Primeval	80%
Oasis	79%
Plant Adaptations	79%
South Lobby	70%
West Gallery	63%
West Orangerie	44%
East Gallery	40%

Showing them a map, researchers asked visitors during the exit interviews what areas of the conservatory they had skipped during their visit. Even with the map, though, many visitors had difficulty identifying exactly what areas they skipped and often gave general answers, such as “we skipped nothing” (32%). Only 17% of the visitors interviewed said they had skipped the East and/or West Galleries; 16% said they skipped the Children’s Garden; and the other rooms ranged from 2 to 9%. However, these self-reports should be interpreted with some caution, as visitors seemed not to know what they *hadn’t* seen, even with a visual aid.

Visitors were also asked why they skipped certain areas during their visit. The most common reasons given were lack of time (24%; n=74); and wayfinding issues, such as they didn’t see or couldn’t find a certain

area (18%; n=57). Visitors also mentioned that they were simply not interested in that room or area or, alternately, were interested in seeing something specific at the garden so skipped other areas (14%; n=44).

### ***Engagement with Interpretive Material***

Researchers gathered data on visitors' use of interpretive materials through both tracking (observable) and room interviews (self-report). For the purposes of this study, interpretive materials were defined as an extended label, plant highlight label, interactive component with text, or a panel; as individual plant labels were not as relevant to the study and difficult to track.

Tracking data suggested that visitors were far more likely to stop at an interpretive material in the West Gallery and East Gallery, making 6.26 and 5.44 stops on average, respectively. On average, visitors stopped at 1.49 interpretive materials in the Medicinal Plants room, and 0.82 in the Garden Primeval. In order to create comparable measures, researchers “weighted” the number of stops per room based on the number of interpretive materials available in each room (See Table 18 below). In relative terms, visitors stopped at the most interpretive materials in Plant Exploration (on average, visitors stopped at 16.5% of them)—possibly because of a special exhibition, Nature’s Bar Codes, that was installed during the study. Visitors were also more likely to stop at interpretive materials in the Garden Primeval (visitors stopped at 13.7% on average), World Deserts (13.6%), and Medicinal Plants (11.5%). Visitors were least likely to stop at interpretive materials in the Garden Court (5.5% on average) and Plant Adaptations (5.7% on average). While even the higher percentages seem low, one must keep in mind that the Conservatory is a very large space, with many rooms and interpretative materials—and thus an individual visitor is not likely to utilize the majority of them. There are also many visitors with a more “aesthetic” agenda, who are more interested in looking at plants and flowers than reading about them. It is also important to note that research in museum label reading indicates that visitors do not tend to look at large percentages of labels available, and that “label readers” at museums are in the minority.

**Table 18:** Average number of stops at interpretive materials by room, weighted by number of materials available

	Total number of interpretive materials in room	Maximum used by visitor	Mean number per visitor	Mean number relative to available (%)	N (visitors)
Garden court	12	6	0.66	5.5%	94
Jungle	8	4	0.55	6.9%	83
Rare and Endangered	11	6	0.49	4.5%	76
Plant Exploration	4	3	0.66	16.5%	73
Orchids	1	1	0.11	11.0%	72
Medicinal Plants	13	8	1.49	11.5%	79
South Lobby	1	0	0.00	0.0%	64
World Deserts	5	5	0.68	13.6%	77
Oasis	2	2	0.14	7.0%	73
Garden Primeval	6	6	0.82	13.7%	71
Plant Adaptations	6	3	0.34	5.7%	71
West Gallery	70	28	6.26	8.9%	58
East Gallery	58	29	5.44	9.4%	34

Note: Interpretive materials include large panels, extended labels, plant highlight labels, and interactives present at the time the study began.

Researchers also measured the engagement level demonstrated by visitors at each “stop” at an interpretive material using a scale of 1 (glance), 2 (cursory), 3 (moderate) and 4 (extensive). Overall averages per room were calculated (See Table 19 below). Averages ranged from 0.00 (in the South Lobby, as no one in the sample was observed reading the “Plants in the News” panel) to 2.31 in the Jungle and Garden Primeval and 2.67 in the East Gallery. Interestingly, while fewer visitors went to the East Gallery, those who did were highly engaged in what they saw and read there.

**Table 19:** Average engagement scores for interpretive materials

	Mean
Garden court	2.20
Jungle	2.31
Rare and Endangered	2.03
Plant Exploration	2.03
Orchids	1.50
Medicinal Plants	2.00
South Lobby	0.00
World Deserts	1.83
Oasis	1.92
Garden Primeval	2.31
Plant Adaptations	2.28
East Gallery	2.67



During the room interviews, researchers also asked visitors whether or not they utilized the labels, panels, and/or other interpretive materials in each room. Out of those who answered this question (n=404), more than half said yes (55%; n=220); 14% (n=56) said they just glanced at labels but did not really read any; and 32% (n=128) said they did not read labels at all. When analyzing by room, self-reported label use differed between rooms somewhat, but no room fell below a self-reported rate of 50%. While these numbers are quite high compared to the observed (tracking) data, one must keep in mind that “social desirability” (trying to please the interviewer) may have caused some visitors to claim they had read labels when they really had not. In addition, many visitors confused labels and panels with the plant name labels, which simply give the name of the plant and its origin.

**Table 20:** Did you use or read any of the larger signs or panels?

	Count	yes	yes - noticed but only glanced	no -- didn't notice or read
Garden court	39	48.7%	17.9%	33.3%
Jungle	41	68.3	0	31.7
Rare and Endangered	37	59.5	5.4	35.1
Plant Exploration	40	47.5	20.0	32.5
Orchids	40	32.5	17.5	50.0
Medicinal Plants	41	56.1	22.0	22.0
South Lobby	n/a	n/a	n/a	n/a
World Deserts	39	66.7	10.3	23.1
Oasis	n/a	n/a	n/a	n/a
Garden Primeval	45	66.7	8.9	24.4
Plant Adaptations	39	35.9	23.1	41.0
West Gallery	n/a	n/a	n/a	n/a
East Gallery	43	60.5	14.0	25.6
<i>Overall</i>	<i>404</i>	<i>54.5</i>	<i>13.9</i>	<i>31.7</i>

Note: Pearson Chi-Square = 34.7; df=18; p=0.01.

Researchers also probed visitors who read labels on what they found useful about them. Of those who responded (n=269), 45% stated that they used labels to identify objects (likely including the plant name labels), 41% found them generally useful, interesting, or educational, and 25% stated that the signage allowed them to learn or reinforce concepts they were already familiar with.

Of those who did not read labels, the most common reasons given were lack of time (27%; n=40) – e.g. they were in a rush to get somewhere else, or the garden was closing; and that the visitor’s agenda was focused on enjoying and looking at plants, rather than reading about them (24%; n=35). Ten percent (n=15) of those who did not read labels/panels said they had been to the room before or were regular visitors, and thus did not feel the need to read interpretive materials again.

When asked how the signage could be improved, nearly half of the visitors (47%; n=118) said they were fine as they are or could not think of any suggestions. This is typical, as visitors are often reluctant to give suggestions for improvement or have a difficult time thinking of suggestions. Some visitors, however, were able to offer ways in which the USBG signage could be made more useful or appealing. Fifteen percent of

those answering this question (n=39) felt the extended labels and panels should have more prominent placement in the rooms, noting that some signs were hidden behind foliage or set back too far. About 13% (n=34) suggested that the content of the labels and panels be different, such as more simple and direct or including more interesting facts/information about plants. Finally, 12% (n=31) recommended that the signs be more visually captivating or eye-catching, such as with larger or more colorful font and/or images. Some visitors suggested that the current signage was too bland or blended into the environment too much. However, 8% (n=19) felt that the signs should not stand out too much because that would take away from the natural environment.

### **Engagement with Plants**

Tracking data measured visitors' engagement with plants in two ways: 1) number of plant stops per room; and 2) an overall "green score" for each room, on a scale of 1 (glance), 2 (brief/cursory), 3 (moderate), and 4 (extensive). Visitors made the most number of plant "stops" in the Jungle (11.13 on average), followed by the Garden Court (mean=6.96), World Deserts (mean=4.96) and Orchids (mean=4.88). Visitors were less likely to stop to look at plants in the Oasis (mean=1.33), Rare and Endangered Species (mean=1.43) and Plant Adaptations (mean=1.68). As the rooms are not of equal size, however, researchers created a comparable unit of analysis—mean per foot of path. [See Table 21]. These data show that the average number of plant stops per foot of path length was highest in the Orchids room (mean=14.5), followed by the South Lobby (mean=7.5), Oasis (mean=5.8), Plant Adaptations (mean=5.5) and Rare and Endangered (mean=4.7). Scores were far lower in the Garden Court (mean=1.2) and Jungle (mean=1.0), even though the average number of stops were highest in those rooms, simply because these areas are so much larger than the others.

**Table 21:** Average number of plant stops (by room)

	N (visitors)	Max	Mean	Relative Mean	Mean per foot of path	Relative mean per foot
Garden court	97	34	6.96	5.2	0.019	1.2
Jungle	83	59	11.13	8.4	0.015	1.0
Rare and Endangered	76	10	1.43	1.1	0.072	4.7
Plant Exploration	75	15	3.05	2.3	0.035	2.3
Orchids	75	16	4.88	3.7	0.222	14.5
Medicinal Plants	79	22	5.42	4.1	0.056	3.7
South Lobby	65	10	2.29	1.7	0.115	7.5
World Deserts	77	19	4.96	3.7	0.057	3.7
Oasis	72	6	1.33	1.0	0.089	5.8
Garden Primeval	72	10	2.64	2.0	0.030	2.0
Plant Adaptations	71	8	1.68	1.3	0.084	5.5

As it was impossible to provide an engagement score for each plant stop, researchers assigned an overall "green score" to each visitor for every room. These scores were not just based on the quantity of plant stops

made, but the intensity of the engagement with plants overall. Results showed that rooms where visitors stopped at plants the most were also where visitors engaged most intensely with the plants. Specifically, the highest overall green scores were in the Jungle (2.95 on average), Orchids (mean=2.85), and Garden Court (mean=2.68). Lowest green scores were in Rare and Endangered species (mean=1.54), the South Lobby (mean=1.69), Oasis (mean=1.70), and Plant Adaptations (mean=1.77).

**Table 22:** Overall “green scores” by room

	N	Mean	Std. Deviation
Garden court	90	2.68	0.87
Jungle	82	2.95	0.99
Rare and Endangered Species	65	1.54	0.81
Plant Exploration	73	2.07	0.92
Orchids	73	2.85	0.89
Medicinal Plants	76	2.57	1.02
South Lobby	55	1.69	0.90
World Deserts	69	2.54	0.95
Oasis	67	1.70	0.85
Garden Primeval	68	2.06	0.96
Plant Adaptations	62	1.77	0.93

### **Social Interaction**

Data from room interviews suggested that the collections and interpretive materials at the USBG sparked conversation among visitors, with 27% (n=111) stating that they had some kind of social interaction with their group, such as pointing at or talking about specific plants and/or interpretive materials. (See “What Individuals Did in Rooms/Galleries above).

Tracking data also provided information on the extent to which visitors interacted with other visitors and/or staff. The most social interaction took place in the Jungle (2.89 interactions on average), the Garden Court (mean=2.28) and West Gallery (mean=2.24). Very little social interaction took place in the Oasis (0.32 interactions on average), Rare and Endangered (mean=0.40), and Plant Adaptations (mean=0.41). This is likely a function of the small size of these rooms and shorter stay times, but may also indicate that visitors are overall less engaged or stimulated by the content and/or collections in these areas.

Relative to the size of the room (as approximated by path length), Orchids elicited the highest rate of social interactions, 13 times higher than the Jungle which, in turn, had a nine times higher rate of social interaction than in the Orchids room (see Table 23). The South Lobby seems to have elicited a high relative rate of social interactions, which is likely due to the fact that many visitors lingered there while waiting for group members using the restrooms, or used the South Lobby as a place to rest or regroup. Other areas of comparatively high social interaction when measured by path length were Oasis, Plant Adaptations, Medicinal Plants, and Rare and Endangered.

**Table 23:** Number of social interactions by room, weighted by path length

	N	Max number of social interactions	Mean number of social interaction	Relative Mean (compared to lowest rate)	Relative social interactions weighed by path length
Garden court	95	11	2.28	7.1	1.55
Jungle	82	17	2.89	9.0	1.00
Rare and Endangered Species	75	4	0.40	1.3	5.04
Plant Exploration	75	7	1.04	3.3	2.98
Orchids	75	6	1.15	3.6	13.17
Medicinal Plants	78	11	2.03	6.3	5.33
South Lobby	64	7	0.59	1.8	7.43
World Deserts	77	12	1.78	5.6	5.15
Oasis	71	3	0.32	1.0	5.37
Garden Primeval	72	8	0.88	2.8	2.52
Plant Adaptations	71	4	0.41	1.3	5.16
West Gallery	58	15	2.24	7.0	2.26
East Gallery	36	23	1.81	5.7	1.30

### **Visitor satisfaction and enjoyment**

#### **Satisfaction with USBG Overall**

Visitors to the USBG were extremely satisfied with their visit. Even if social desirability is taken into consideration, the results are extremely positive. Researchers deliberately chose a 10-point scale in a semantic differential approach to allow visitors an expression of criticism, and utilized a 12-item scale (with two subscales) to increase validity and reliability. Still a true ceiling effect on satisfaction was achieved. While expressed satisfaction with the visit was extremely high throughout, the highest values were recorded for the holiday season and the “lowest” during the summer (Table 24). This result should be interpreted with some caution, however, as the holiday sample was only about half that of the other four seasons.

**Table 24:** Satisfaction for five seasons of USBG visitors (semantic differential from 1 to 10)

	Total [n=327]	Holiday [n=38]	Winter [n=73]	Spring [n=75]	Summer [n=81]	Fall [n=60]
Total satisfaction (12 items) <sub>a</sub>	8.83	9.13	8.83	8.62	8.83	8.93
Satisfaction based on perceived benefits (7 items) <sub>b</sub>	8.55	8.85	8.48	8.36	8.52	8.75
Satisfaction based on “action” (5 items) <sub>c</sub>	9.24	9.48	9.34	9.02	9.25	9.24

Note: All differences were calculated using the non-parametric equivalent of a one-way ANOVA, the Kruskal-Wallis test. (a) Chi-Square = 6.82; df=4; p=0.146; (b) Chi-Square = 5.51; df=4; p=0.239; (c) Chi-Square = 8.85; df=4; p=0.065.

There was some evidence that having a dominant identity is linked with higher satisfaction scores (Table 25), an effect that might have to do less with why a visitor chose to visit, but more so with clarity about the

visit agenda. That is, visitors who are clear about what they want out of the visit tend to be more satisfied with what they get out of it.

**Table 25: Satisfaction correlated with motivational identities**

	Dominant identity (mean satisfaction)	No dominant identity (mean satisfaction)	p
Experience Seeker [n=377/27]	9.84	9.21	<0.001
Professional/Hobbyist [n=312/93]	9.43	9.20	<0.001
Spiritual Pilgrim [n=336/68]	9.49	9.21	<0.05
Facilitator [n=389/15]	9.53	9.25	n.s.
Explorer [n=346/58]	9.32	9.25	n.s.

Note: All differences were calculated using the non-parametric equivalent of a t-Test, the Mann-Whitney test.

Self-reported time spent in the conservatory correlated somewhat with visitor satisfaction. Specifically, the longer visitors stayed at USBG, the more satisfied they were with their visit. Visitors spending less than 15 minutes in the Conservatory (n=16) showed an average satisfaction score of 8.55; those who spent 15-29 minutes (n=77) showed an average satisfaction score of 8.99. But for those who spent between 30 and 120 minutes at USBG (n=336) showed an average satisfaction score of about 9.3, and stay times longer than two hours (n=17) had an average satisfaction score of 9.92 (Chi-Square=16.8, df=6, p=0.01). However, how much of the conservatory had been visited (self-reported) does not seem to influence the satisfaction score.

Satisfaction scores did not clearly correlate with social group (alone, with family/friends, with partner): the three scales lead to slightly different results. Satisfaction scores correlate with residence of visitors, but this may be a measurement issue: the 27 foreign visitors expressed lower satisfaction ratings than US citizens, likely because they may perceive the semantic differential scale differently from US citizens and were more likely to give lower scores.

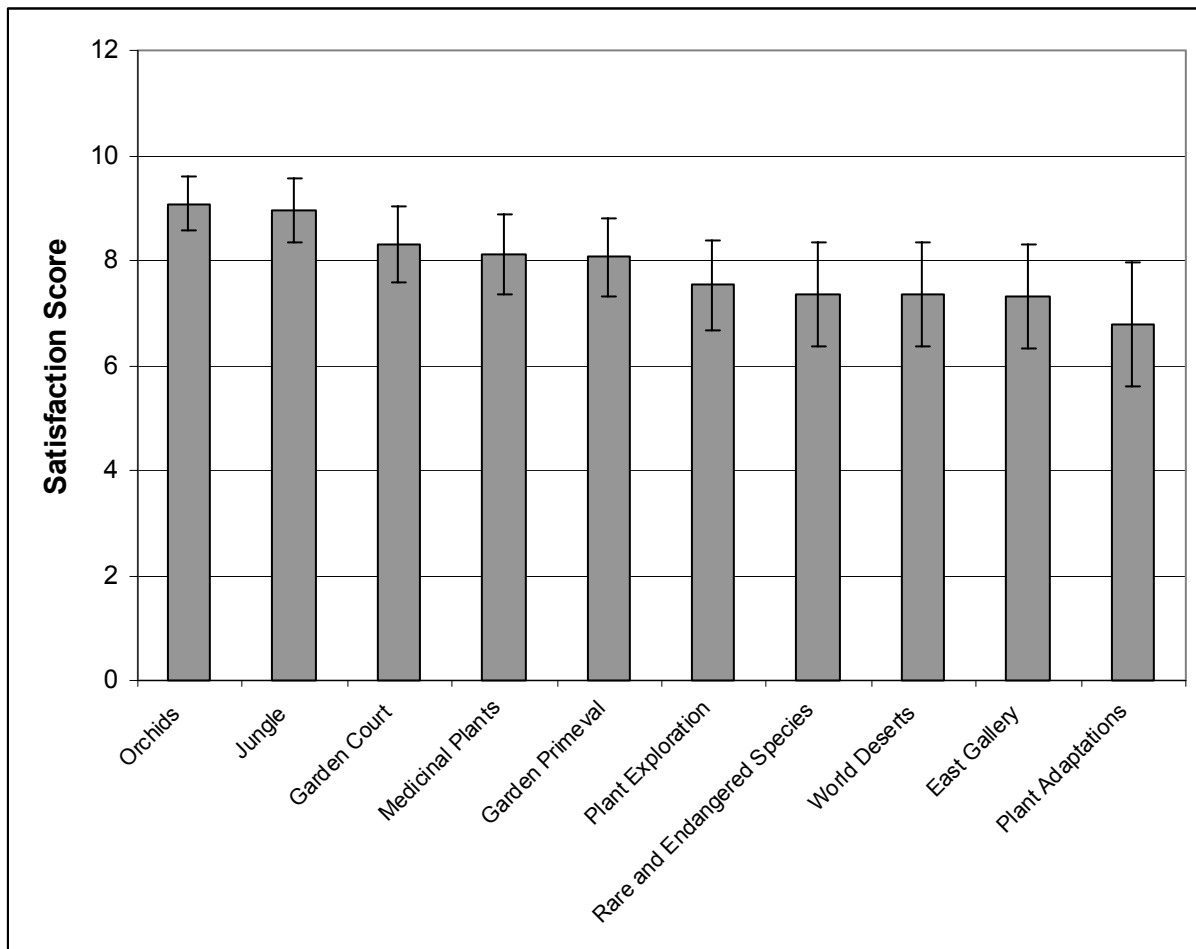
### **Satisfaction with individual rooms**

Visitors were also highly satisfied with their experience in specific rooms of the garden. Based on a 4-item satisfaction scale (type of plants, design/layout, value of experience, and overall appeal), rooms averaged 7.90 overall. Visitors expressed significant differences in their satisfaction with individual rooms (Chi-Square=59.5; df=9; p<0.001). [See Table 26] Orchids and Jungle received extremely high satisfaction scores; visitors were also very satisfied with the Garden Court, Medicinal Plants and Garden Primeval; and, while still rated high on satisfaction, Plant Explorations, Rare and Endangered, World Deserts, and the East Gallery were rated lower (in the mid-seven range, on average, out of ten). Plant Adaptation received the lowest satisfaction score on average (mean=6.78). Interview data suggested that visitors often did not even view Plant Adaptations as a distinct “room” and sometimes felt it was just a hallway or passageway between areas, which may have contributed to their lower ratings of satisfaction in this room.

**Table 26:** Room Satisfaction Scale (4 items)

	Mean	Std. dev.	Minimum	Maximum
Orchids	9.08	1.04	6.25	10
Jungle	8.95	1.20	5.50	10
Garden Court	8.31	1.42	5.00	10
Medicinal Plants	8.12	1.51	4.75	10
Garden Primeval	8.06	1.49	3.75	10
Plant Exploration	7.54	1.72	3.75	10
Rare and Endangered Species	7.37	1.98	2.00	10
World Deserts	7.36	1.96	2.50	10
East Gallery	7.32	1.98	2.25	10
Plant Adaptations	6.78	2.37	2.25	10

Note: Chi-Square (Kruskal-Wallis) = 59.5; df=9;  $p < 0.0001$



**Figure 3:** Visitor satisfaction by room

## What visitors enjoyed

When asked what they enjoyed most about the USBG overall, visitors were most likely to name a specific plant/flower or type, such as the orchids or desert plants (59%; n=273). Visitors also commonly mentioned a specific room (40%; n=183), most often the Jungle, Orchids, or World Deserts. Other aspects visitors enjoyed about the garden included the variety and diversity of plants (21%; n=96); a certain design feature (19%; n=89), such as the Jungle catwalk and water fountains; and the overall atmosphere (sounds, smells, colors) of the garden (17%; n=78). About 15% (n=71) said they enjoyed an interpretive element the most, such as smelling stations in the West Gallery, or a particular panel that they found interesting. [See Table 27 below]. These results indicate that visitors appreciate the USBG most for its diverse plants and flowers, as well as the overall aesthetics and design of the garden, and that “learning” (i.e. through interpretive elements) is secondary. However, this is to be expected in an environment so rich in natural beauty, and one that offers unique, immersive environments not necessarily available to many visitors. The fact that more than 15% of visitors still mentioned an interpretive element as something they enjoyed most is quite impressive.

**Table 27:** What visitors enjoyed most about the USBG overall

	N	Percent of Respondents (n=458)
Plant, flower types	273	58.8
Specific room	183	39.4
Variety, diversity (of plants, rooms)	96	20.7
Design feature of USBG	89	19.2
Atmosphere in USBG	78	16.8
Interpretive elements	71	15.3
Special exhibit	28	6.0
Seeing unique plants	27	5.8
Staff, tour guides	7	1.5
Child enjoyed USBG	6	1.3
Other	15	3.2

Note: Visitors gave multiple responses, so totals do not equal 100%. Average number of answers per visitor = 1.87

There were some seasonal differences in terms of what visitors enjoyed about the USBG. For example, people enjoyed looking at plants/flowers, and appreciated the diversity of plant life, in winter and spring more than at other times. It is clear that Spring is a season where visitors are highly focused on seeing specific plants and flowers in bloom, and perhaps visitors in the Winter enjoyed seeing flowers most because it is not as possible outdoors at that time. Holiday visitors were less interested in seeing the variety of plant life, as many of them were focused on the special holiday display, and specific design features for the holidays. They were also far more likely to say it was their child who enjoyed the Garden, possibly because they felt the holiday display, which includes trains and architectural models, are appealing to children.

**Table 28: What visitors enjoyed most about the USBG by season**

	Total (n=464)	Holidays (n=54)	Winter (n=111)	Spring (n=108)	Summer (n=106)	Fall (n=85)
Plant, flower types	58.8%	57.4%	65.8%	71.3%	46.2%	50.6%
Specific room	39.4	38.9	45.9	28.7	46.2	36.5
Variety, diversity (of plants, rooms)	20.7	5.6	29.7	28.7	10.4	21.2
Design feature of USBG	19.2	24.1	17.1	12.0	22.6	23.5
Atmosphere in USBG	16.8	9.3	20.7	20.4	19.8	8.2
Interpretive elements	15.3	9.3	13.5	18.5	15.1	17.6
Special exhibit	6.0	35.2	1.8	0.9	2.8	3.5
Seeing unique plants	5.8	1.9	3.6	8.3	8.5	4.7
Staff, tour guides	1.5	1.9	1.8	0	2.8	1.2
Child enjoyed USBG	1.3	7.4	0	0	0.9	1.2
Other	3.2	0	0.9	8.3	3.8	1.2

Note: Visitors gave multiple responses, so totals do not equal 100%. Average number of answers per visitor = 1.88

Visitors were also prompted to explain why they enjoyed certain aspects of their USBG experience. The most common response was that it was aesthetically or visually pleasing (38%), such as the types of flowers they saw, the design of the rooms, or a special exhibit or display. Another 32% said they enjoyed something because they felt a personal connection, such as it was a type of plant that they grow themselves or an environment (e.g., the desert) that they come from; 23% enjoyed something (usually a specific flower or room, such as the Jungle) because it was novel, unique or “amazing.” Twenty percent of the respondents enjoyed something because they found it educational or they learn something new. Others said they enjoyed the “immersive” nature or authentic feeling of a room (11%), especially the Jungle, and another 11% enjoyed that they could experience something, such as a certain habitat or climate, that was different from their everyday life. [See Table 29].

**Table 29: Why visitors enjoyed certain aspects of the USBG**

	N	Percent of Respondents (n=360)
Aesthetically pleasing	273	38.1
Personally relevant	183	31.7
Novel, unique, amazing	96	22.8
Educational, learned something new	89	20.3
Immersive, real, authentic	78	11.4
Different experience from daily life	71	11.4
Enjoyable atmosphere	28	8.9

Note: Visitors gave multiple responses, so totals do not equal 100%. Average number of answers per visitor = 1.44

Data from room interviews also showed that visitors most enjoyed specific plants. Almost half (49%; n=197) of the visitors who answered this question mentioned a specific plant or type of plant that they enjoyed most. Similarly, visitors also enjoyed a specific design feature, architecture, or layout of rooms (16%;



n=65); as well as the visual/sensory experience of a room (14%; n=56). Visitors did not often mention interpretive components when talking about specific rooms during the room interviews. Only 5% (n=21) said they enjoyed a particular sign/panel the most; and only 2% (n=7) mentioned an interactive component, likely because most of the rooms do not contain interactives. In addition, the discrepancy between the exit interviews and the room interviews in terms of enjoying interpretive materials may be due to the fact that visitors were most immediately impressed by the plants and visual aspects when exiting a specific room, while interpretive material and content stood out more once they had time to reflect upon their whole experience during the exit interviews.

When interpreting results from open-ended questions, it is important to keep in mind that the answers are top-of-mind. It doesn't mean that elements not mentioned aren't important or enjoyable to visitors; but with an average of 1.35 answers per person, they simply are not the first thing that comes to mind. With that caveat, the differences in what people enjoy in each room are dramatic. Visitors were far more likely to mention a specific plant or flower in Rare and Endangered than in the Jungle, where visitors were more focused on the overall atmosphere and feeling of the room. Naturally plants were not often mentioned in the East Gallery, where living collections is not the focus. Visitors were also much more likely to enjoy a design feature or overall design layout of the Jungle and the Orchids, and—along with the Garden Court—were most likely to enjoy something visual or sensory about these rooms, such as colors, smells, or the impressive size of plants and trees. Variety, diversity, and abundance of plant life were most appreciated in the Orchids room, World Deserts, Garden Court, and Garden Primeval. Interpretive components—both signage and interactives—were most appreciated in the East Gallery, as was the Special Exhibition “Shore to Ship.”[See Table 30].

**Table 30: What visitors enjoyed about specific rooms (Percentage of Respondents)**

	Total (n=397)	Garden Court	Rare & Endang.	Plant Explor.	Orchids	Med. Plants	Jungle	World Deserts	Garden Primiev.	Plant Adapt.	East Gall.
Plant/flower	50%	58%	72%	50%	45%	50%	34%	45%	65%	67%	13%
Design feature, architecture, layout	16	21	3	25	35	5	37	13	7	3	15
Visual, sensory appeal	14	34	3	8	20	8	34	13	13	6	3
Liked nothing, not sure, nothing in particular	8	8	11	8	0	10	0	5	7	19	18
Atmosphere, ambience	8	11	0	5	13	8	20	5	13	3	0
Variety, diversity, abundance	8	11	8	5	15	5	5	13	11	0	3
Liked room in general	6	3	8	10	8	8	7	8	2	6	5
Interpretive component (signage)	5	3	3	3	0	10	5	0	2	3	25
Flowering, fruit-bearing plants	5	8	3	3	0	8	10	10	2	11	0
Seeing unique, novel plants/flowers	4	3	6	3	8	5	5	5	7	3	0
Educational information, realized something new	4	0	3	5	0	8	0	5	4	3	8
Special exhibition	2	0	0	5	0	0	0	0	0	0	18
Professionalism	2	5	0	0	3	5	5	3	0	0	0
Interpretive component (interactive)	2	0	0	3	0	0	0	3	0	0	13

Note: Visitors gave multiple responses, so totals do not equal 100%. Average number of answers per visitor = 1.35

## What do visitors take away from their experience at the USBG?

### Overall USBG experience

During exit interviews, visitors were asked in an open format to describe what they perceived to be the Main or Big Idea behind the USBG; what did they see as the “main messages” that the USBG conveyed. Visitor answers were subsequently coded and quantified (see Table 31 for results). On average, visitors provided 1.75 Main Ideas, many of them captured the stated purpose of the USBG.

**Table 31:** Main or Big Idea for the USBG mentioned by visitors, total and by season

	Total (n=456)	Holiday (n=53)	Winter (n=107)	Spring (n=107)	Summer (n=105)	Fall (n=84)
Experience diversity	57	55	45	52	65	70
Appreciate beauty of nature	22	23	25	21	20	24
Plant physiology	21	34	14	14	20	32
Conservation, preservation	18	28	28	15	13	8
Human/plant relationships	15	23	13	14	18	8
Value and importance of plants	12	13	14	14	12	6
Plant/environment relationships	11	13	11	19	5	6
Different, unique experience	6	9	10	2	3	7
Collections, research	4	4	3	3	2	8
Good for kids	3	6	3	4	0	5
Not sure, no message	2	8	3	3	0	0
Other	4	4	3	4	6	4

Note: Multiple responses, average number per person 1.75

The most important message that visitors perceived, identified by 57% of respondents, was that of diversity. Visitors felt that the USBG conveyed a sense of diversity within the plant kingdom. Appreciation for the beauty of nature, and understanding the internal functioning of plants (plant physiology) were both mentioned by a little over 20% of respondents, followed by conservation messages, plant-human relationship, the value and importance of plants and ecology (plant-environment relationship), all mentioned by between 11 and 18% of respondents. Few respondents felt that the USBG was about research or collections or that the USBG was good for children. Which Big Idea was identified did not depend on gender, origin, social group or other demographic variables. However, season of visit and dominant visit-related identity could influence how visitors perceived the USBG (see Table 31 and Table 32). Spring and Summer visitors seemed somewhat comparable in their answers, but Holiday, Winter and Fall visitors differed from one another and from visitors in Summer and Spring, particularly in how they identified diversity, physiology and plant-human interaction as themes.

Differences in visit-related identity translated predictably into the way visitors perceived the USBG. Spiritual Pilgrims were more likely to experience diversity as the main theme or felt that the USBG conveyed

appreciation for the beauty of nature than Professional/Hobbyists, while the latter were more likely to state that the USBG stood for the conservation and preservation of plants.

**Table 32: Main or Big Idea for the USBG mentioned by visitors, total and by identity**

	Total (n=456)	Prof/Hobbyist (n=93)	Spiritual Pilgrim (n=71)	Explorer (n=59)
Experience diversity	57%	47%	59%	54%
Appreciate beauty of nature	22	18	27	17
Plant physiology	21	27	24	19
Conservation, preservation	18	25	14	10
Human/plant relationships	15	16	18	14
Value and importance of plants	12	15	11	7
Plant/environment relationships	11	15	16	10
Different, unique experience	6	5	4	12
Collections, research	4	2	4	5
Good for kids	3	3	1	2
Not sure, no message	2	3	0	5
Other	4	4	4	3

Note: Multiple responses, average number per person 1.75. Dominant Experience Seekers (n=25) and Facilitators (n=15) were not included due to low numbers.

### What conveyed the Big Idea?

Interpretive elements and components like labels, signage and brochures were most important in conveying the USBG's Main Ideas, mentioned by a third of the respondents, followed by specific exhibits, displays, and the way in which rooms were laid out by ecosystem, habitat, or flower type. (Table 33).

**Table 33: Elements of the USBG that convey the Main or Big Idea**

	Percentage of respondents (n=395)
Interpretive Components	32%
Specific exhibit, display, or room	25
Themed rooms/Layout	24
Abundance, variety, diversity	18
Atmosphere	11
Plants themselves	8
Visually, sensually pleasing	8
Architectural or design feature	6
Different from daily life	3
Real, authentic, immersive	3
Live interpreter, staff, docent, tour	2
Other/Unrelated	6

Note: Multiple responses, average number per person 1.47

Table 34 shows a cross tabulation of visitors' sense of the Main Idea (columns) with the various USBG elements that may convey these ideas (rows). The table represents the most frequent answers in both categories and is therefore a selection of answers. It is apparent that interpretive elements (labels, displays, entire rooms) are the main way in which the USBG communicates with its visitors. The overall gestalt of the venue and the plants themselves, while responsible for visitors' enjoyment and satisfaction, do not carry the interpretive messages of the conservatory.

**Table 34: What conveys the Main or Big Idea (Column percentages)**

	Experience diversity (n=347)	Appreciate beauty of nature (n=142)	Plant physiology (n=129)	Conservation, preservation (n=108)	Human/plant rel. (n=100)	Value of plants (n=67)	Ecology (n=58)
Interpretive Components	21%	18%	27%	31%	30%	25%	19%
Themed rooms/Layout	20	9	16	7	17	9	24
Specific exhibit, display, or room	15	16	19	26	29	24	19
Abundance, variety, diversity	13	15	9	10	9	15	14
Atmosphere	9	11	6	5	2	6	3
Plants themselves	6	5	4	6	2	3	3
Visually, sensually pleasing	5	10	5	5	2	6	5

### ***Visitors' perceptions of room themes***

Room interview data provided information about the extent to which visitors understood the main idea of each room as intended by the US Botanic Garden. Researchers rated the open-ended answers as “1” if the visitor described a message that does not at all align with the USBG’s intended message for that room; a “2” if the visitor was correct but offered a vague or very basic understanding of the room’s main idea; a “3” for a more sophisticated, but still partial, understanding of the room’s message; and “4” when visitors articulated a main idea that very closely aligned with the USBG’s intended message. Responses were rated a “0” if the visitor said they did not pick up on any message or main idea.

Visitors were far more likely not to pick up on a message or main idea in Plant Adaptations (73%; n=29), with many of them saying they did not even perceive this space as a separate “room.” On the other hand, visitors were far less likely to say they did not perceive any main idea/theme in the Jungle (13%; n=5) or East Gallery (17%; n=7). Visitors were most likely to offer a limited or “incorrect” response for the Garden Court (60%; n=23) and Garden Primeval (45%; n=21). Visitors tended to view the Garden Court as a place for appreciating the beauty of nature, showing the diversity of plant life, or featuring beautiful and colorful displays of plants. Only one visitor picked up on the theme of human relationships to and economic uses of plants. In the Garden Primeval, more than half the visitors in this category (54%; n=12) thought the room was intended to feature specific plants or a region (such as “ferns” or “the tropics”); 18% (n=4) thought it was about showing plant diversity; and another 18% thought the main idea was to experience a particular atmosphere or habitat (such as “moist” and “humid”).

Visitors were most likely to have at least a basic understanding of the main ideas in Medicinal Plants (58%; n=23), the Jungle (53%; n=21), and World Deserts (54%; n=21). They were most likely to understand the main messages of the East Gallery, with more than two-thirds of visitors having at least a general idea of the main idea (68%; n=28), with 64% of those (n=18) demonstrating a moderate or sophisticated understanding.

**Table 35:** To what extent did visitors get message? (by room, in percentages)

	N (visitors)	No message (0)	1 (limited or incorrect understanding)	2 (basic, but general and vague)	3 (moderate but partial understanding)	4 (sophisticated and/or complete understanding)
Garden Court	38	37%	61%	0%	3%	0%
Rare and Endangered	40	40	20	28	10	3
Plant Exploration	40	38	35	8	18	3
Orchids	40	35	38	18	10	0
Medicinal Plants	40	30	13	38	15	5
Jungle	40	13	35	40	13	0
World Deserts	39	26	21	23	26	5
Garden Primeval	47	21	45	11	17	6
Plant Adaptations	40	73	13	10	5	0
East Gallery	41	17	15	24	32	12
TOTAL	405	33	29	20	15	4

Note: Total percentage may exceed 100% due to rounding.

Results show that more is needed to make visitors aware of room messages and themes. Some rooms are currently better suited to do so, such as the East Gallery, World Deserts, and Medicinal Plants. Others do not necessarily convey their overall themes very well, if at all, including Garden Court, Plant Explorations, Orchids, and Plant Adaptations.

But what may lead to better understanding? We cross-tabulated visitors' understanding of room themes against the time they spent in the room (Kendell's tau\_b; p=0.055) and against the degree to which they read interpretive material in the room (Kendell's tau\_b; p<0.001). Both variables appear to influence understanding of the theme, but results are still somewhat inconclusive. [See Table 36 and Table 37]

Specifically, visitors who spent less than a minute in a room were far less likely to pick up on a Main Idea or message (54%, compared to just 21% for those who spent 15-20 minutes in a room, and 9% for those who spent 20 minutes or more). Visitors spending two or more minutes in a room seem to have a much better chance of getting at least a basic understanding of the room theme(s), though this understanding does not increase with time after the two-minute mark.

**Table 36:** Understanding room message correlated with time spent in room

Time in room	N (visitors)	No message (0)	1 (limited or incorrect understanding)	2 (basic, but general and vague)	3 (moderate but partial understanding)	4 (sophisticated and/or complete understanding)
1 minute or less	56	54%	16%	18%	11%	2%
2-5 minutes	187	32	27	23	17	2
5-10 minutes	93	29	33	16	12	10
10-15 minutes	37	27	43	14	14	3
15-20 minutes	14	21	36	21	21	0
More than 20 min.	11	9	64	18	9	0
TOTAL (count)	398	130	118	78	58	14

Note: Kendell's tau\_b = 0.079; approximate T=1.915; p=0.055. Percentages may deviate from 100% due to rounding.

Reading signage appears to influence visitors' understanding of the room theme more than just spending time in the room. Those who did not notice or read any signage were far more likely to miss the message altogether than those who did. Almost half (43%) of those who reported reading labels had at least a basic understanding of the room messages, compared to 37% of those who only glanced, and 31% of non-readers, which shows that interpretive material was important in conveying the message, but that other elements (such as design, plants, etc.) must have also contributed to understanding. That is, reading alone does not account for whether the visitor got the message or not.

**Table 37:** Understanding room message correlated with reading of interpretive material

Did you use or read any of the larger signs or panels?	N (visitors)	No message (0)	1 (limited or incorrect understanding)	2 (basic, but general and vague)	3 (moderate but partial understanding)	4 (sophisticated and/or complete understanding)
Yes	218	25%	32%	21%	18%	4%
Yes, noticed but only glanced	55	38	26	18	13	6
No, didn't notice or read	124	43	27	19	10	2
TOTAL (count)	397	128	118	79	59	13

Note: Kendell's tau\_b = -0.154; approximate T=-3.65; p<0.0001.

Table 38 presents alternative perspectives on room themes expressed by visitors who either did not see a message, had limited awareness of a theme, were incorrect, or had a basic but vague understanding of the room message. The sample is not large enough to run for each room, but overall, those who provided an alternative perspective on the room theme often expressed a general notion that was at least aligned with the overall mission of the USBG.

**Table 38:** What visitors saw as the main ideas behind rooms

	Percentage of Respondents (n=131)
To feature specific plants or region	23.7%
To show plants, flowers are beautiful	18.3%
To experience a particular habitat or ecosystem (natural environment)	16.8%
To provide a peaceful, relaxing place	15.3%
To show diversity/variety of plants	13.0%
Didn't think this was a room at all	9.9%
To provide learning opportunities	9.2%
To feature unique and unusual plants	4.6%
To emphasize the importance of conservation	3.8%

Note: Visitors gave multiple responses, so totals do not equal 100%. Average number of answers per visitor = 1.15

Irrespective of their understanding of room themes, visitors were asked to provide their ideas on how the room messages could be made clearer. The most common suggestion was to make the content of the signage more clear, direct, and simple, with more than one third of visitors giving that response (36%; n=129). If the garden wants visitors to walk away with a certain message, visitors felt they needed to state the message much more directly. Visitors also suggested providing better initial orientation to the topic (17%; n=61), such as by placing an intro label more obviously near the all entrances to a room. Visitors interviewed in the Garden Primeval in particular noted that the intro panel only came first only if you entered from Plant Adaptations, not from the Oasis. Finally, some visitors (17%; n=63) felt the signage should be more visually appealing in order to grab their attention and convey the message of the room more clearly. (See Table 39 below).

**Table 39:** How room messages could be made more clear (overall)

	N	Percentage
orientation	61	16.8%
clearer or different content, language	129	35.5%
location of signage	29	8.0%
not interested in message	15	4.1%
design, visual appeal	63	17.4%
interactivity	24	6.6%
live interpretation	10	2.8%
nothing, no suggestions	100	27.5%
other, unrelated	18	5.0%

Though numbers were relatively small per room, researchers cross-tabulated visitors' suggestions on how to make the message clearer with specific rooms. Table 40 summarizes the results. Data show that improvement strategies may have to differ between individual rooms. The East Gallery received the highest percentage of "No suggestions/nothing," presumably because there is a lot of interpretation and clear



signage. On the other hand, Garden Primeval signage may most benefit from clearer language, improved content, and better orientation/placement of signage.

**Table 40:** How room messages could be made clearer (by room)

	Total (n=363)	Garden Court	Rare & Endang.	Plant Explor.	Orchids	Med. Plants	Jungle	World Deserts	Garden Primiev.	Plant Adapt.	East Gall.
Clearer or different content, language	35.5%	52.6%	41.0%	26.3%	28.9%	36.1%	48.5%	27.3%	61.5%	16.7%	12.1%
Nothing, no suggestions	27.5	10.5	17.9	31.6	26.3	22.2	21.2	39.4	15.4	25.0	72.7
Design, visual appeal	17.4	18.4	17.9	13.2	13.2	8.3	24.2	18.2	20.5	27.8	12.1
Orientation	16.8	21.1	17.9	13.2	26.3	11.1	15.2	6.1	20.5	25.0	9.1
Location of signage	8.0	15.8	17.9	7.9	0.0	8.3	0.0	6.1	10.3	11.1	0.0
Interactivity	6.6	7.9	2.6	13.2	7.9	8.3	6.1	6.1	5.1	2.8	6.1
Other, unrelated	5.0	5.3	2.6	2.6	5.3	8.3	9.1	9.1	2.6	5.6	0.0
Not interested in message	4.1	7.9	5.1	5.3	0.0	11.1	0.0	3.0	2.6	2.8	3.0
Live interpretation	2.8	0.0	2.6	10.5	7.9	2.8	3.0	0.0	0.0	0.0	0.0

Note: Visitors gave multiple responses, so totals do not equal 100%. Average number of answers per visitor = 1.24

Visitors who said they did not read signs or only glanced at them were also asked to suggest ways in which the signage could be made more appealing to them. Of those who answered this question (n=252), almost half (47%) felt that no changes were needed, suggesting that their lack of using the labels had nothing to do with the signage itself; 16% felt that the signage needed better placement, with some visitors noting that signs were sometimes too far back from the path or partially blocked by foliage; 14% felt the content could be made more interesting; and 12% thought the signage should have a more visually appealing design, or one that would “stand out more.” A few respondents suggested that signage be more hands-on or interactive (6%). All other suggestions were mentioned by less than 2% of respondents, including making them more kid friendly, have less text, make the message clearer, use questioning techniques (less didactic), and make them less “basic.”

## CONCLUSIONS

The multiple methods utilized in the US Botanic Garden Visitor Study allows us to make many conclusions about the nature of USBG visitors, their motivations for coming, how they utilize the space, their levels of satisfaction and enjoyment, and what they take away from the experience. The study was not intended to be prescriptive, however, but rather to provide useful information about visitors that could help inform or guide future strategic and interpretive planning at the US Botanic Garden.

- **The US Botanic Garden provides extremely high overall satisfaction and enjoyment to visitors.** Visitors conveyed extremely high satisfaction and enjoyment of their experience at the US Botanic Garden, on both the overall and individual room levels. While there is some variation between the rooms (for example, visitors were significantly more satisfied with their experience in the Garden Court than in Plant Adaptations), the overall satisfaction measures were very high and demonstrated a ceiling effect. This suggests that, on principle, the Botanic Garden does not need to change much, if anything, to maintain overall visitor satisfaction with the experience.
- **Visitors are strongly motivated by personal interest and “spiritual” renewal.** Visitors to the USBG are predominantly there for personal, rather than social, reasons. Many seek the affective, sensory experience of looking at beautiful plants, flowers, and natural environments. They utilize the garden as a place for relaxation, renewal, and even “escape” from everyday life. Others are predominantly there because they are “plant aficionados” – they have a strong personal interest in plants, gardening, learning about nature, and so on. Far fewer visitors were motivated to visit the garden for social reasons—that is, to facilitate the experience of others, such as children or other family members—which makes the Botanic Garden visitorship unique compared to other institutions with living collections, such as aquariums and zoos.
- **Visitors enjoy the mix of aesthetics/contemplation and education.** While visitors to the US Botanic Garden were more likely to enjoy the natural beauty of the plants, exhibits, displays, and “rooms” than to focus on an educational agenda, they seem to appreciate having a mix of both. That is, while they are mostly focused on the experiential and sensory aspects of the garden, they also appreciate learning more about plants, their uses, how they function, and how they connect to larger ecosystems. There is no inherent conflict between interpretation (e.g., more educational material and offerings) and a more affective, contemplative use of the garden. The East Gallery and West Gallery are important additions to the interpretive goals of the USBG, and visitors who utilize interpretive materials in the rest of the Conservatory enjoy them. Visitors who do not tend to read labels are not, for the most part, bothered by them being there.
- **Current usage rates of interpretive materials may be sufficient.** As is typical of most free-choice learning institutions, a relatively small percentage of visitors read labels, panels, and other signage. However, it is important to keep in mind that the Conservatory is a large space that offers a great deal of interpretive materials, so even usage rates of around 10% may be as much as the USBG can hope for. More importantly, for visitors who did stop at signs and labels, their level of engagement was relatively high. In addition, visitors to the USBG don’t necessarily come to read and be educated, hence the rate of interpretive material use is not a problem from the visitor perspective.

- **Visitors suggested some ways in which interpretive materials might be made more appealing.** Although current usage of interpretive materials may be sufficient, visitors did offer suggestions on how the signage and labels might be made more appealing to them. These included giving them more prominent placement in the room, making the content or message simpler and more clear, and creating a visual design that “stands out” more. Research also shows that visitors are more likely to read labels if the text is shorter, simpler, and if the message of a sign is immediately apparent. If visitors need to “work” to figure out what a sign is going to be about, or if they are overwhelmed by too much text or “jargony” language, they are not likely to read the sign.
- **More opportunities to touch, smell, manipulate may boost use of interpretive materials.** As many visitors were most interested in the sensory aspects of the garden (sights, sounds, smells), it may be effective to incorporate more of this type of experience into the interpretive materials. For example, many visitors appreciated opportunities to touch, smell, and interact with exhibits, particularly in the West Gallery. Especially for groups with children, it would be useful to provide more interactives and hands-on activities, whether permanent or temporary (such as the “rubbings” activity associated with the Ship to Shore exhibit).
- **Visitors seem to “get” many of the key messages of the USBG overall.** Visitors walk away with several “big ideas” from their overall experience at the USBG that align well with the institution’s mission and goals. The key messages visitors talked about include experiencing the diversity of plant life and ecosystems, appreciating the beauty of nature, learning about how plants function, as well as human relationships to plants, and the importance and value of conservation efforts and preserving plants, habitats, and ecosystems. Further, visitors felt these messages were largely conveyed through interpretive materials, as well as the way the garden is laid out by separate “themed” rooms and galleries.
- **Visitors have more difficulty understanding specific themes or messages in the individual rooms and galleries.** It was more difficult for visitors to pick up on the main ideas of individual rooms than for the Botanic Garden as a whole. If these room-based messages are important to the USBG, it seems that more could be done to promote these ideas without overburdening visitors with too much interpretive media. For example, the intended messages of the specific rooms are often very complex, or too detailed, for a visitor to absorb in just a few minutes (keeping in mind the average stay times in a single room or gallery). Some of the messages are obscure and/or not easily gleaned from the interpretation of that room. For example, in the Garden Court, most of the signage about human use of plants and the economics of plants are placed behind benches, so that people face away from them when they sit down. The Garden Court is also a space that people don’t really see as a “room” or exhibit, but a place to get oriented, rest, look at the new floral displays, take photos, eat lunch, meet up with others in their group, etc. – a social gathering space more than an exhibit. So perhaps this room is not the best environment for educational messages.

In addition, visitors suggested that room themes be more clearly stated in signage in order to be better understood. Some also felt the signs needed better or more prominent placement so that they would stand out more, noting that some signs are hidden behind foliage or set too far back from the path.

- **Understanding the “Big Ideas” depends partly on time spent and on use of interpretive materials.** Whether people receive the messages depends in part on the time they spent in the Conservatory and the rooms, and in part on the extent to which they used interpretive material. However, interpretation is achieved apparently not just through signage, but through design, plants, and aesthetics. In other words, interpretive material is just one way in which visitors pick up on some of the overall themes of the Garden.

Overall, the US Botanic Garden seems to provide a highly satisfying experience for a variety of visitor agendas, and an experience that is both aesthetic and educational. Visitors are drawn to experience plants in their unique habitats, but also enjoy learning more about plants—whether through signage, interactives, or simply how many of the rooms are laid out into different ecosystems. The USBG is therefore a “hybrid” institution—part “art museum” in that it provides a visual and aesthetic experience to visitors, and part “natural history or science museum” because of what visitors learn about the natural environment, plant physiology, and human relationships to the plant world. We recommend keeping it this way, since visitors seem to appreciate both aspects of the experience.

## **Lessons learned**

Stepping back, several important lessons can be gleaned from the US Botanic Garden Visitor Study. These include:

- Information on—and directly from—visitors is crucial to understanding the roles and effectiveness of an institution. That is, it is important to view the visitor as a key “stakeholder” in your institution.
- Comprehensive studies may require enormous amounts of data to get a reliable and representative perspective on the visitor experience.
- Different approaches are needed to answer different questions: one method alone is not likely to succeed, and will certainly not provide a rich and detailed account of the visitor perspective.
- Interpreting data benefits greatly from theoretical frameworks (e.g., identity, “interpretive capital”, etc.).
- Linking findings to motivation, identity and other “psychographics” (rather than demographics) is useful in interpreting visitor data.
- In the end, visitor studies do not answer questions in clear, black-and-white terms; but rather they can inform and guide an institution in making important strategic decisions.

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## APPENDIX A: Observation Demographics Sheet



Sheet #: \_\_\_\_\_ Observer: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  A.M.  
 Approximate level of visitation:  Empty or sparsely visited  Crowded  P.M.  
 Moderately visited  Very Crowded

(Please circle appropriate categories)

Ind. #	Sex		Age estimate	Race/ethnicity						Group Type			Same group Mark
	Male	Female		Caucasian	African Am	Asian/ Asian Am	Latin/ Hisp.	Native/ Pac. Isl.	Intergen Group	All adults	Couple	Alone	
1	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
2	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
3	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
4	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
5	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
6	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
7	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
8	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
9	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
10	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
11	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
12	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
13	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
14	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
15	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
16	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	
17	M	F		C	AF	AS	L	N	All ages	Adults	Couple	1	

## APPENDIX B: Timing and Tracking Protocols and Instruments

## US Botanic Garden Visitor Study Tracking Map Protocols

Prepared by:  
Institute for Learning Innovation

### What is “visitor tracking” and why are we doing it?

Tracking is a type of unobtrusive observation where data are collected about how visitors naturally use an exhibition and/or specific components within an exhibition. In this study, we will track approximately 75-100 individual visitors through the US Botanic Garden (excluding the Outdoor Gardens and Bartholdi park). Data collectors will record general information, such as the pathway that the visitor takes through each gallery, how much time the visitor spends in each “room” of the garden, to what extent they look at or read interpretive signage, as well as their social interactions with each other and/or staff.

### How to select a visitor to track

Visitors will be selected and approached randomly at the entrance way just past the Security Guard desk. Visitors have a choice to enter through the Garden Court or the West Orangerie gallery; data collectors will intercept the visitor before they enter either doorway. Select visitors by creating an imaginary line near the entrance, and only approach people who are approximately 15 or older (determine visually). The moment you are ready to interview someone, look up and the next person who crosses the line is the person you should talk to. Make sure that you don't start intentionally “selecting people,” for this would introduce what we call a bias into the sampling. However, you may encounter in couples and groups that one person gets volunteered or that the person says that someone else is better to talk to. Don't fight that. If that is so, interview the other person. Do not interview visitors who appear to part of an organized group (i.e., a school trip or group tour), in which case do not include them in your sample and recruit another visitor.

### How to initiate the tracking

Once a data collector has randomly selected a visitor, she will approach the visitor. Be sure to smile and look friendly. Briefly explain to the visitor that you are conducting a study for the Botanic Garden about how visitors use the space, and that you would like to just keep an eye on their group as they visit. This is an extremely important part of tracking, as you need to get permission from the visitor before including them in the study. You can use the following script:

*“Hi, my name is \_\_\_\_\_. I am a volunteer here at the US Botanic Garden, and we're conducting a study to better understand what people do while they're here. Would you mind if I kept an eye on you [or your group, if the visitor is part of a larger group] in the garden rooms and make some notes about where you go and what you do? To thank you for your time, we have a lovely Lawn and Garden book for you.”*

[Declines]

If the visitor declines, remain cheerful and do not take it personally. It is often useful to try to gauge any initial hesitation by visitors as they are debating about whether to participate. There are myriad reasons why visitors might not want to participate, but some of these reasons we can try to anticipate and proactively acknowledge to make the visitor feel more comfortable. Our goal is to give the visitor every reason to participate. For example, if the visitor says they are only planning to stay in the galleries for a short period of time, tell them that's fine and that it doesn't matter how long they stay. If the visitor simply appears reluctant to participate, make it clear that their participation will help the US Botanic Garden to make the experience even better for visitors like them.

If the visitor still seems unwilling, you can say something like: *“No problem, thank you for stopping, and have a wonderful visit here.”*

[Accepts]

If the visitor agrees to participate, thank them, and ask them to answer a few quick questions about themselves, just so that we know who exactly participated in the study. At this point, have your “Background/Demographic sheet” handy, and ask the visitor the questions on that sheet. You can use the following script:

*“Thank you so much for agreeing to participate, we really appreciate it. I first need to ask you a few quick questions about yourself, so that we know who’s coming to the Garden. Then you can just explore the Garden as you normally would, and don’t worry about me. Remember, it’s not important what your group does or how long you stay – you should just all explore the garden as you normally would, even if you decide to separate.*

*At the end of your visit, however, do you mind if I ask you a few questions about your experience today? If you decide not to take part in the interview, that’s fine. This first part of the study will still be useful to us.”*

Once you have collected the necessary demographic information from the visitor, thank them, and encourage them to begin their visit, just as they would if you were not watching them.

## **How to actually track a visitor through the Botanic Garden**

### Staying “incognito”

The goal in visitor tracking is to strike a balance between the visitor’s comfort level (i.e., not getting too close to them) and your need to collect detailed data on their experience. After a few minutes, the visitor will likely forget that you’re even keeping an eye on them. This is especially true when data collectors are careful to remain out of sight of the visitor, so as not to interfere with his/her natural exhibition experience. Data collectors should naturally engage with the exhibition themselves, often appearing as if they are taking notes about a specific exhibition component or plant, and not the visitor. It is not necessary to stay right with the visitor at all times, or watch them at every moment. Keep a comfortable distance between yourself and the visitor, and be as natural as possible.

## Recording tracking data

Data collectors will use scaled-down maps of the Botanic Garden to record tracking data (a separate sheet will be used for the East Gallery and one for the West Gallery). Use the map to identify where you need to record information as follows:

1. Timing – When the visitor first enters the Garden after agreeing to participate in the tracking (they will enter either through the Garden Court or the West Orangerie), put a “0.” As the visitor exits each room, you will cumulatively put the amount of time that has passed using a stopwatch or regular watch. For example, if the visitor leaves the West Gallery and enters Rare and Endangered species after 4 minutes, note “4” in the appropriate spot; if the visitor enters the Plant Exploration after 2 minutes, note “6” (as a total of six minutes has passed since the visit began). This way, we will be able to calculate an overall “stay time” within each room or space.

As the visitor moves through each room, the data collector will record the visitor’s pathway through the space. Specifically, the data collector will draw a line corresponding to the visitor’s movement throughout the gallery, with particular attention paid to the specific interpretive experiences that are marked on the map (panels, labels, interactives, benches). The data collector will mark the line with directional arrows, to record the direction of the visitor’s movement throughout the space. When the visitor leaves that room, the tracker will assign an overall “green” score to reflect the extent to which the visitor interacted with the plants (see below).

When a visitor makes a “stop” at a particular plant or group of plants (i.e., stops walking and/or looks at the plants for at least 5-10 seconds), the tracker will indicate this by drawing an arrow towards those plants and marking the spot with an “X.” When a visitor makes a stop at an interpretive material or activity (i.e., a panel, label, or interactive), the data collector will draw the path line to touch that gallery component and give an “engagement” rating. When a visitor stops at a bench, draw the path arrow to touch the bench and note approximately how long they spent there.

If you lose the visitor at any point in the tracking (such as they get too far ahead, or someone has stopped to ask you something), just catch up with the person as quickly as possible, mark the “lost” time on the map, and continue tracking from there.

As data collectors will rate visitor engagement and interactions on numerous levels, each is described below with its own distinct scale: 1) Plants and flowers; 2) Panels and labels; 3) Interactive Components; and 4) Social Interaction.

### *Visitors’ engagement with plants and flowers*

While data collectors will mark an “X” on the map every time a visitor makes a stop at a plant or flower, they will also assign an overall “Green score” that reflects the extent to which the visitor engaged with the plants in the room in general. Use the following 4-point scale:

- 1 = GLANCE – visitor walks through the gallery/room without stopping, or stopping only briefly; visitor may glance around at the plants but is not drawn to any plant in particular and does not stop to look at anything more closely.
- 2= MINIMAL/CURSORY - visitor stops at 1-2 plants or groups of plants and looks at them, but generally walks through the gallery fairly quickly and does not strongly engage with any of the greenery.
- 3= MODERATE – visitor stops at several of the plants, may comment or point out something; they look engaged and interested in several areas of the room; they may sit on a bench for a moment and look around.
- 4= EXTENSIVE – visitor stops at many plants, may comment or point out something, take pictures of the plants or sketch them; visitor shows clear interest in many of the plants/flowers in the room; may sit on a bench for a while to “take in” the scenery.

*Visitors’ engagement with panels and labels*

Each time the visitor looks at or uses one of the gallery components on the map (not including the benches), the data collector will record the quality of engagement with that component (panel, extended label, or interactive). In order to do this, you will use a quality ranking scale, developed to assess the quality of interactions that visitors have with specific exhibition components, as described below (if the visitor does not notice or look at the component, do not record anything):

- 1= GLANCE - visitor walks by and glances at the component (label, panel, interactive), but displays no apparent interest in any particular element or information; visitor does not actually read any of the label or touch the interactive.
- 2= MINIMAL/CURSORY - visitor stops, views one or more elements of the component briefly in a cursory way, perhaps casually points to something; visitor may read a small portion of the label, in a fairly cursory fashion; briefly touch or smell an interactive, but does not show a lot of interest
- 3= MODERATE - visitor stops, views one or more elements of the component with apparent interest; appears engaged and focused; maybe points to something or makes comments aloud such as “Wow,” “Cool,” or “Look at that;” visitor reads most of the panel/sign, or engages with the interactive fairly closely.
- 4= EXTENSIVE - visitor stops, views elements of the label/panel or interactive very intently; pointing, commenting, asking questions; visibly engaged and focused; visitor reads almost all aspects of the label/panel, fairly deeply, or uses the interactive intensively.

*Visitor’s engagement with interactive components*

For the purposes of this study, an “interactive” is defined as any interpretive component in the exhibits or rooms that allows the visitor to touch, handle, manipulate, smell, etc. (this does NOT include plants without interpretative components). Each time a visitor uses an interactive, rate them on the following 3-point scale:

- 1= GLANCE - visitor walks by and glances at the interactive component, but displays no apparent interest in any particular element or information; they notice it, but do not actually touch or manipulate the interactive.
- 2= MINIMAL/CURSORY - visitor touches/smells or otherwise manipulates the interactive component briefly (such as lifting up a card), but does not show great interest and walks away. For example, if it is a lift-up card, they will not read the text underneath.
- 3= MODERATE - visitor touches, smells, manipulates the interactive in a relatively focused way; they may comment on them or point out something; if there are several components (such as flip cards), they will lift up at least a couple of them, and read them briefly.
- 4= EXTENSIVE - visitor intensively engages with the interactive, using almost all or all of the components, and reads text when available; overall, they appear very focused and engaged. They might point out something to another group member or talk about the interactive.

### *Visitors' social interaction*

In addition to recording visitors' engagement with the interpretive experiences, data collectors will record evidence of social interaction. To the best of your ability, only note instances when the visitor's interaction is related to the experience (for example, they are talking about a particular plant or label, rather than what they plan to do after leaving the Garden). Specifically, the data collector will record instances where an individual is overheard talking to a member of their group, another visitor, or staff member about a particular aspect of an experience, or where the individual is seen collaborating with someone else to use an interpretive space or material. In all of these cases, the tracker will mark an “S” next to the component or plant that seems to spark the conversation.

### **How to end the tracking**

Ideally, we would like each person that we track to participate in a brief exit interview. When the visitor exits the Garden Court into the foyer near the East Orangerie (classroom), the tracking portion is done. At this point, you will mark the total, accumulated time on the map, and approach the visitor. Re-introduce yourself, thank them for participating, and remind them that you had wanted to conduct a quick interview on what they experienced. Emphasize that it's a short interview (5-10 minutes) and would be really helpful to the Botanic Garden to know not only what people did while they're here, but what they got out of the experience. You can say something like:

*“Excuse me – remember we spoke at the beginning of your visit? Thanks again for agreeing to participate in this study, and now I was wondering if you’d be willing to talk with me for a few minutes about your visit and what you thought about your experiences. It should just take a few minutes, and you can leave whenever you need to.”*

If they decline, thank them for participating in the tracking portion and hand them their complimentary gift. If they agree, thank them and proceed with the exit interview using the Interview Guidelines.



**U.S. BOTANIC GARDEN VISITOR TRACKING  
DATA SHEET**

**Date:** \_\_\_\_\_ **Interviewer:** \_\_\_\_\_

**Visitor #** \_\_\_\_\_ **Time In:** \_\_\_\_\_ **AM/PM** **Time Out:** \_\_\_\_\_ **AM/PM**

**Sex:**  Male  Female **Age estimate:** \_\_\_\_\_

**Race/Ethnicity:**  Caucasian  Afr American  Latino/Hispanic  Asian/Pac Islander  Native American  
 Other/Mixed

**Group size:** 1 2 3 4 5+

**Group Type:**  Alone  Couple  Adult Group  Intergenerational Group

**Crowdedness Level:** Assess at the end, since crowdedness can change over time, give an average for the visit. Then use a scale of 1-4 as follows:


- 1 - Empty**, hardly any visitors present to sparsely visited; others are around but access to exhibits is easy
- 2 - Moderately visited**; exhibition feels comfortably filled with visitors; noise level is pleasant; all exhibits are accessible (with few exceptions); hardly any wait time for interactions
- 3 - Crowded**; moderate noise level; wait time for some exhibits; some exhibits not accessible
- 4 - Very crowded**; high noise level; difficult to navigate; many exhibits are inaccessible or crowded, or wait time to see/interact with them


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**Map Key**

T= time check


P= panel 

L = label 

INT= interactive

GL = group of small labels

PH = plant highlight

 = bench

**Engagement Scales**

(panels/labels, interactives, overall plant engagement)

1 = Glance

2 = Cursory/minimal

3 = Moderate

4 = Extensive

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**Notes:**

## APPENDIX C: Overall Exit Interview Protocol and Instruments

## U.S. Botanic Garden Exit Interview

Date: \_\_\_\_\_ Interviewer: \_\_\_\_\_

Time of day: \_\_\_\_\_ AM/PM Visitor #: \_\_\_\_\_

A. Introduction (use **Interview Procedure US Botanic Garden** sheet for protocols on random sampling and approaching visitors – interview should take about 10 minutes)

B. Interview questions

1. How long, approximately, have you spent in the conservatory today? [about \_\_\_\_\_ minutes]

2. Approximately how much of the conservatory have you seen today?

cursory visit – just passed through

visited some of it, but less than half

visited about half

visited more than half

visited almost all or all of the botanic garden

3. What would you consider most fascinating, interesting or enjoyable about your visit today? *Prompts: What did you appreciate most about your visit?*

→ Why did you find those things most interesting? *Prompts: Can you tell me more about that? Can you give me an example?*

4. What areas have you skipped in the Garden today?

→ What was the main reason(s) you skipped these areas?

5. If someone asked you to describe the “main idea(s)” of the US Botanic Garden, what would you say? *Prompts: What do you think the USBG wants to convey to its visitors? What do they want visitors to experience or learn?*

6. What about your experience today best conveyed these “main ideas”? *Prompts: Can you give an example of something you saw, read, or experienced at the USBG today that communicated this message or idea? How could USBG make these messages more clear?*

C. Please rate your satisfaction with the following elements of your visit experience:

PART 1

	A. How satisfied were you with this element of your experience?										B. How important was this element to you?					Does not apply
	Extremely dissatisfied					Extremely satisfied					Not at all important		Extremely important			
Opportunities to learn new things	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	[ ]
Opportunities to re-familiarize myself with things I know or used to know	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	[ ]
Enjoy being around plants	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	[ ]
Experience fun and excitement	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	[ ]
Have opportunities for reflection and introspection	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	[ ]
Experience something new, unusual, or unique	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	[ ]
Encounter knowledgeable, helpful and pleasant staff	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	[ ]

PART 2

How likely is it that you would recommend visiting the US Botanic Garden to a friend or colleague?	Not at all likely (Definitely not)	1	2	3	4	5	6	7	8	9	10	Very likely (Definitely)
If it were possible, how likely is it that you would return?	Not at all likely (Definitely not)	1	2	3	4	5	6	7	8	9	10	Very likely (Definitely)
To what degree were your expectations met today?	Not at all	1	2	3	4	5	6	7	8	9	10	Completely
Overall, how satisfied are you with your visit?	Extremely dissatisfied	1	2	3	4	5	6	7	8	9	10	Extremely satisfied
How would you rate the US Botanic Garden overall?	Boring	1	2	3	4	5	6	7	8	9	10	Fascinating

D. Demographic Information

(Now may I ask you a few questions about yourself so that we know who's coming to the USBG?)

1. Are you a
  - First-time visitor?
  - Been here once before?
  - Occasional visitor?
  - Regular visitor?
  
2. Did you visit the website before your visit?
  - Yes
  - No
  
3. Where do you live?
  - Local (Within the Beltway )
  - Nearby (Greater DC Metropolitan Area)
  - Out-of-state (non-neighboring)
  - Foreign country
  
4. What year were you born? \_\_\_\_\_
  
5. Gender:
  - Female
  - Male
  
6. Would you describe yourself as?
  - Asian American or Pacific Islander
  - Black or African American
  - Latino or Hispanic
  - Native American
  - White or Caucasian
  - Other or mixed (please describe.)
  
7. Who are you here with today?
  - With family
  - With friend/partner
  - Alone
  
8. Age of youngest child in group: \_\_\_\_\_
  
9. Can I ask you what your profession/occupation is?
  
10. How have you learned about plants throughout your life (if at all)?

*Thank you so much for your help. Now I'd just like you to quickly fill out this sheet on why you came here today. It should just take a few minutes, and I'll get your thank-you gift while you fill it out.*

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**Any notes, observations:**

## Why are you here today?

Check the **5** statements that best reflect **why you are here today**.

**For those 5 statements only**, indicate the importance of the reason for you visiting today (not whether you generally agree with the statement).

- If a statement represents a **very important reason you are here today**, you would circle **7**.
- If a statement represents a **less important reason you are here today**, you would circle **1**.

### Check 5

		Less Important Reason						More Important Reason
<input type="checkbox"/>	...this is an important institution in this community	1	2	3	4	5	6	7
<input type="checkbox"/>	...I support the mission to study, celebrate and protect plants	1	2	3	4	5	6	7
<input type="checkbox"/>	...I came a long time ago and want to revisit it	1	2	3	4	5	6	7
<input type="checkbox"/>	...It is one of the best places to visit around here	1	2	3	4	5	6	7
<input type="checkbox"/>	...I frequently visit botanic gardens when I go on trips	1	2	3	4	5	6	7
<input type="checkbox"/>	...I like to learn about plants	1	2	3	4	5	6	7
<input type="checkbox"/>	...I actively support conservation and the protection of plants	1	2	3	4	5	6	7
<input type="checkbox"/>	...coming here helps me appreciate nature	1	2	3	4	5	6	7
<input type="checkbox"/>	...I feel at peace in these surroundings	1	2	3	4	5	6	7
<input type="checkbox"/>	...viewing the different species fills me with wonder	1	2	3	4	5	6	7
<input type="checkbox"/>	...I discover things about myself when I come here	1	2	3	4	5	6	7
<input type="checkbox"/>	...my wife/partner/husband made me come here	1	2	3	4	5	6	7
<input type="checkbox"/>	...this is a good way for my family/friends to share quality time	1	2	3	4	5	6	7
<input type="checkbox"/>	...my family/friends enjoy themselves here	1	2	3	4	5	6	7
<input type="checkbox"/>	...my family/friends have good experiences here	1	2	3	4	5	6	7
<input type="checkbox"/>	...I like the types of things I can learn here	1	2	3	4	5	6	7
<input type="checkbox"/>	...I get more here than going to a shopping mall or a movie	1	2	3	4	5	6	7
<input type="checkbox"/>	...I like to see the plants	1	2	3	4	5	6	7
<input type="checkbox"/>	...It was my choice for how to spend the day	1	2	3	4	5	6	7
<input type="checkbox"/>	...Visiting here is part of my tourist program for DC	1	2	3	4	5	6	7

## Interview Procedure US Botanic Garden

Select visitors who appear 15 or older.

Select by creating an imaginary line near the entrance (if you track), or at the exit (if you interview). The moment you are ready to interview someone, look up and the next person who crosses the line is the person you should talk to. Make sure that you don't start "selecting people, for this would introduce what we call a bias into the sampling. However, you may encounter in couples and groups that one person gets volunteered or that the person says that someone else is better to talk to. Don't fight that. If that is so, interview the other person. If the person in the group seems to be a minor, ask the adult (parent or guardian) and the minor whether it is okay if they answered a few questions.

Approach people cheerfully and smile.

"Hello, my name is [ ], and I am a volunteer here at the US Botanic Garden. I was wondering whether I can ask you a question, or more a favor. We are currently trying to assess how well we serve our visitors. If you have a moment, I would love to ask you a few questions about your experience here today. To thank you for your time, we have a lovely Lawn and Garden book for you.

[If visitors declines, remain cheerful]

"No problem, thank you for stopping, and have a wonderful visit here."

[If visitor says that they have spent little time in there or if they seem unwilling to take part in a longer interview: skip the interview, and have the person only fill out the Why are you here today sheet]

"I understand; yes, a 5-10 minute interview might not be all that appropriate. If you don't mind, and I know I am asking a big favor, would you it be okay to fill out this sheet that basically asks why people came to the US Botanic Garden? That allows us to understand our visitors better. That will only take two minutes and is unrelated to your visit.

[Accept]

"Thank you so much. We could do this at the table over there. [If multiple people in the group: ask if all of them would like to fill them out, but later mark them as belonging to one group!!!!]

[Decline]

No problem, I know I was imposing myself. Please enjoy the rest of your visit, and thank you for visiting the Botanic Garden today.

[If visitor accepts]

"Wonderful, thank you so much. We can go over to this table and sit down. I should say, though, that this can take 10 minutes. However, I won't be offended and please feel free to leave at any moment. Also, feel free to skip questions if you feel uncomfortable or simply if you don't want to answer a question. You should also know that I was not involved in developing this exhibition, so feel free to be very candid."

[During interview]

Feel free to let them walk away. If you feel that they get nervous and want to leave, thank them and let them leave. If more than one person in the group would like to participate, offer them a blank sheet and offer them to fill it out themselves. Be sure to mark that the survey was from the same group. If the group is larger, you may offer to keep the “target” with you, and the rest could explore the adjacent area. That gives you the room and time to interview the person. People get nervous because they think that they are wasting the time of others in their group.

Skip the why questions, or ask only indirectly “why” if someone seems to elaborate. Feel free to ask for clarifications should you not understand what they mean. Feel free to write down quotes. Also, feel free to skip questions if they have been answered before!

[At the end]

Thank them profusely, and offer the gift as a token of our appreciation for their time and insights that they shared with us.

Do postscript:

- Go over answers and elaborate, make sure things are legible.
- If multiple interviews from one group, mark that.
- Write down your observations if there is anything particularly interesting.
- Don't forget your initials.
- Fill in sex and – if not provided – assess age and race/ethnicity
- Describe the group: Father, about 35, with wife and three kids (about 2, 4, 7). Youngest in stroller. He was very willing , but wife became nervous. Kids started to protest. Interview was rushed at the end.”

If you have any questions during interview or tracking, call Martin at 443-254-0002, or feel free to email at [storksdieck@ilinet.org](mailto:storksdieck@ilinet.org)



## APPENDIX D: Room Interview Protocol and Instrument

## U.S. Botanic Garden Retrospective Tracking Interview

Room: \_\_\_\_\_ Interviewer: \_\_\_\_\_ Visitor #: \_\_\_\_\_

Date: \_\_\_\_\_ Time of day: \_\_\_\_\_ AM/PM

**A. Introduction** - Use Individual Room Protocols sheet for guidelines on random sampling and approaching visitors – interview should take about 5 minutes

### **B. Interview questions [Please feel free to use a conversational interview style]**

1. First, approximately how much time did you spend overall in this room? \_\_\_\_\_
2. Approximately how much of the conservatory have you seen today so far?
  - very little so far – just started
  - visited some of it, but less than half
  - visited about half
  - visited more than half
  - visited almost all or all of the botanic garden
3. Thinking just about this room, can you describe to me what you did? You can look at this map or look back at the room if it helps. *Prompts: Did you stop to look at any of the plants? Did you have any conversations or make comments related to the plant collections or signage?*  
[Record running list below]
4. In particular, did you notice or use any of the panels or labels in this room?
  - If yes, do you remember which ones? Did you find them useful? Why or why not?  
*Prompts: What about the signage was useful? What could the USBG do to make it better?*
  
  
  
  
  
  
  
  
  
  
  - If no, why not? Is there anything USBG could do to make the signage more appealing?
5. What did you find to be the most enjoyable, interesting, or fascinating in this room?

→ Why did you find those things most interesting? *Prompts: What about that in particular was fascinating or interesting? Can you tell me more about that? Can you give me an example?*

6. What do you see as the overall theme/message of this room? What do you think the Botanic Garden staff is trying to convey? **[PROBE or give more information if necessary]**

→ How could the USBG make the theme of this room clearer to visitors?

7. Based on this room only, please rate the following statements on a scale of 1-10, with 1 being “strongly disagree” and 10 being “strongly agree”:

	Strongly Disagree										Strongly Agree
I like the type of plants in this room	1	2	3	4	5	6	7	8	9	10	
I like the design/layout of this room	1	2	3	4	5	6	7	8	9	10	
This room provided me with a valuable experience	1	2	3	4	5	6	7	8	9	10	
Overall, this room is appealing to me	1	2	3	4	5	6	7	8	9	10	

### C. Demographic Information

(Now may I ask you a few questions about yourself so that we know who's coming to the USBG?)

11. Are you a  
 First-time visitor?  
 Been here once before?  
 Occasional visitor?  
 Regular visitor?
12. Did you visit the website before your visit?  
 Yes  
 No
13. Where do you live?  
 Local (Within the Beltway)  
 Nearby (Greater DC Metropolitan Area)  
 Out-of-state (non-neighboring)  
 Foreign country
14. What year were you born? \_\_\_\_\_
15. Gender:  
 Female  
 Male
16. Would you describe yourself as?  
 Asian American or Pacific Islander  
 Black or African American  
 Latino or Hispanic  
 Native American  
 White or Caucasian  
 Other or mixed (please describe.)
17. Who are you here with today?  
 With family  
 With friend/partner  
 Alone
18. Age of youngest child in group: \_\_\_\_\_
19. Can I ask you what your profession/occupation is?

*Thank you so much for your help – we really appreciate your feedback. Here is a small gift to thank you for your time.*

---

**Any notes, observations:**

## US Botanic Garden Visitor Study Individual Room Protocols

Prepared by:  
Institute for Learning Innovation

### What you need:

Interview forms  
Clipboard  
Plenty of sharp pencils  
Maps of the rooms  
USBG pencils (thank-you gifts)  
Green apron

### Purpose of the individual room study

To gain a better understanding of what visitors do, experience, and learn in different areas of the Botanic Garden; the extent to which they use interpretive materials; whether they understand the main themes of the individual rooms; and to be able to compare this data across different rooms during the same season (ostensibly a similar visitorship).

### Rooms included in the study:

1. Garden Court
2. Rare and Endangered
3. Plant Exploration
4. Orchids
5. Medicinal Plants
6. Jungle
7. World Deserts
8. Garden Primeval
9. Plant Adaptations
10. East Gallery

### Selecting visitors

This study requires a random sample of visitors, so that we have data from a wide range of individuals (age, gender, ethnicity, geographic location, purpose of visit, etc.). We can best reduce our own biases by using an “imaginary line” to select visitors to approach. For the room interviews, create an imaginary line just outside the room exit, and only approach people who are approximately 15 or older (determine visually). You can randomize in two ways 1) If the gardens are busy, select every fifth visitor who crosses the line; or 2) Once you finish with one interview, have cleaned up your notes, and prepared another interview form, look up an approach the *first* person to cross the line (this technique works well when visitation is low, so you don’t have to wait 20 minutes for the fifth visitor to cross the line).

Most important, make sure that you don’t start intentionally “selecting people,” as this would introduce what we call a bias into the sampling. However, you may encounter in couples and

groups that one person gets volunteered or that the person says that someone else is better to talk to. Try to persuade the initial person to do the interview (you can say things like, “we really have a lot of female perspectives already, and need some male perspectives” or “we need to be as random as possible for the research, so we don’t just want the perspectives of people who volunteer to interview.”). However, if the person really seems uncomfortable or disinterested, don’t fight that and go ahead and interview the other person. Do not interview visitors who appear to part of an organized group (i.e., a school trip or group tour), in which case do not include them in your sample and recruit another visitor.

### **Initiating the interview**

Once you have randomly selected a visitor, approach the visitor. Be sure to smile and look friendly. Briefly explain to the visitor that you are conducting a study for the Botanic Garden about how visitors use the space, and that you would like to ask them a few quick questions. You can say something like:

*“Hi, my name is \_\_\_\_\_. I am working with the US Botanic Garden, and we’re conducting a study to better understand what people do while they’re here. Would you mind if I asked you a few quick questions about what you did and thought about \_\_\_\_\_ room before you move on?”*

#### **[Declines]**

If the visitor declines, remain cheerful and do not take it personally. It is often useful to try to gauge any initial hesitation by visitors as they are debating about whether to participate. There are myriad reasons why visitors might not want to participate, but some of these reasons we can try to anticipate and proactively acknowledge to make the visitor feel more comfortable. Our goal is to give the visitor every reason to participate. For example, if the visitor says they are in a hurry, assure them it only takes a few minutes. If the visitor simply appears reluctant to participate, make it clear that their participation will help the US Botanic Garden to make the experience even better for visitors like them. If the visitor still seems unwilling, you can say something like: *“No problem, thank you for stopping, and have a wonderful visit here.”*

#### **[Accepts]**

If the visitor agrees to participate, thank them, and continue with the interview. You can say something like:

*“Thank you so much for agreeing to participate, we really appreciate it. The rest of your group can either wait for you here or continue to look around. It should only take a few minutes.”*

### **Conducting the interview**

Follow the interview instrument (Retrospective Tracking Room Interview) closely, but be sure to be conversational and make eye contact as well. Take notes that reflect the visitors’ exact words whenever possible, and paraphrase only if necessary. It is okay to ask someone to slow down or repeat what they just said. They are usually very understanding. Make sure you get enough information for each question that you feel they’ve really answered it. Use the probes provided

and/or prompt visitors' with questions such as, "Can you give me an example?" or "Can you tell me more about that?"

When you have finished the interview, be sure to collect the demographic information (they can fill this out themselves), thank them for their time, and give them their gift. Fill in and/or clarify your notes, then move on to the next interview using the random sampling techniques described above.

## APPENDIX E: West Gallery Summative Evaluation



# West Gallery, United States Botanic Garden Summative Evaluation 2007



Prepared for United States Botanic Garden  
in partnership with Institute for Learning Innovation

Elena Guarinello  
MSTD 295/Independent Research  
The George Washington University  
May 16, 2007

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## **Executive Summary**

### **Overview**

This report summarizes the findings of a summative evaluation of the United States Botanic Garden's (USBG) West Gallery conducted by Elena Guarinello, a graduate student in The George Washington University's Museum Studies program. Elena worked in cooperation with the Institute for Learning Innovation (ILI). Elena collected data during March and April 2007. The West Gallery summative evaluation is intended to complement a larger study conducted by ILI.<sup>3</sup>

The primary interest behind this visitor study of the West Gallery stems from the difference it bears to the rest of USBG. Unlike most of USBG, live plants do not predominate in this gallery. Rather, the gallery is arranged around a series of stations that provide interpretation on the role plants play in people's lives (e.g. spices, fragrances, therapy, idioms). A number of sensory opportunities invite visitors to explore this subject material. The sensory opportunities consist of smelling spices and extracts and touching various labels (e.g. turning, spinning, lifting).

### **Research Questions**

In order to assess visitor behavior and experiences within the West Gallery, the study sought to collect data based around the following research questions:

1. How do visitors use the West Gallery?
2. What do visitors take away from the West Gallery? Especially, what satisfaction do they feel with elements in the West Gallery and what messages about plants and cultural uses do they gain?
3. Who visits the West Gallery?

### **Methods**

Exit interviews and uncued observational timing and tracking were utilized to gather data for this study.

### **Results**

1. How do visitors use the West Gallery?

Tracking data from 48 visitors indicate that visitors spent a median of 2 minutes in the West Gallery and that they engaged with the exhibition's components to varying degrees in terms of number of "hits," level of engagement with exhibition components, and use of sensory components. In general, visitors stopped most often and were more fully engaged with spice scents and the gallery's three interactive tables (fragrance, ceremony, therapy).

2. What do visitors take away from the West Gallery?

Results garnered from interviews encouragingly reveal that the sensory components of the West Gallery held a high appeal for visitors and many visitors grasped the gallery's theme of plants' connection to culture. Many also cited personal connections to the material. However, results also suggests that the USBG may be able to

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<sup>3</sup> ILI's visitor study of the USBG runs from fall 2006 to summer 2007. The study's four components will be repeated during seasonal increments (fall, holidays, winter, spring, and summer) to provide comparative data. Working together with USBG staff, ILI developed a series of protocols to assess who is visiting USBG, where they are spending their time, overall satisfaction, and satisfaction and activities within particular areas of USBG. The protocols consist of demographic count, timing and tracking through the entire space, exit interviews, and interviews utilizing reflective tracking for specific USBG areas. Volunteers, USBG staff, and ILI staff will sample over 800 visitors through the study's constituent parts.

do a better job of orienting and directing people to the West Gallery as some visitors were surprised and confused by the room.

### 3. Who visits the West Gallery?

Based on combined results from interviews and timing and tracking, visitors to the West Gallery are predominant Caucasian (83%, n = 78), female (67%, n = 78), over the age of 35 (82%, n = 78), and visiting the gallery as part of an adult couple (35%, n = 78). Based on interview data, many visitors were first-time visitors to the USBG (63%, n = 30) and hailed from out-of-state (60%, n = 30).

### **Conclusions**

The following conclusions are based on collected data and analysis:

- The West Gallery's sensory components were enjoyed and used by visitors. Forty-eight percent of all tracked visitors used at least one sensory component and, in general, the sensory items rated well for number of "hits," level of engagement, and were mentioned positively by interviewees.
- Many visitors understood the gallery's main message of plants' connection to culture.
- The artistic design and interactivity of the West Gallery were recognized and appreciated elements of the space.
- The West Gallery provides a counterpoint to the rest of the gardens; a distinction that visitors understood and appreciated.
- The West Gallery's signage could do more to communicate its content to visitors before they step across its threshold.

## Methodology

The study relied upon observational timing and tracking and exit interviews to gather data on visitor behavior in, and impressions of, the West Gallery. These methods were selected in direct relation to the study's research questions.

The following list outlines the alignment of research methods to specific research questions and also delineates the type of data gathered from each method.

### 1. How do visitors use the West Gallery?

Timing & tracking:

- overall time
- visitors' path
- the direction from which visitors enter and exit
- level of engagement with the exhibition's components
- use of sensory opportunities, which include smelling and touching

Exit interviews

- visitors' recollections of activities within the West Gallery

### 2. What do visitors take away from the West Gallery?

Exit interviews:

- visitor satisfaction
- perceived themes and main messages
- visitor comparison to other rooms in the USBG

### 3. Who visits the West Gallery?

Timing & tracking:

- demographic estimates

Exit Interviews:

- demographic questionnaire

## Timing & Tracking

Unobtrusive observation offers a chance to record where visitors go and how they behave within an exhibition. With regard to the West Gallery, this method also provides an opportunity to collect quantifiable data on how many visitors use the gallery's sensory components.

The evaluator selected visitors to observe based upon a rotating random selection pattern for visitors over the age of 18. This sampling method took in to account that visitors can enter and/or exit the West Gallery from three separate egresses: the West Orangerie, the Garden Court, and Rare & Endangered Plants. The third eligible visitor to enter the room from a given entrance was selected for observation. The evaluator rotated selection amongst the three entrances. In order to balance the need for random selection with available visitors, this rotation did not always follow the same pattern. As a result, from a total of 48 tracked visitors, 15 entered through the West Orangerie, 18 through the Garden Court, and 15 through Rare and Endangered Plants.

Once the evaluator selected a visitor, she followed the visitor through the exhibition, noting level of engagement with exhibition components, route taken, and logging the total time spent in the exhibition. The evaluator assessed visitors' level of engagement with gallery components using the same system of numerical codes employed by Institute for Learning Innovation evaluators in the overall study of the USBG (0 = no attention paid, 1 = a glance, brief interest, 2 = casual interest, 3 = moderate interest, 4 = heavy interest).

Estimates were also made regarding the visitor's demographics (race, age, group type) and the level of crowdedness of the gallery.

The timing and tracking form consisted of an approximation of the gallery's floor plan with each component and egress identified. The tracking form included "SM" for "smell" and "T" for "touch" next to components that offered sensory interactions. The evaluator circled these codes when the tracked visitors smelled or touched these components. The back of the tracking form included a detailed drawing of each of the three tables (ceremony, therapy, fragrance). Although notes were made about a visitor's interest in each item at the tables, each table was given an overall engagement score, which was ultimately utilized in data analysis. Please see Appendix A for a copy of the timing and tracking form.

Timing and tracking was conducted during five days in March 2007, resulting in a sample size of 48.

*Caveat:* Since visitors can follow numerous routes through the USBG and may visit some rooms multiple times, it is possible that some of the tracked visitors had previously visited the West Gallery. If this were the case, a previous visit may have had an impact on the visitor's level of engagement with the gallery's components. However, for the purposes of this study, the evaluator analyzed the data based on the assumption that visitors were passing through the room for the first time during their USBG visit.

## **Exit Interviews**

Exit interviews provide qualitative data that often complements and enriches more quantitative data, such as that gathered with timing and tracking. These conversations with visitors allow the evaluator to gather personal stories and recollections from visitors as well as glean an understanding of how visitors conceptualize and understand the gallery.

As with timing and tracking, the evaluator selected visitors over the age of 18 using a rotating random selection pattern. The same care was taken to select visitors emerging from the gallery's three egresses. As a result, from a total of 30 interviewees, 10 exited through the West Orangerie, 10 through the Garden Court, and 10 through Rare and Endangered Plants.

The interview was adapted from the exit interviews conducted as part of the Institute for Learning Innovation's overall USBG study. The interview form consisted of eleven questions, including five open-ended questions targeting responses related to visitor activities, satisfaction, and descriptions and understandings of the gallery.

At the end of the interview, the evaluator asked the visitor a series of demographic questions to gather information on type of visitor (e.g. first time, regular), where the visitor lives, age, race/ethnicity, group type, and occupation. The interviewee was then asked to complete a form related to motivation for visiting the USBG. The motivation sheet was not utilized within the scope of this study, but will contribute additional samples to ILI's study. Please see Appendix B for interview form and demographic sheet.

Exit interviews were conducted during six days in April 2007, resulting in a sample size of 30.

## Results & Discussion: Exhibition Use

The following sections include a description and interpretation of the study’s results, as based upon the study’s three primary research questions.

### Total Time

Tracked visitors spent an average of 3.5 minutes in the West Gallery. Two minutes was both the mode and median time for this sample set. The shortest visit was 30 seconds<sup>4</sup> and the longest visit was 22 minutes long. **The largest percentage (42%, n = 48) of visitors spent between 2 and 5 minutes in the West Gallery.**

**Table 41: Total time in the West Gallery**

Total Time	% (n=48)
0 – 1 minute	35%
2 – 5 minutes	42%
6 – 22 minutes	23%

The high number of visitors spending 1 minute or less in the West Gallery is understandable given that visitors can follow many circulation routes throughout the USBG.<sup>5</sup> The evaluator observed a number of visitors, both tracked and otherwise, essentially using the West Gallery as a corridor to pass from one section to the USBG to another.

This pattern was particularly true for visitors traveling between the Rare & Endangered Plants and the Garden Court egresses. This is shortest path between two egresses in the West Gallery. More than half (65%, n = 17) of those spending 1 minute or less traveled this route. However, it is important to note that 45% (n = 31) of those spending more than 1 minute also traveled this same path. By the same token, longer total times are not conclusively linked to traveling the longest route through the gallery – between the West Orangerie and Rare and Endangered Plants egresses. Of those visitors with total times above 6 minutes, 36% (n=11) traveled the longest route compared with 24% (n = 37) of those spending 5 minutes or less in the gallery.

Interviewees self-reported higher total times than those observed during timing and tracking. The median reported time was 10 minutes. Nearly one-third of interviewees reported less than 10 minutes (37%, n = 30), 10 minutes (30%, n = 30), and greater than 10 minutes (33%, n = 30). Based on observed times in timing and tracking, it is likely that visitors overestimated the amount of time they actually spent in the West Gallery.

### Measures of engagement and activity

Based on a sample size of 48, maps of the West Gallery were used to record data, which was then analyzed across three dimensions: 1) number of times exhibition components were viewed (“hits”); 2) level of

<sup>4</sup> A few visitors spent less than 30 seconds in the exhibition. Any visits of this length were recorded as 30 seconds.

<sup>5</sup> This assertion is based on the USBG’s layout, anecdotal observations, and preliminary studies in partnership with ILI that tracked visitors throughout the entire USBG.



engagement with exhibition components;<sup>6</sup> and 3) use of sensory opportunities when available. These dimensions were averaged for each of the West Gallery’s 40 components<sup>7</sup> and then scaled into three categories: hot, warm, and cool.

**Table 42: Scoring categories**

	HOT	WARM	COOL
Number of “hits” per component	16 & up	8-15	0 - 7
Level of engagement with components	Mean score over 2.5	Mean score of 1.75-2.5	Mean score of less than 1.75
% Use of sensory components <sup>8</sup>	65% & above	46%-64%	28%-45%

**Number of “hits:”**

The West Gallery includes 40 components in which visitors could express some level of interest. For the purposes of this study, any level of interest from a glance to intense interest was considered a “hit” for that particular component. **The majority (68%, n = 40) of components received a hot or warm score.**

As the color-coded map in Appendix C indicates, the hottest areas of the gallery include the three tables, the central area, spice cluster one, and the graphic panels on rice, wheat, and corn. Aside from the central area, all of these sections bear close physical proximity to one of the gallery’s egresses.

Findings from the **exit interviews support this trend of increased activity in the table area and with the spice clusters.** Of all of the comments gathered in response to the question of “Can you tell me what you just did in this area?,” 32% (n = 92) of all mentions included one or more of the tables and 25% (n = 92) of all mentions included smelling, with several specifically mentioning spices. Please see Table 22 in Appendix D for a complete list of responses to this interview question.

As seen in the color-coded map, the top right corner comprised of spice cluster 2 and the side art exhibit is mostly covered in blue. The attracting power of this latter portion may have less to do with the items themselves than with their position in the exhibition. This corner is not “on the way” to any of the egresses and for visitors entering at the West Orangerie or Rare and Endangered Plants, the area is not directly in their sightlines as they scan the room. For example, anecdotal evidence and tracking paths indicate that when most visitors entering through the West Orangerie reach the pathway between the two clusters they progress through it towards the rest of the room. In fact, only one quarter of the tracked visitors circumnavigated the second spice cluster, included those viewing the side art exhibit.

<sup>6</sup> The engagement dimensions were measured on a 0-4 scale. See the report’s Methodology section, page 6 for more details.

<sup>7</sup> For the purposes of this study, the gallery includes 40 components, which includes the rotating art exhibit and counts each of the tables (therapy, ceremony, fragrance) as one component each.

<sup>8</sup> Use of sensory components was determined from the set of visitors that “hit” each component that offered a sensory opportunity, either smelling or touching. For example, 10 of the 16 people that stopped at Asian curry smelled it.

As shown below in Table 3, **the central area, and the fragrance and spice tables received the highest number of hits.** As the component occupying the largest square footage of gallery space, it is not surprising that the central area received the highest number of hits. In addition, the two tables are located closer to the room's traffic flow than the ceremony table. Although the significant difference in level of engagement between the fragrance and therapy table indicates that position alone is not a predictor of the component's holding power.

**Table 43: Most visited components (n=48)**

Exhibition Component	# of Hits	Engagement	% Used Sensory
Central Area	28	2.00	N/A
Fragrance Table	23	2.35	65 (smell) 48 (touch)
Therapy Table	23	1.57	48

As shown in Table 4, **all of the least visited components are visual components that do not offer sensory opportunities or any text to read.**

**Table 44: Least visited components (n=48)**

Exhibition Component	# of Hits	Engagement	% Used Sensory
Video 3	2	2	N/A
Tea case	4	2	N/A
Side Exhibit: image 1	4	2	N/A

Another important trend to note is that components with sensory opportunities account for over half of the components receiving hot (64%, n = 11) and warm (63%, n = 16) scores. Only 4 of the 21 sensory components received a cool rating, accounting for 31% (n = 13) of all cool components. Please see Table 19 in Appendix C for a full list of hits for all components.

**Level of engagement:**

It is encouraging to note that more exhibition components received a hot or warm rating across the engagement dimension (78%, n = 40) than across the number of hits dimension (68%, n = 40). This data suggests that even if a large number of visitors are not attracted to particular component, the component still holds the interest of those initially attracted.

Some examples of this latter scenario include the words interactive and the scents at the second spice cluster (cresote bush, balsam fir, grasslands). All of these items rated cool for hits, but warm or hot for level of engagement. Conversely, the therapy table, video 1, video 2, and the case in spice cluster 1 all received warm

or hot hit ratings but cool engagement scores. Taken together, this data indicates that **sensory components displayed greater holding power compared to passive elements, such as videos and objects**. Please see the color-coded map in Appendix C to view the hot, warm, and cool rankings of each West Gallery component.

As Table 5 displays, the most engaging components were all spice scents. Interestingly, these particular spice scents are distinct from other scents (e.g. wasabi, cinnamon) in that they are each comprised of a collection of 6-7 spices. These collections of spices are meant to illustrate the ingredients of commonly powdered spices. For example, the Asian curry component included coriander and cloves, among others.

**Table 45: Most engaging components (n=48)**

Exhibition Component	Engagement	# of Hits	% Used Sensory
Cajun Gumbo	3.13	8	75
Asian Curry	2.94	16	63
African Berbere	2.91	11	55

**Interview data validates this high interest in these conglomerate spice scents.** In response to “What did you find to be the most enjoyable, interesting, or fascinating in this area?,” four people mentioned that they enjoyed seeing what powdered spices were made from. An addition 11 respondents cited smelling as an enjoyment. Together these respondents account for 50% (n = 30) of the interview sample. Please see Table 23 in Appendix D for a complete list of responses to this question.

As shown in Table 6, **all of the least engaging components are visual components that do not offer sensory opportunities or any text to read.**

**Table 46: Least engaging components (n=48)**

Exhibition Component	Engagement	# of Hits	% Used Sensory
Hat case	1.33	6	N/A
Video 2 <sup>9</sup>	1.37	11	N/A
Case	1.50	22	N/A

Please see Table 20 in Appendix C for a full list of average engagement scores for all components.

<sup>9</sup> Video 1 actually had the lowest level of engagement with a score of 1 for 12 stops. However, since the video was not functioning for a large portion of time during tracking it was not included in this table.

### Use of sensory items:

Twenty-one of the 40 components in the West Gallery offer sensory opportunities include smelling (73%, n = 22) and touching (27%, n =22). Since the fragrance table offers both smelling and touching, analysis for this dimension used 22 as the total number of sensory components. As illustrated below, fifteen spice scents housed in sculptural flowers along the two spice clusters and in eight bottles set atop the fragrance table comprise the gallery's smelling opportunities.



Regarding opportunities to touch, the words and places towers consist of a series of questions and flip labels. At the gardens tower visitors could choose to operate two cranks that caused a series of photos to revolve vertically. Each table also contained an opportunity to touch in order to access additional information about each of the table's eight items. As illustrated below, the therapy table had flip labels; the fragrance table had three-dimensional spin labels; and, the ceremony had two-dimensional spin labels that revealed one quadrant of text and sample plant/seed at a time.



As seen in the color-coded map in Appendix C, equal numbers of sensory components ranked hot and cool (41%, n = 22) and just a few ranked warm (18%, n = 22).

Table 7 displays the components with the highest sensory scores. The high sensory usages coupled with comparable levels of engagement indicate the strong holding power of these items. However, please note that the top two components, grasslands and words, both rank cool in terms of number of hits, suggesting weak attracting power.

**Table 47: Highest sensory use (n=48)**

<b>Exhibition Component</b>	<b>% Used Sensory</b>	<b># of Hits</b>	<b>Engagement</b>
Grasslands – smell	83.3	6	2.67
Words – touch	80	5	2.60
Ceremony – touch	80	15	2.67

As seen in Table 8, **all of the components with the lowest sensory usage were spice scents.** One characteristic these scents share is that they are positioned at the corners of the spice clusters' layout. Other items garnering low scores were also spice scents gathered in these same corners. One possible explanation for this pattern is the physical layout of these spice scents. Each scent is housed in a different sculptural flower and set at different heights and distances from the area's edge. This may have made it difficult for visitors to smell all of the spices. However, Asian curry, African berbere, and Cajun gumbo also consist of different smells set a varying distances from the edge, albeit at the same height, and these were among the spice scents garnering high usage. Perhaps the thematic relationship between these three, which is lacking in the smaller spice scents, plays a role in the difference in sensory usage among the spice scents. Further study would be necessary to confirm this idea.

**Table 48: Lowest sensory use (n = 48)**

<b>Exhibition Component</b>	<b>% Used Sensory</b>	<b># of Hits</b>	<b>Engagement</b>
Tarragon – smell	29	14	2.57
Sage – smell	31	13	2.46
Balsam fir – smell	33	6	2.17

Please see Table 21 in Appendix C for a full list of use of sensory components.

**Overall exhibition component use:**

Table 9 first ranks the components with a hot ranking for number of hits and for level of engagement and then lists the components with the highest combination of hot and warm scores for these data dimensions.

**Table 49: Top 5 exhibition components (n=48)**

<b>Exhibition Component</b>	<b># of Hits</b>	<b>Engagement</b>	<b>% Used Sensory</b>
Rice	18	2.83	N/A
Asian Curry - smell	16	2.94	63
Vanilla - smell	16	2.63	69
Central Area	28	2.00	N/A
Fragrance Table	23	2.35	65 (smell) 48 (touch)

**Typical individual exhibition use:**

Beyond analyzing the three data dimensions across components, this report also looks at typical individual behavior in the West Gallery. Table 10 illustrates how individuals tended to interact with the exhibition components.

**Table 50: Individual exhibition use**

	<b>Average</b>	<b>Maximum</b>	<b>Median</b>	<b>Minimum (non-zero)</b>
# of Hits	10	31	6	1
Engagement	2.20	3.83	1.69	0.50
Used Sensory	3	18	0	1

In addition, 14.6% (n = 48) of all tracked visitors paid attention to 50% or more of the exhibition components and **48% (n = 48) of tracked visitors used at least one sensory component.**

## Results & Discussion: Visitor Satisfaction & Messages

Results garnered from interviews encouragingly reveal that the sensory components of the West Gallery held a high appeal for visitors and many visitors grasped the gallery’s theme of plants’ connection to culture. Many also cited personal connections to the material. However, results also suggests that the USBG may be able to do a better job of orienting and directing people to the West Gallery as some visitors were surprised and confused by the room.

Results were analyzed based on responses to individual questions. Categories were inductively determined based on the interviewee’s responses.

### Visitor activity

The first question of the interview asked visitors to describe what they did in the West Gallery. A map was available for them to view as they answered this question. Although no single component garnered a large number of mentions, **the most often cited areas were the three tables (fragrance, ceremony, therapy) and smell areas, specifically one or both of the spice clusters.** It is significant to note that of the 29 table mentions, the largest number of responses (9) refer specifically to smelling at the fragrance table. **Smelling at various areas in the exhibition was clearly an element that resonated with visitors.**

For a description of how this self-reported data aligns with timing and tracking data, please see pages 8-9.

**Table 51: Responses to “Can you tell me what you just did in this area?”**

Categories	% of mentions (n=92)
Tables	32
Smell Areas	27
Central Area	12
Noticed the aesthetics	11
Other	10
Information/text areas	9

For a complete list of responses to this question, please see Table 22 in Appendix D.

### Visitor satisfaction: Most enjoyable part of the gallery

Visitors were asked to describe what they found most enjoyable, interesting, or fascinating in the gallery and to elaborate on why. As seen below in Table 12, **ideas/concepts, aesthetics, and smelling were cited as the most interesting elements in the exhibition.**

**Table 52: Responses to “What did you find to be the most enjoyable, interesting, or fascinating in this area?”**

<b>Categories</b>	<b>% of mentions (n=53)</b>
Ideas/concepts	25
Aesthetics	23
Smelling	23
Tables	11
Other	8
Central Area quotes	6
Learning	6

For a complete list of responses to this question, please see Table 23 in Appendix D.

The high frequency of ideas and concepts, including several mentions of the seeing plants’ origins and everyday usage, **reflects an appreciation of plant’s role in culture and also an understanding of the exhibition’s main message.**

Furthermore, the frequency of mentions regarding aesthetics and smelling indicates that **the exhibition’s unique design and sensory emphasis resonated positively with visitors.** As the following paraphrased quotes suggest, visitors did not merely think that the room was pretty or attractive, but actively considered and appreciated the exhibition’s aesthetic and design.

- “the mixture of organic forms with nonorganic material”
- “video within the flowers were really appealing how they were hidden inside”

Also, in response to question 1, two visitors mentioned that they looked closely at the exhibition’s material.

Likewise, the following paraphrased quotations suggest that an appreciation for the sensory experiences of the exhibition:

- “it’s nice not just to have something visual, but a new experience”
- “because it’s fun to smell stuff and you don’t usually get to smell things in museums”

A few visitors cited personal reasons for enjoying or noticing portions of the gallery. For example, two visitors who enjoyed the sculptures spoke about a having relatives who were an artist and metal sculpture artist respectively. Other interviewees mentioned being cooks and/or gardeners.

## **Understanding the West Gallery: Main Messages**

Visitors were asked the following questions: “If you had to describe this room or area to a friend, what would you say that it’s about?”

As evident in Table 13, **a quarter of interviewees recognized that the room was a hands-on and interactive place meant for learning.** Although this is one of the exhibition’s goals, this category describes



the room more than it identifies a main content theme of the gallery. The same is true for the second highest category – description of room – most of which describes the room as a pleasant, peaceful place.<sup>10</sup>

However, it is encouraging to note that **20% of interviewees said that the gallery was about the notions that plants are connected to everyday life and have common uses.** This understanding accurately matches to the main ideas of the gallery, which is listed as *Plants and Culture* in one of the USBG’s printed brochures.

**Table 53: Responses to “What would you say that this room is about?”**

Categories	% of mentions (n=56)
Learning	25
Description of room	21
Connection to everyday life	20
About smelling	16
Target group	11
Sculpture	4
Don't know	4

For a complete list of responses to this question, please see Table 24 in Appendix D.

### Visitor satisfaction: Comparison to the rest of the USBG

The interview form included a few questions designed to collect feedback regarding visitor’s understanding of the West Gallery compared to the rest of the USBG. Responses from the following two questions were analyzed for this segment of the report:

- “Please tell me a bit about your experience in this room compared to the other rooms in USBG. How was this room similar or different?”
- “Did you expect to find a room like this here? Did you do anything in this room you might not have been able to do elsewhere?”

Some visitors had difficulty answering these questions because of the decidedly different styles of the West Gallery and the rest of the USBG. Many began their responses by stating comments similar to “Well, they are just so different...”

Overall, comments regarding the **West Gallery’s increased focus on learning and interactivity dominate responses to these comparison questions.** One interviewee who regularly visits the USBG neatly summed up this difference when he said that the West Gallery “speaks to your intellect” whereas the rest of the USBG “speaks to your soul.” He also declared that when he wants an “intellectual experience” he “consciously” goes to another museum and when he wants a “spiritual experience” he “consciously” chooses to visit the USBG. He stated that the room was not really geared for him and in response to the question about the

<sup>10</sup> *Caveat:* Upon analysis, it was clear that there were problems with the wording of this question. Many visitors spent time physically describing the room. Although not the specific data anticipated, these descriptions offered some insight into how visitors conceptualize and experience the room. These results, in conjunction with descriptions gleaned from questions regarding a comparison to the rest of the USBG, are further exploration on page 19-20 of this report.

room’s main message, cited the value of public education and how good the gallery is for an eighth grade audience.

Nearly one-fifth of all responses to these questions concerned the room’s design and layout. **Many visitors enjoyed the open space the West Gallery afforded them compared to the winding paths of the USBG’s other rooms.** Descriptions include, “more open,” “very clear,” “more open and inviting,” and “not as cluttered.” In a similar vein, five people mentioned that the West Gallery was a nice change from the rest of the USBG. One woman described her experience of the gallery as a way of “cleansing your palate” and “settling your brain” after the stimuli of the garden rooms. These types of responses suggest that the **West Gallery provides an important counterpoint to the rest of the USBG in terms of visitor’s behavioral and intellectual experiences.**

Five people expressed a preference for the rest of the USBG, noting that it was “more immersive,” “had more plants,” and there was “more to see.”

**Table 54: Responses to questions asking visitors to compare the West Gallery to the USBG**

Categories	% of mentions (n=53)
More learning	26
Clean/clear design/pleasant atmosphere	19
Nice change	9
Unexpected/very different	9
Rest has more/preferred	9
Not real/not real plants	8
Other	6
Didn't see rest/first stop	11

For a complete list of responses to this question, please see Table 25 in Appendix D.

## Visitor Confusion

Based on responses to several of the interview questions, a trend of visitor confusion emerged. **Visitors did not anticipate the existence of this type exhibition in the West Gallery and were often surprised to find themselves in this setting.** For example, two people mentioned that they thought people could easily miss the room.<sup>11</sup> One of these visitors went on to say that there is ‘nothing that tells you that you can do anything until you get up close, there is no sign, it’s so beautiful, but some people might miss it.’ Another visitor specifically mentioned that the “West Gallery” sign above the room does not help tell you what’s in the room.<sup>12</sup> The tables within the room confused two other visitors who respectively thought the room was a

<sup>11</sup> These comments were made in response to the question regarding what people did in the gallery.

<sup>12</sup> This comment was made in response to a comparison question.

gift shop<sup>13</sup> and a cafeteria. Three other visitors stated that entering the room was a “surprise” and a “bit of an accident.” They saw the room out of the corner of their eye and decided to enter.<sup>14</sup>

The evaluator also observed many visitors peer through the clear doors from the Garden Court and choose another direction. She also observed people open this door, peer around the West Gallery and then choose not to enter. This anecdotal evidence further supports this trend of confusion.

On the one hand, since USBG is a botanic garden it is understandable that people do not expect to find a room such as the West Gallery. However, the USBG could consider changing their maps and the signage around the West Gallery in order to address this trend. The two USBG guides currently available identify the room as “West Gallery” on the map and only list the title “Plants in Culture” in a description of the West Gallery. Identifying the room as “Plants in Culture” on the map could help communicate to visitors what is in the room. In fact, unlike “Jungle” and “Orchids,” the West and East Galleries are the only permanent displays on the map whose names do not immediately communicate what is in the room. By the same token, the USBG could consider changing the physical title above the gallery’s entrance to read “Plants and Culture” instead of “West Gallery.”

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<sup>13</sup> This comment was made in response to the question about describing what the room was about.

<sup>14</sup> All of these comments were made in response to a comparison question.

## Results & Discussion: Visitor Demographics

Based on both tracking and interview data, the typical visitor to the West Gallery is a Caucasian female in her forties visiting as part of an adult couple. She is from out-of-state and a first time visitor to the institution.

### Basic Demographics

The table below summarizes specific demographic information based on the sample size used in this study. These numbers should be compared to data gathered by ILI for a better picture of the USBG’s visitor population.

**Table 55: Visitor demographics**

Characteristic	%	%	%
	Timing & Tracking n = 48	Interviews n = 30	Combined n = 78
<b>Gender</b>			
Female	62.5%	73%	67%
Male	37.5%	27%	33%
<b>Race/Ethnicity</b>			
Caucasian	77%	93%	83%
African American	2%	0%	1%
Latino/Hispanic	2%	7%	5%
Asian/Pacific Islander	15%	0%	9%
Other	4%	0%	2%
<b>Age</b>			
20 – 34	31%	23%	28%
35 – 49	40%	30%	36%
50 – 70	29%	47%	36%

### Place of Residence

As detailed in Table 16, over half of the sample size (60%) hailed from out-of-state. This figure suggests that a large number of visitors are tourists. Anecdotal evidence supports the idea that many visitors come to the USBG as part of a their visit to several nearby attractions, such as the Capitol Building and the Smithsonian malls. For example, many visitors wore name badges from the Capitol tour. Also, one interviewee reported that she and her friend didn’t know that the USBG existed and visited upon the suggestion of a man in at a Smithsonian information booth.

**Table 56: Place of residence**

Place of Residence	% (n=30)
Local (inside the Beltway)	23%
Nearby (Greater DC Area)	7%
Out-of-state	60%
Foreign Country	10%

## Visitor type

Based on interview results, visitor data indicates a high number of first-time visitors (63%).

**Table 57: Visitor type**

Visitor Type	% (n=30)
First-time visitors	63%
Been once before	23%
Occasional visitor	3%
Regular visitor	10%

## Group Composition

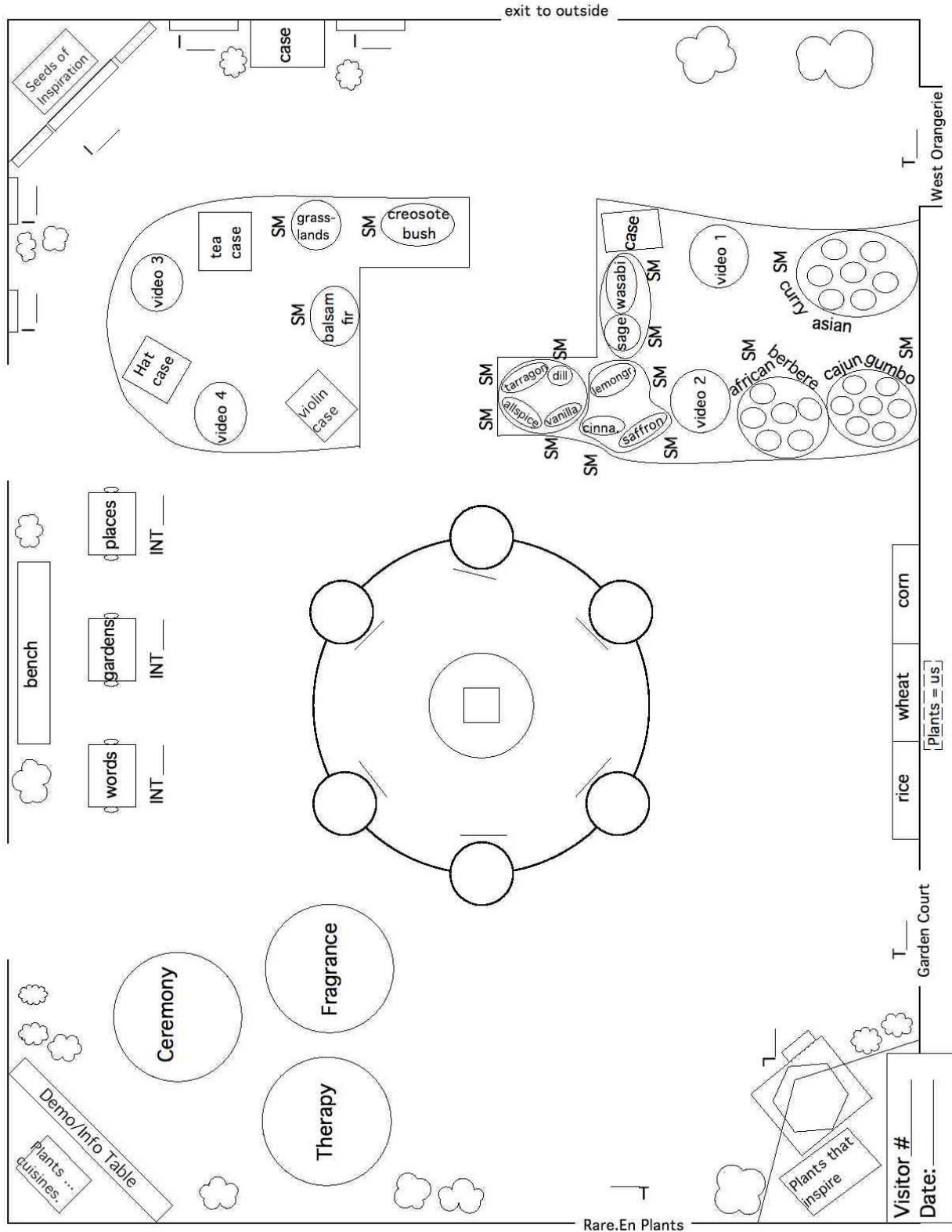
Based on the timing and tracking sample, the two most predominant group compositions were adult couples and adult groups. While the interview sample also suggested a predominance of adult couples, there were far more adult and child groups in this sample. Data collection times most likely account for this difference. Timing and tracking data were largely collected during weekday hours, during which the majority of children at the USBG were part of an organized tour or field trip. Conversely, the interviews were mostly collected on weekend days, likely accounting for a large number of family groups in attendance.

**Table 58: Group composition of samples**

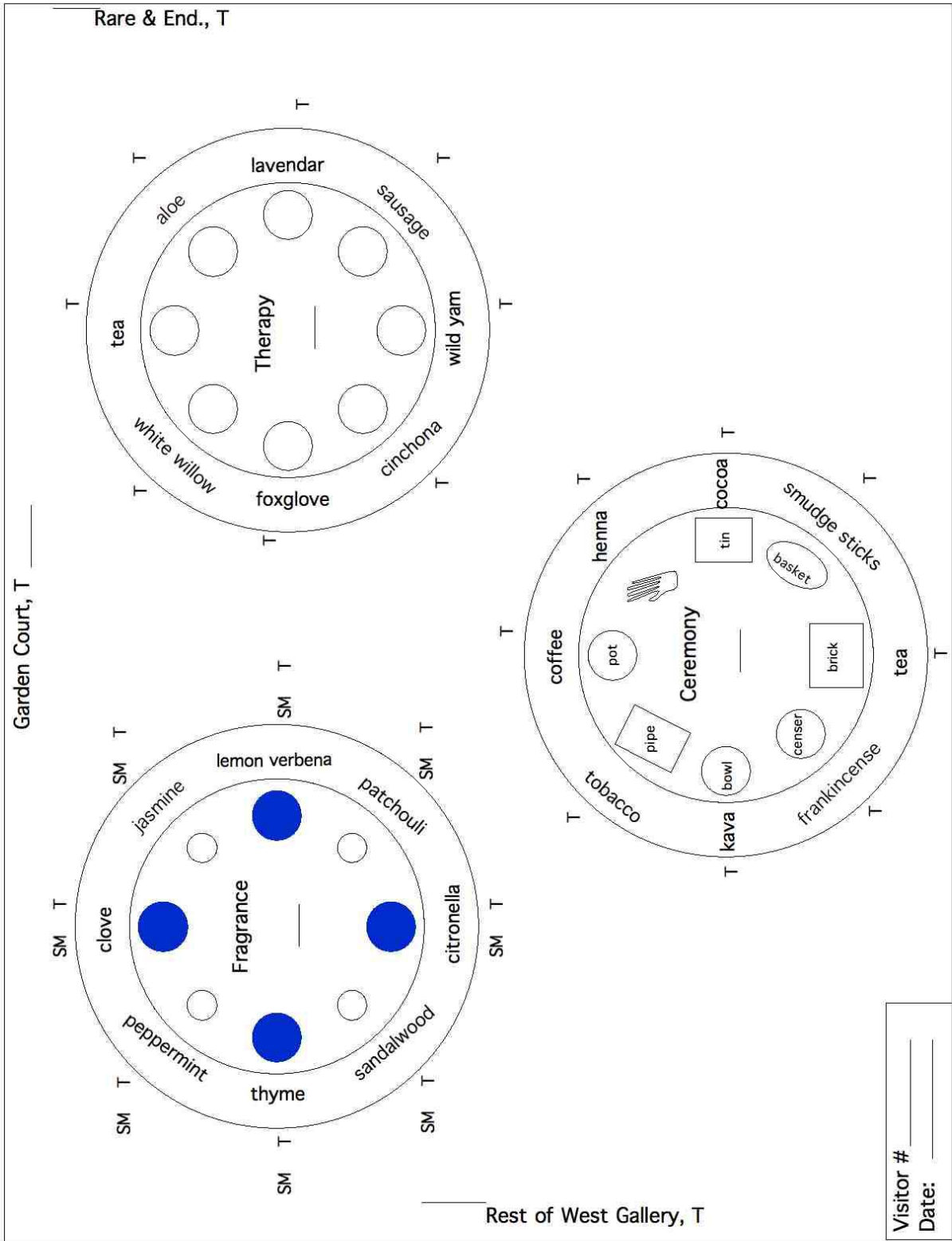
Group Composition	%	%	%
	Timing & Tracking n=48	Interviews n=30	Combined n=78
Adult alone	19%	13%	17%
Adult couple	35%	33%	35%
Adult group	35%	20%	29%
Adult and child group	10%	33%	19%

# Appendix A: Timing and Tracking Form

Front (actual size fit entire page)



**Appendix A: Timing and Tracking Form**  
Back (actual size fit entire page)



**Appendix B: Interview Form**  
**U.S. Botanic Garden Retrospective Tracking Interview:**  
**STUDY D- West Gallery**

**Date:** \_\_\_\_\_ **Interviewer:** \_\_\_\_\_

**Time of day:** \_\_\_\_\_ **AM/PM** **Visitor #:**  
\_\_\_\_\_

A. Introduction (use **Interview Procedure US Botanic Garden** sheet for protocols on random sampling and approaching visitors – interview should take about 5 minutes)

B. Interview questions

8. First, can you tell me what you just did in this area? You can look at this map or back into the room if that helps. *Prompts: Did you stop to look at any of the plants? Did you read any labels? Did you have any conversations?*  
[Record running list below]

9. Approximately how much time did you spend overall in this area?  
\_\_\_\_\_

10. What did you find to be the most enjoyable, interesting, or fascinating in this area?

→ Why did you find those things most interesting? *Prompts: What about that in particular was fascinating or interesting? Can you tell me more about that? Can you give me an example?*

11. If you had to describe this room or area to a friend, what would you say that it's about? (Or what are the "main idea(s)"? What do you think the Botanic Garden staff wants you to experience or learn in this room?) *Prompts: Do you see a theme here? How could the USBG make the message/theme more clear?*



12. Did you notice or use any of the panels or labels in this room?

→ If yes, did you find them useful? Why or why not?

*Prompts: What about the signage was useful? What could the USBG do to make it better?*

→ If no, why not? Is there anything USBG could do to make the signage more appealing?

### C. Comparison to the USBG

1. Please tell me a little bit about your experience in this room compared to the other rooms in USBG.

*Prompts: Did you expect to find a room like this here? Did you do anything in this room you might not have been able to do elsewhere?*

2. Please rate this room compared to others that you have visited here at the US Botanic Garden:

	Worse									Better
Overall Appeal	1	2	3	4	5	6	7	8	9	10
Type of plants	1	2	3	4	5	6	7	8	9	10
Aesthetics of area	1	2	3	4	5	6	7	8	9	10
Value to you	1	2	3	4	5	6	7	8	9	10

At what point during your visit to USBG did you come in to this room?

- first stop
- less than halfway through
- about halfway through
- more than halfway through
- last stop

Approximately how many other rooms have you visited so far? \_\_\_\_\_

D. Demographic Information

*(Now may I ask you a few questions about yourself so that we know who's coming to the USBG?)*

2. Are you a

- First-time visitor?
- Been here once before?
- Occasional visitor?
- Regular visitor?

20. Did you visit the website before your visit?

- Yes
- No

21. Where do you live?

- Local (Within the Beltway )
- Nearby (Greater DC Metropolitan Area)
- Out-of-state (non-neighboring)
- Foreign country

22. What year were you born? \_\_\_\_\_

23. Gender:

- Female
- Male

24. Would you describe yourself as?

- Asian American or Pacific Islander
- Black or African American
- Latino or Hispanic
- Native American
- White or Caucasian
- Other or mixed (please describe.)

25. Who are you here with today?

- With family
- With friend/partner
- Alone

26. Age of youngest child in group: \_\_\_\_\_

27. Can I ask you what your profession/occupation is?

*Thank you so much for your help. Now I'd just like you to quickly fill out this sheet on why you came here today. It should just take a few minutes, and I'll get your thank-you gift while you fill it out.*

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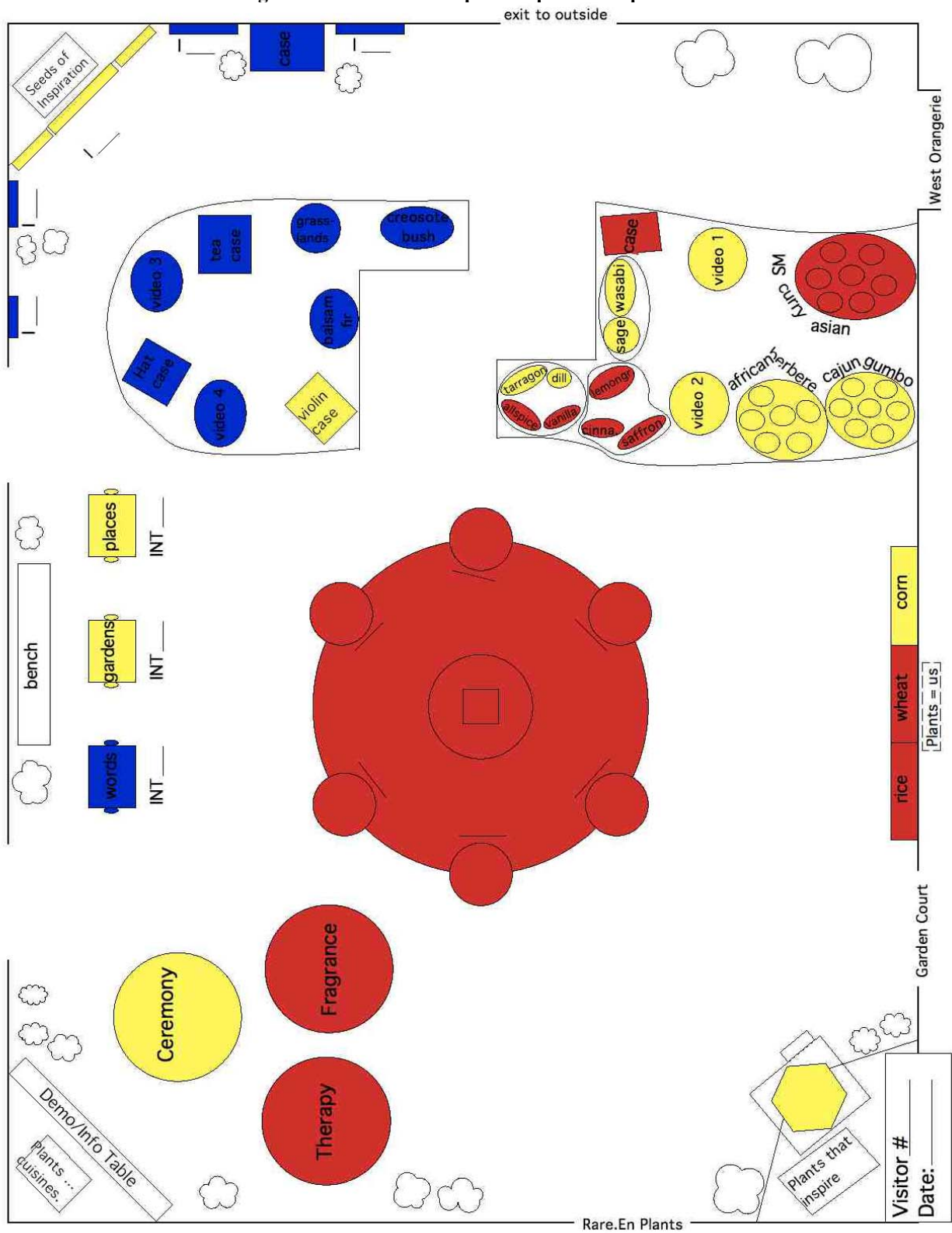
**Any notes, observations:**

## Appendix C – Timing & Tracking Data

**Table 59: Visitation by component (n=48)**

Exhibition Component	# of Hits	% of Visitors Attending
Central area	28	58
Therapy Table	23	48
Fragrance Table	23	48
Case	22	46
Rice	18	38
Cinnamon	17	35
Saffron	17	35
Asian curry	16	33
Allspice	16	33
Vanilla	16	33
Wheat	16	33
Lemongrass	15	31
Ceremony Table	15	31
Pedestal	15	31
Dill	14	29
Tarragon	14	29
Wasabi	13	27
Sage	13	27
Corn	13	27
Video 1	12	25
African berbere	11	23
Video 2	11	23
Places	10	21
Gardens	10	21
Violin case	10	21
Cajun gumbo	8	17
Side exhibit: image 3	8	17
Cresote bush	7	15
Side exhibit: image 4	7	15
Grasslands	6	13
Balsam fir	6	13
Hat case	6	13
Side exhibit: image 5	6	13
Words	5	10
Video 4	5	10
Side exhibit: image 2	5	10
Tea case	4	8
Side exhibit: image 1	4	8
Side exhibit: case 1	4	8
Video 3	2	4

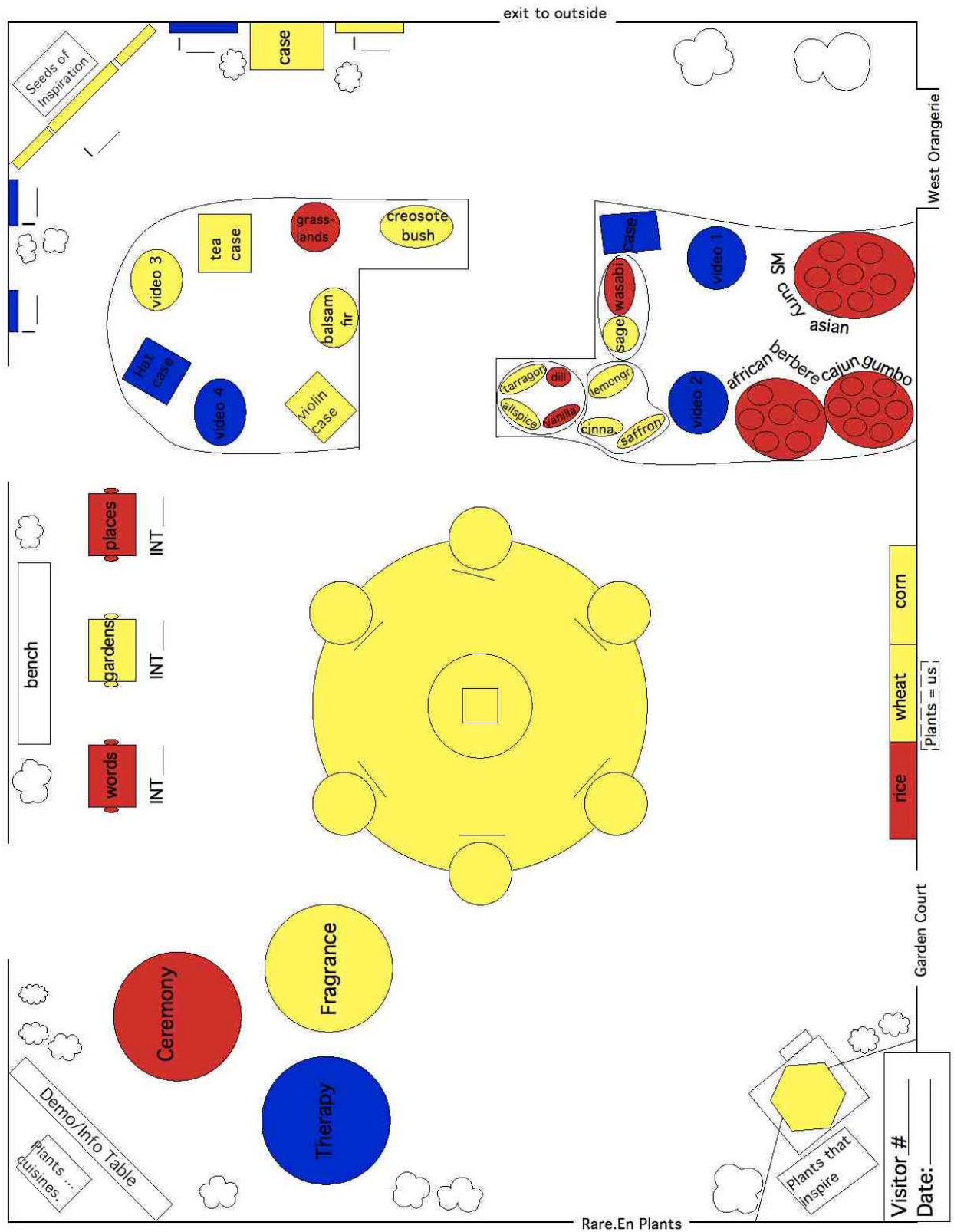
Figure 4: Number of hits per component map



**Table 60: Average level of engagement by component (n=48)**

Exhibition Component	Average level of engagement
Cajun gumbo	3.00
Asian curry	2.94
Africa berbere	2.91
Rice	2.83
Grasslands	2.67
Ceremony Table	2.67
Vanilla	2.63
Wasabi	2.62
Places	2.60
Words	2.60
Dill	2.57
Allspice	2.44
Wheat	2.44
Sage	2.43
Tarragon	2.36
Fragrance Table	2.35
Lemongrass	2.33
Corn	2.31
Balsam fir	2.17
Cresote bush	2.14
Side exhibit: image 3	2.13
Saffron	2.12
Cinnamon	2.06
Gardens	2.00
Tea case	2.00
Video 3	2.00
Side exhibit: image 1	2.00
Side exhibit: case 1	2.00
Central area	2.00
Violin case	1.80
Pedestal	1.80
Side exhibit: image 4	1.71
Video 4	1.60
Side exhibit: image 2	1.60
Therapy Table	1.57
Case	1.50
Side exhibit: image 5	1.50
Video 2	1.37
Hat case	1.33
Video 1	1.00

Figure 5: Average level of engagement per component map

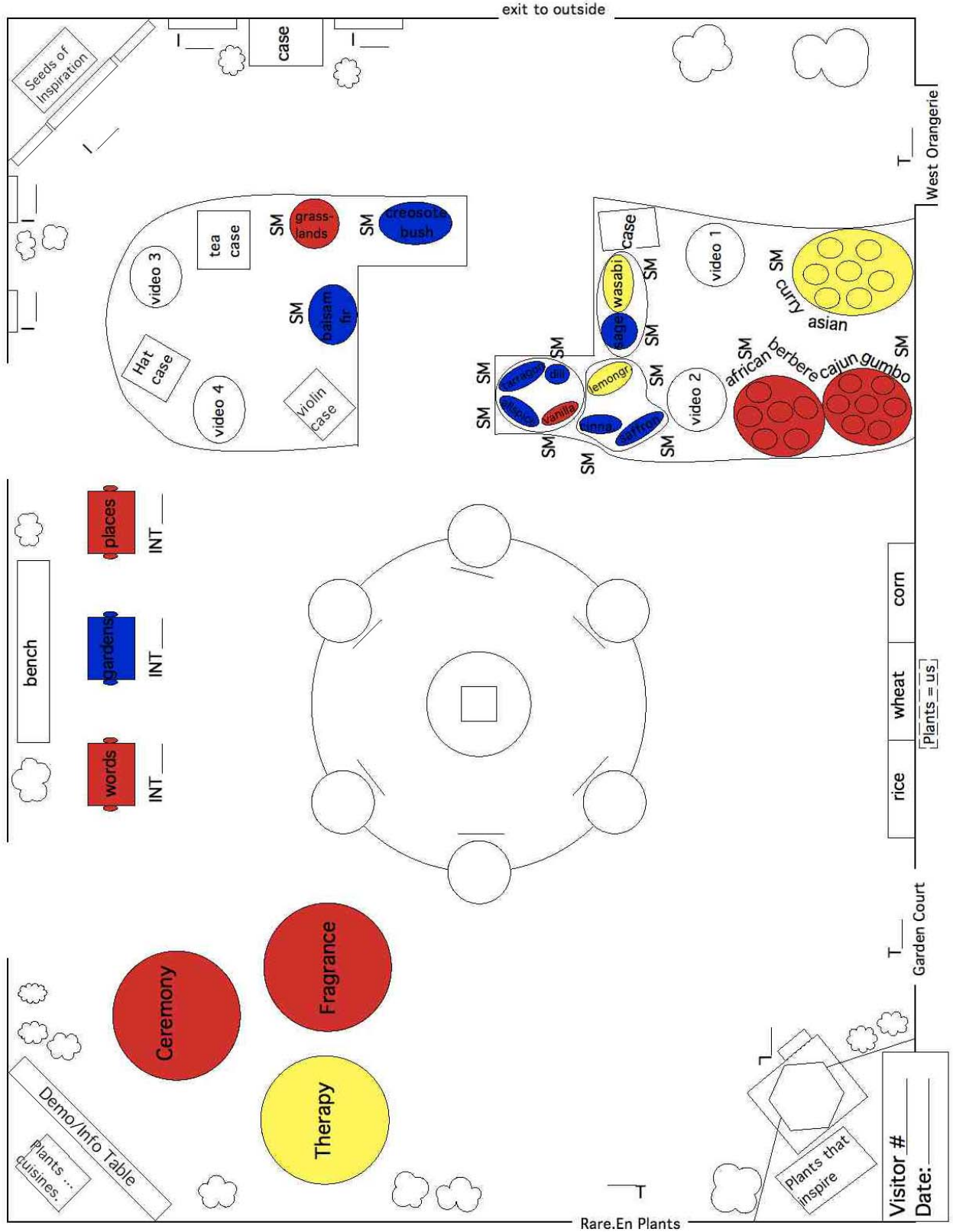


**Table 61:** Use of Sensory Components (22 sensory components)

<b>Exhibition Component</b>	<b># of Hits</b>	<b># Used sensory</b>	<b>%</b>
Grasslands	6	5	83
Ceremony Table - touch	15	12	80
Words - touch	5	4	80
Cajun gumbo	8	6	75
Places - touch	10	7	70
Vanilla	16	11	69
Fragrance Table	23	15	65
Asian curry	16	10	63
Wasabi	13	8	62
African berbere	11	6	55
Therapy Table - touch	23	11	48
Fragrance Table – touch	23	11	48
Lemongrass	15	7	47
Allspice	16	7	44
Cresote bush	7	3	43
Saffron	17	7	41
Gardens – touch	10	4	40
Dill	14	5	36
Cinnamon	17	6	35
Balsam fir	6	2	33
Sage	13	4	31
Tarragon	14	4	29

\* Sensory refers to smelling except where noted.

Figure 6: Use of sensory components map





## Appendix D – Exit Interview Data

**Table 62: Responses to “Can you tell me what you just did in this area?” (n=92)**

Categories	# of mentions	% of mentions
<b>Tables</b>	<b>29</b>	<b>32</b>
smelling at the fragrance table	9	
all three tables	6	
fragrance table	5	
table area, didn't mention all specifically	4	
therapy table	4	
ceremony table	1	
<b>Smell Areas</b>	<b>25</b>	<b>27</b>
smelled at cluster 1	8	
smelled everything	4	
smelled spices	4	
smelled at one or both clusters	3	
looked at cluster 1	2	
looked at cluster 2	1	
<b>Central Area</b>	<b>11</b>	<b>12</b>
read the quotes	3	
sat on the bench	2	
confused by the area	2	
translated sayings to friends	1	
liked the quotes	1	
rubbed the logs	1	
walked through	1	
<b>Noticed the aesthetics</b>	<b>10</b>	<b>11</b>
aesthetics/sculpture	4	
silver flowers with videos	3	
looked closely at the materials	2	
carpet wall hanging	1	
<b>Other</b>	<b>9</b>	<b>10</b>
noticed violin case	3	
photo exhibit	3	
all of it	2	
beautiful pedestal	1	
<b>Information/text areas</b>	<b>8</b>	<b>9</b>
some mention of one or more of the rice, corn, wheat walls	5	
some mention of flip labels	3	

**Table 63: Responses to “What did you find to be the most enjoyable, interesting, or fascinating in this area?” (n=53)**

<b>Categories</b>	<b># of mentions</b>	<b>% of mentions</b>
<b>Ideas/concepts</b>	<b>13</b>	<b>25</b>
what powdered spices are made from (i.e. gumbo, curry)	3	
seeing where plants are from	2	
seeing the seeds that spices come from	1	
where lavender and tea are from and how they're used	1	
how plants correlate to products	1	
everyday commercial uses	1	
relationship between everyday things and plants that are used	1	
medicinal uses	1	
connections to rice, wheat, and corn across societies and cultures	1	
contemplate what I saw in the gardens	1	
<b>Aesthetics</b>	<b>12</b>	<b>23</b>
sculpture	7	
aesthetics	3	
video flowers	1	
integration of art with photo exhibit and the design of the gallery add to appreciation of nature	1	
<b>Smelling</b>	<b>12</b>	<b>23</b>
<b>Tables</b>	<b>6</b>	<b>11</b>
all three	2	
ceremony table	2	
fragrance table	1	
therapy table	1	
<b>Other</b>	<b>4</b>	<b>8</b>
peaceful	2	
not crowded	1	
beautiful plate	1	
<b>Central Area quotes</b>	<b>3</b>	<b>6</b>
<b>Learning</b>	<b>3</b>	<b>6</b>
turning the labels to learn at the ceremony table	1	
nice interactive space	1	
easy to understand	1	

**Table 64: Responses to “What would you say that this room is about?” (n=56)**

<b>Categories</b>	<b># of mentions</b>	<b>% of mentions</b>
<b>Learning</b>	<b>14</b>	<b>25</b>
interactive/hands-on	8	
can learn things/educational/informative	4	
info from other places	1	
learn about rice and corn	1	
<b>Description of room</b>	<b>12</b>	<b>21</b>
peaceful	2	
beautiful	2	
pleasant, warm atmosphere	1	
contemplative	1	
eclectic	1	
whimsical	1	
fragrant	1	
refreshing	1	
open and airy	1	
nice flow	1	
<b>Connection to everyday life</b>	<b>11</b>	<b>20</b>
how plants are used	2	
practical uses of plants	2	
incorporate plants into everyday experiences and commercial use	2	
plants are in everyday life	2	
gardening and botanics are connected to real life	1	
homeopathic virtue of herbs	1	
we're dependant on plants and have been for generations	1	
<b>About smelling</b>	<b>9</b>	<b>16</b>
smells	4	
what plants smell like	2	
smells of different herbs	1	
it's important to smell the spices after the visiting the gardens	1	
wasn't expecting to be able to smell	1	
<b>Target group</b>	<b>6</b>	<b>11</b>
good/interesting for kids	3	
good for a range of ages	2	
works for adults too	1	
<b>Sculpture</b>	<b>2</b>	<b>4</b>
artistic approach, flowers as sculpture	1	
sculpture, “it's plants w/o being plants”	1	
<b>Don't know</b>	<b>2</b>	<b>4</b>

**Table 65: Responses to questions asking visitors to compare the West Gallery to the USBG (n=53)**

<b>Categories</b>	<b># of mentions</b>	<b>% of mentions</b>
<b>More learning</b>	<b>14</b>	<b>26</b>
more interactive/hands-on	4	
can touch, which you can't do elsewhere	2	
more like a museum	1	
can learn more about plants and how they're used	1	
expands on what you saw in rest of garden	1	
can look at different things and learn	1	
good for background info	1	
"this was the thinking part"	1	
"speaks to your intellect" vs. the rest which "speaks to your soul"	1	
education	1	
<b>Clean/clear design/pleasant atmosphere</b>	<b>10</b>	<b>19</b>
not as cluttered	1	
very well laid out	1	
more open and sparse in a good way, strong components were clearly laid out	1	
very clear, organized, well-designed	1	
airy, nice flow	1	
more open & inviting	1	
less crowded	1	
lots of light	1	
cooler temperature	1	
peaceful	1	
<b>Nice change</b>	<b>5</b>	<b>9</b>
nice change of pace	2	
nice for a change	1	
settles your brain, cleanses	1	
other rooms have so much you have to seek out what you like; here you can look around and feel like you can cover it all	1	
<b>Unexpected/very different</b>	<b>5</b>	<b>9</b>
<b>Rest has more/preferred</b>	<b>5</b>	<b>9</b>
rest is more immersive, experience	2	
like rest of USBG b/c it has more plants	2	
more to see in rest	1	
<b>Not real/not real plants</b>	<b>4</b>	<b>8</b>
<b>Other</b>	<b>3</b>	<b>6</b>
good break b/c of allergies	1	
jarring, b/c going from room to room with a flow and then suddenly you're in a gallery	1	
wouldn't want the rest to be like WG, each has its place	1	
<b>Didn't see rest/first stop</b>	<b>7</b>	<b>11</b>